Marketing health care in South East Asia

Mannil Prem Kumar

ABSTRACT

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The Asia /Pacific basin is currently the centre of business activity. One particular area in this basin which has caught the attenton of businessmen is the Asean region especially the countries of Thailand, Singapore and Malaysia. Investment has poured into these nations and there is rapid development. One particular business which has developed very rapidly is the health care segment. The economies of these countries are flourishing and the standard of health care management has improved. This means there is a ready market for heath care.

The thesis begins with a brief introduction to the country profiles and then moves to the health care system of the three countries. The pharmaceutical industry of the three nations are highlighted. The manufacturing base is small in Malaysia but is extensive in Thailand and Singapore. Singapore's Economic Development Board is luring high technology based industries and showering them with generous benefits. Multinationals feel that having Singapore as their base they could tap the entire Asia/Pacific region. Patent rights has become a major issue in Thailand and the relaxed rules has encouraged the mushrooming of generics which has threatened the very existence of multinationals.

The distribution network of the pharmaceutical industry is

mentioned. Special mention is made to the G.P.O in Thailand which acts as a major purchasing, manufacturing and distributing unit. The various drug regulations in the three countries are published, with special mention given to the registration exercise which is being conducted in Malaysia. The advertising code, O.T.C products and self medication has found a palce in the thesis. The cross country analysis throws light on the pharmaceutical business in the three nations. The emergence of Japan as a future source for pharmaceutical technology is explained briefly. The conclusion and the mention of Singapore as the venue for the pharmaceutical business takes us through the last pages of the thesis.

MARKETING HEALTH CARE IN SOUTH EAST ASIA

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CONTENTS

FOR COMPETION BY CANDIDATE IF 7(b) ON HIGHER DEGREE ENTRY FORM DOES NOT APPLY.

This is to certify that none of the material offered has previously been submitted by me for a degree in this or in any other university.

Signed .....M. Prem Kumar.....

Date .....15/10/90.....

Mannil Prem Kumar

PHARMACEUTICAL MARKETING RESEARCH

1 The Asia / Pacific region excluding Japan, currently accounts for 17% of the world wide pharmaceutical sales and represents the world's fastest growing pharmaceutical market. In contrast to the bankcrupt economies in certain countries of Africa and the escalating inflation in South America, the Far East is enjoying genuine and rapid economic growth at present with incomes and living standards rising faster than anywhere else in the world.

Asia has changed its outlook alltogether. This is not the continent ages back which was colonised by the West. The outlook projected then was a backward and neglected area. Things have changed now. Asia has become a leading producer of oil, natural resources and boasts of industrialised countries. The economies of many Asian countries are comparable to that of Europe, U.S.A and Canada.

Once reknown for cholera, leprosy, typhoid,and malaria and a region which had a poor health care system, modernisation has moved into the continent. Pharmaceutical and medical supplies were shipped into the continent from the West. Health care system became a necessity and a market developed. During the past decade, the value of world consumption of drugs at current prices has increased dramatically. In 1976 it amounted to U.S$43 billion and in 1985 it reached U.S$94.1 billion which saw an average annual increase of 9.1%.

Fig 1 WORLD CONSUMPTION OF PHARMACEUTICAL BY REGION U.S$ BILLION EX MANUFACTURER'S PRICE

	1976	1985
North America	8.761	28.141
W.Europe	13.111	22
E.Europe	6.197	9.6
Japan	4.020	14.038
Oceania	0.480	0.7
Latin America	3.689	5.6
Africa	1.268	2.7
Asia	2.920	6.6
China	2.6	4.7

(W.H.O, Geneva 1988)

The health care system in North America and Europe has developed to a stage which will ultimately become saturated. Multinational pharmaceutical companies have become uneasy. New markets have to be found. The Latin American economy is in bad shape. Brazil, Argentina, Mexico and Venezuela have huge debts and their economies are in shambles. Africa has not improved that much either. It is still poverty stricken and famine has rocked the land. Only a handful of African nations have strong economies. On the whole the entire region is neglected and the dark continent will still remain as such.

Thus, what remains is Asia. An ever ready market which has proved to the Western investor an alternate region for investment and trade.

Fig 2

PHARMACEUTICAL MARKET SIZE PACIFIC AREA

RANK IN FREE WORLD		1986 LOCAL CURRENCY MILLION	1986 US$ IN MILLION	GROWTH IN L.C	GROWTH IN U.S$
12	KOREA	W927,300	1053	+3	+2
22	TAIWAN	NT18,942	493	+17	+22
24	INDONESIA	Rp528,000	419	+11	-4
26	PHILIPPINES	P8,175	374	+15	+7
37	THAILAND	B6,640	255	+ 3	+2
-	MALAYSIA	M$270	108	+8	+3
-	HONG KONG	HK$594	76	+6	+6
-	SINGAPORE	S$92	44	+5	+5

(I.M.S Pacific, October 1987)

South Korea leads the region with a pharmaceutical market size of U.S$1.05 billion, although its growth has slowed down tremendously. Taiwan has overtaken Indonesia in the number 2 spot, with the most impressive growth rate in the region in 1986 with 22% in U.S$ terms. Indonesia's lag is largely due to the 45% devaluation of the Rupiah it suffered in 1986. The Philippines is back to where it was in 1983 at U.S$374 million. The remaining countries showed marginal growth.

Zeroing down to a special region is Asean (Association Of South East Asian Nations). Three of the countries, Thailand, Malaysia

and Singapore have become centres of success. Singapore the 2.5 million populated country has become a newly industrialised nation, Malaysia has proved to be the world's largest producer of tin, rubber and palm oil, and finally Thailand which has gathered enough attention to be the centre of investment for Asia and is no more the "Sick Man Of The Asian Continent".

Pharmaceutical companies seeking new opportunities for sales and profits in the face of maturing markets in the Western Hemisphere and disillusionment about the prospects in other developing countries are incresingly looking to the Far East for significant rewards in the next few decades in return for investments being made now.

The objective of the research is to establish that Thailand, Singapore and Malaysia have become the focal point of investment and also comprise a region which could be utilised by international health care companies to market their products. This is a region whose health care system has improved tremendously and which has enormous potential for the major pharmaceutical companies.

This research also looks into the marketing policies adopted by pharmaceutical companies in Singapore, Thailand and Malaysia. The format for this thesis has been broken into 3 categories that is

1) Malaysia

2) Singapore

3) Thailand

The resources for the write up have been tapped through library

references, interviews and newspaper reports.

For Malaysia, the interviews were conducted with personnel directly involved in the business. People interviewed work for Ciba Geigy, Astra, and Johnson & Johnson. The Malaysian Medical Council was contacted for material information. The Ministry's library, Malaysian Industrial Development Authority, New Straits Times and other institutions have graciously provided valuable information.

In Singapore, Johnson & Johnson, The Ministry Of Health, and the research company I.M.S were visited for materials. It has been observed that no real write up on the pharmaceutical industry has been conducted except for extracts from United Nations reports which had been tabled years ago. Newspaper reports were a source of information but they were brief.

Pharmaceutical companies were reluctant to part with the information they had and research companies that conducted work charged the companies high rates. Their information was based on samples and not on the population as such.

In Thailand, Johnson & Johnson, Olic Thailand and the Pharmaceutical Products Association provided valuable information. In addition to these sources, The Drug control Authorities of the 3 countries provided skeletal reports on the pharmaceutical industry. The Drug Control Authorities Of Thailand, Malaysia and Singapore are still in their infant stages and depend on the U.S, U.K, Sweden,Japan and Australia for vital

information.

Thus, it is seen that unlike the West where ready information is available, in South East Asia, it is an uphill task to gather the material.

THE ASEAN PROFILE

2 The 1980 E.S.C.A.P conference (Economic Commission For Asia And The Pacific, 19-23 May 1980) in Bangkok in its findings showed a very heterogenous character within ASEAN countries ranging from population disparity among the 5 members ie. Thailand, Malaysia, Singapore, Philippines and Indonesia. Today the newest member in ASEAN is Brunei.

With a population of 233 million in 1976, a great disparity is evident. Singapore, is the smallest, and is represented only by 1% of the population. Indonesia is represented with 56%. Philippines and Thailand shared 18.5% - 18.6% of the population and Malaysia recorded 5.7%.

The number of ailments episodes per year was 700 million cases. Indonesia's share of ailments over its population share represented 63.7% of the total ailments, and Singapore recorded only 0.8%

3 Requirements of drugs expressed in terms of population needs was estimated at U.S$2,750 million at retail price. Share requirements was found to be :

Thailand - 14.8%

Singapore - 1.4%

Philippines - 25.3%

Malaysia - 3.8%

Indonesia - 54.7%

Actual drugs consumed in 1976 in ASEAN was about U.S$1 billion at retail price. Indonesia and Thailand shared the same amount of 33% of the total drug consumption in the sub region despite their population disparities. Singapore consumed 3% of the total value. Drug consumption in the Philippines and Malaysia was 16.8% and 9.8% respectively.

Local production which is mainly of a formulation nature in ASEAN, totaled US$686 million in retail price. Indonesia accounted for 40.1%. Thailand and Philippines totaled an equal amount between 22.1% - 22.7%. Singapore was found to be 9.8% with Malaysia's share being only 5.4% of the total production value.

4 At C.I.F value on the import of drugs in ASEAN countries the amount stood at U.S$266 million.

Thailand	16.1%
Philippines	16.7%
Singapore	19%
Malaysia	16.1%
Indonesia	32.1%

5 Among the ASEAN members, Singapore had the highest expenditure on health with U.S$87. Indonesia accounted for U.S$6.7, Thailand U.S$ 17, Malaysia U.S$24.5 and Philippines U.S$9.6.

Major ailments in the ASEAN region as a whole were :

Upper respiratory : 652%

Dental conditions : 562%

Parasitosis	:	471%
Anemia	:	313%
Skin infection	:	187%
Diarrhoeal disease	:	94%

6 Together these ailments account for more than 50% of the morbidity of the region and mostly require simple drugs. To treat the various ailments in the region in terms of equivalent of active principles, the leading drugs were :-

Paracetamol	9,008 tons
P.A.S	4,620 tons
Ferrous sulphate	1,213 tons
Metamizol	880 tons
Ferrous gluconate	879 tons
Peperazine	800 tons
Aspirin	495 tons

7 In terms of dollar value the leading drugs were :

Propanolol	U.S$166 million
Ferrous gluconate	U.S$130 million
P.A.S	U.S$77 million
Penicillin G-sodium	U.S$63 million
Streptomycin	U.S$54 million

Together these 5 items account for U.S$500 million representing 18% - 20% of the total requirement.

The distribution of drug consumption by its pharmacological class in 1976 was led by antimicrobials 30%, vitamins and nutrients 10%, analgesics and antipyretics 9%, hormones 8% , and

respiratory drugs 7.8% adding to 65% of the total consumption. Within the antimicrobial class, the therapeutics group of anti - biotics was the leading one.

For Thailand the consumption of psychotherapeutics was increasing in average at 187% annually followed by antihelmintics, hormones and vitamins which were all increasing at about 80% per year. Antibiotics and cardiovasculars was estimated to grow at a rate of 70% and 61% respectively.

In the ASEAN countries the production of drugs could be divided into manufacturing of active principle of raw materials and formulation of dosage forms. At present the pharmaceutical industry in ASEAN is gearing slowly towards the manufacturing of active ingredients. Indonesia was the pioneer in this region. Active ingredients are still acquired from Western Europe, Japan and the U.S

In 1976 there were 708 producers, with 0.7% being state enterprises and 89% nationally owned and 10% foreign companies or joint ventures. Of this total of 708 producers, Thailand accounted for 183, with Singapore, Philippines, Malaysia and Indonesia accounting for 10, 266, 12, and 239 respectively.

Of a total production at the wholesale price of U.S$686 million approximately 40% of this value was produced by Indonesia, 22.7% by Thailand, 22.1% by the Philippines and 5.4% by Malaysia. Singapore had the most remarkable position with a population representing 1% of the region, it accounted for 10% of the total

output. The structure of local pharmaceutical production by pharmacological group is led by antimicrobial, vitamins and nutrients, analgesics and antipyretics. The issue regarding production and degree of self reliance could highlight the fact that ASEAN countries still depend on imports and finished products from abroad. Importation to ASEAN countries are from West Germany, U.S.A, Switerzland, U.K, and Japan.

8 MALAYSIA

In its 1980 report on pharmaceuticals in ASEAN (ASEAN 1980 - UNIDO), it was mentioned that the number of formulation plants then was 12. The main formulation centre is the Government Pharmaceutical Stores in Petaling Jaya. 81.5% of the raw materials were imported. The most significant drug requirements in terms of monetary value were :

Chloropropamide

Penicillin

Metformin

Chlorothiazide

Erythromycin

Hydralazine

Methyldopa

Propanalol

Ampicillin

9 The drug dosage forms which was commonly used were tablets and capsules. The leading drugs in terms of weight which was used were :

Paracetamol

Tetracycline

Penicillin

Ferrous Sulphate

Ferrous Fumarate

Aspirin

Comparision of requirements and consumption showed gaps. Four drugs were overconsumed namely Methyldopa, Ampicillin, Tetracycline and Gelusil. There were many drugs found to have requirements in excess of consumption such as Chloropropamide, Penicillin, Metformin, Chlorothiazide and Erythomycin. U.N.I.D.O in its 1980 report found that diabetics mellitus and hypertension were undertreated. However, it was seen that psychotherapeutic drugs and vitamins were grossly overconsumed.

PRICE STRUCTURE

There is no price control on pharmaceuticals in Malaysia. The usual mark for retail sales of pharmaceuticals is about 30%. Manufacturers and wholesalers have more variable profit margin depending on the type of preparations. In general, brand products have higher profit margins than generic preparations, only a 5% profit is expected by retail pharmacists from the sales to doctors.

SINGAPORE

In the Republic the basic drugs consumed were :

Antimicrobials

Analgesics and antipyretics

Vitamins

Nutrients

Respiratory

Psychotherapeutics

10 Drugs sold in Singapore by value, dosage unit and weights were:

RANK	$ VALUE	DOSAGE UNIT	WEIGHT
1	Chlorpropamide	Imipramine	Tolbutamide
2	Chlorothiazide	Chloropropamide	Acetylsalicylic Acid
3	Imipramine	Tolbutamide	Chlorothiazide
4	Tolbutamide	Acetylsalicylic Acid	Chloropropamide
5	Hydrallazine	Haloperidol	Paracetamol
6	Methyldopa	Phenobarbitane	Methyldopa
7	Propanolol	Chlorothiazide	Mag.Trisilicate
8	Indomethacin	Phenytoin	Aluminium Hydroxide
9	Acetylsalicylic Acid	Chlorpromazine	Ampicillin
10	Thioridazine	Thioridazine	Primidone

PRICE STRUCTURE

Given below is the price structure build up and the price to the consumer:

Material cost	46%
Other manufacturing cost	54%
Full factory cost	100%
Manufacturers mark up	25%
Price to wholesaler / agent	125%
Wholesaler / agent mark up	25%
Price to retailer	150%
Retail mark up	50%
Price to consumer	200%

Thus from the calculations shown it is seen that the price to the consumer is 200% from the initial material cost of 46%.

DISTRIBUTION

The sale of drugs is controlled by legislation under the poison act and rules. Generally, drugs which are patented and with toxic effects if taken indiscriminately are classified as poisons and can only be sold by registered pharmacists and also dispensed and prescribed by doctors. Drugs not included in the poison list can be freely sold anywhere. Amongst these, over the counter (O.T.C) drugs are vitamin preparations, cough and cold remedies and common analgesics like Aspirin and Paracetamol.

O.T.C items can be dispensed through grocery stores, supermarkets, Chinese druggist etc. The major portion of the drugs get dispensed through government hospitals, clinics or health centres, private hospitals, private clinics and dentists.

THAILAND

The 1980 U.N report shows that upper respiratory infections was

found to be the leading group disease accounting for 25.8% of total cases. The top 5 diseases and symptoms are completed with fever, diarrhoea, headache and intestinal infection adding up to 51%. It is clear that these are common ailments which require simple drugs. Nutritional deficiencies, dental diseases immunizable diseases, backaches and parasitosis follow. These 10 diseases account for 655 of the total cases.

In terms of monetary value, the requirements were led by antibiotics, analgesics, antianemics and antiasthmatics. Considering the growth of each drug consumption individually some drugs show a high rate ranging from 100% - 190% eg. psychotherapeutic drugs, anesthetics, diuretics and hormones. The comparison of requirements and consumption show gaps both for the total value and for some individual drugs such as P.A.S which if accepted as standard treatment would have requirements much greater than the actual consumption. Paracetamol gives the opposite results which means great overconsumption of the drug.

Regarding production it has been established that the local industry has grown tremendously considering the growth in number of producers in the industry and the value of the output. Local production of drugs under the pharmacological categories are anti - microbial drugs, vitamins and other nutrients. Imports of pharmaceuticals were mainly from the U.S.A, Germany, Switzerland, U.K, and Japan.

The pharmaceutical industry in ASEAN countries is a formulation one with almost all of intermediates and raw materials imported

from foreign countries. It is also an industry where multi national corporations are active due to the nature of this industry which requires high investment.

11 There are approximately 700 producers in the ASEAN pharmaceutical industry. Of this number about 10% or about 70 producers are foreign companies and joint ventures. This number, even if relatively low is a good indicator of the low degree of control by foreign companies. More appropriate indicators should be further studied, such as the degree of concentration by overall market and sub market concentration.

It is also the case that profits in the drug industry made by M.N.C's in developed countries, such as the U.S.A is higher than any other industries. Also transfer pricing in developing countries mostly occurs due to the dependency on raw materials and intermediates. Evidence in Colombia and India are good examples. This transfer pricing is a heavy burden to consumers. To this extent developing countries need to set up appropriate policies on prices, according to the cost of drugs. Developing countries also need to improve their national capacity to solve the problem of transfer pricing.

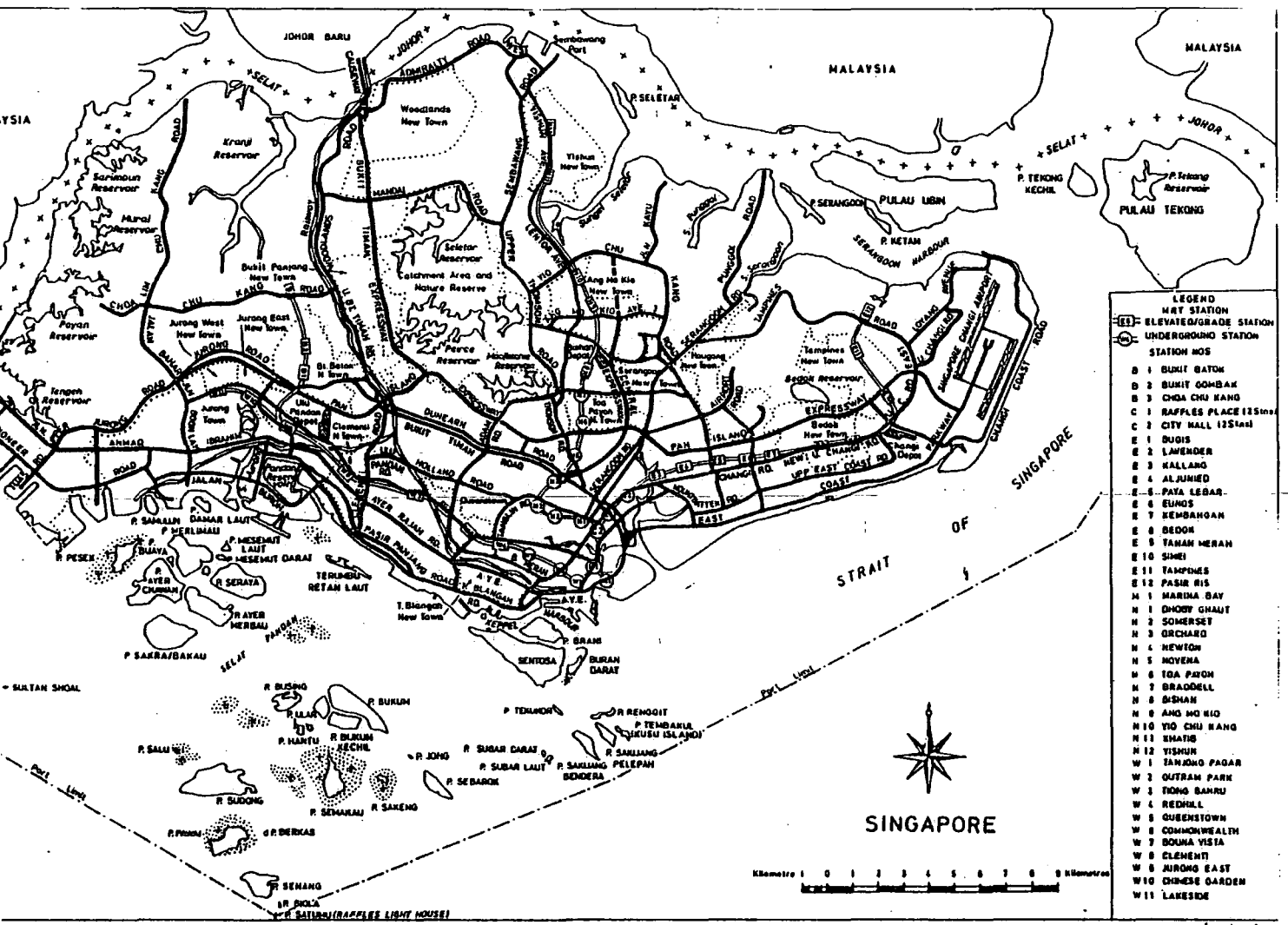
It is also arguable that in many countries production of basic drugs may not be feasible due to the limited economies of scale. But the ASEAN pharmaceutical industry, with an existing market of U.S$1 billion, shows an appropriateness of its market size for local basic production. Also the appropriateness of purchasing power level in this sub - region, strongly supports this. It is

a strategy of basic production to be adopted as M.N.C's would be required in order to reach the objectives of an increase in the capacity of basic and intermediate production. To promote stronger domestic industry, domestic ownership participation is an important factor and the improvement of local ownership is strongly envisaged by the governments in the countries researched in this thesis. There remains the problem of transfer pricing, dependency on raw materials and intermediates of the ASEAN pharmaceutical industry and the political will to start basic drug production and related programmes.

ASEAN countries, still require many drugs which have to be acquired from foreign markets. Essential drugs which would serve the need of the majority of the population may be considered suitable to set up a local basic production. In any case there would still be drugs for which basic drug production could not begin and import of raw materials and intermediates would still be required. In this case, transfer pricing would be inevitable if the procurement system is not improved.

Bulk drugs purchasing for the sub region is another possible option to solve the problem of transfer pricing.

MAP OF SINGAPORE



SINGAPORE

The Republic of Singapore consists of Singapore island itself and 54 islets. The Republic is situated at the Southern tip of the Malay Peninsula and is separated from Malaysia by the Straits Of Johore. The island is some 14 miles wide and 26 miles long and the total area is 621 square kilometers .

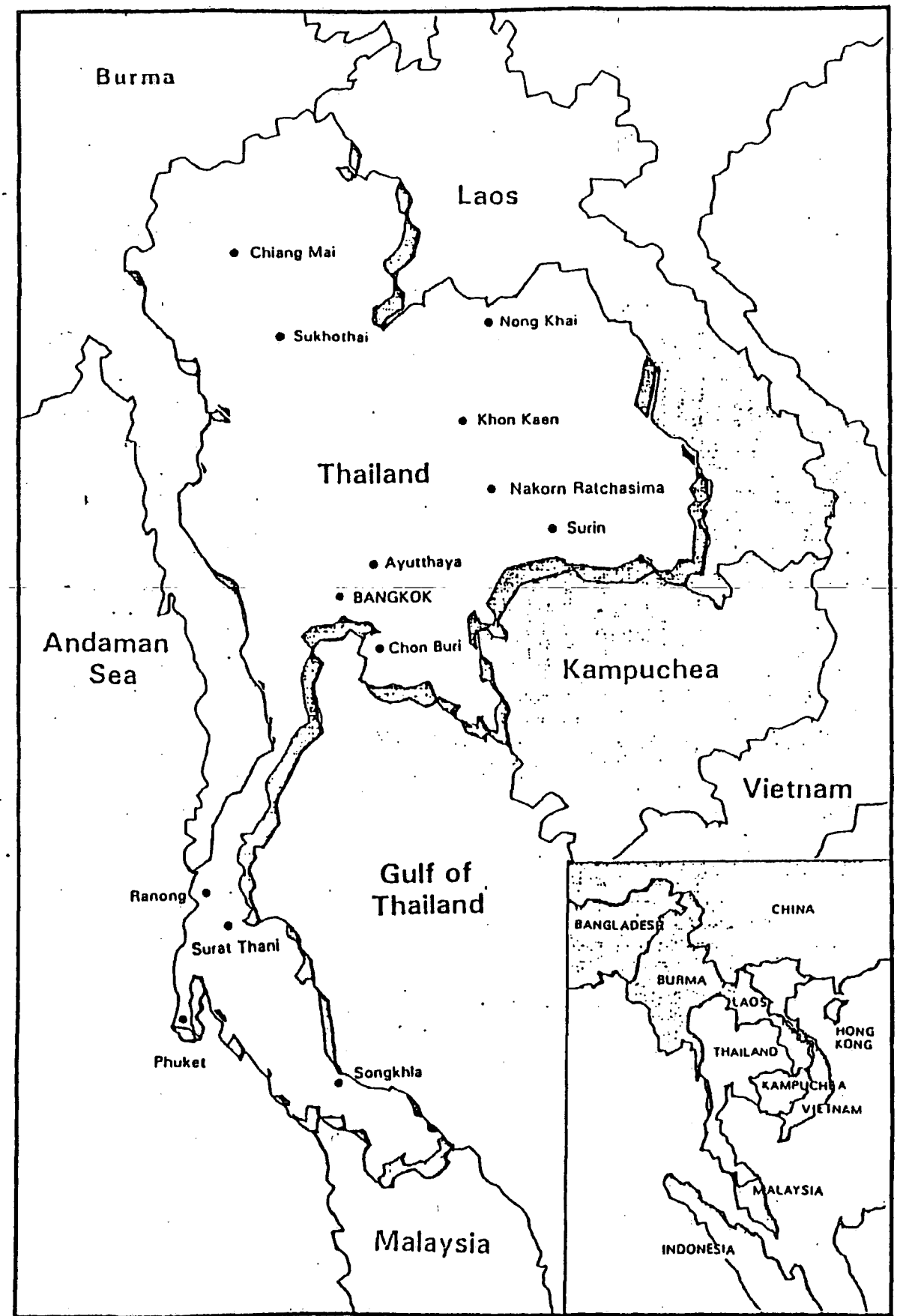
The island lies 77 miles North of the equator and the climate is Equatorial. Temperature varies daily from 75 to 80 degrees Fahrenheit. It has a relative high humidity and no defined wet or dry seasons.

The main racial groups in the country are the Chinese 77%, Malays 15% and the remainder being mainly Indians and Europeans. The official languages are Mandarin, Malay, Tamil and English. The principal religions practised are Taoism, Buddhism, Islam, Christianity and Hinduism.

Military service for 30 months is compulsory and was extended to cover all adult males in 1985. The Singapore armed forces numbered 55,000 in 1985, and the defence budget was S$2,173 million for 1987 - 1988.

Singapore is a member of the Association Of South East Asian Nations (A.S.E.A.N), The Commonwealth, the Colombo Plan, I.M.F, U.N, the World Bank and W.H.O.

MAP OF THAILAND



THAILAND

Location

Thailand is a South East Asian Kingdom almost equidistant from China and India.

The Kingdom has a population of 55 million is the approximate size of France and shares borders with Burma to the West and North, Laos to the North and North East, Kampuchea to the East and Malysia to the South.

Thailand is divided into four distinct regions, the mountainous North, the semi arid North East plateau, the Central Plains which is the world's most fertile rice growing areas and the lushly tropical Southern isthmus.

Climate

Thailand has 2 distinct climates ; a tropical savanna climate from the Gulf Of Thailand to the North and a tropical monsoon climate to the South. There are 3 well defined seasons, the hot season (March and April), the rainy season May through October and the cool season November through February. Average temperatures are about 83 degrees F.

People

Over 85% of the population is ethnic Thai and the balance are Chinese, Malay and Indian origin.

Religion

Theravada Buddhism is the professed religion of more than 90% of all Thais and casts strong influence on daily life. Thais have always subscribed to the ideal religious freedom and sizeable minorities of Muslims, Christians, Hindus and Sikhs pursue their respective faiths.

Language

Spoken and written Thai remain largely in-comprehensible to the casual visitor. However English is widely understood particulary in Bangkok where it is almost the second commercial language.

National Leaders

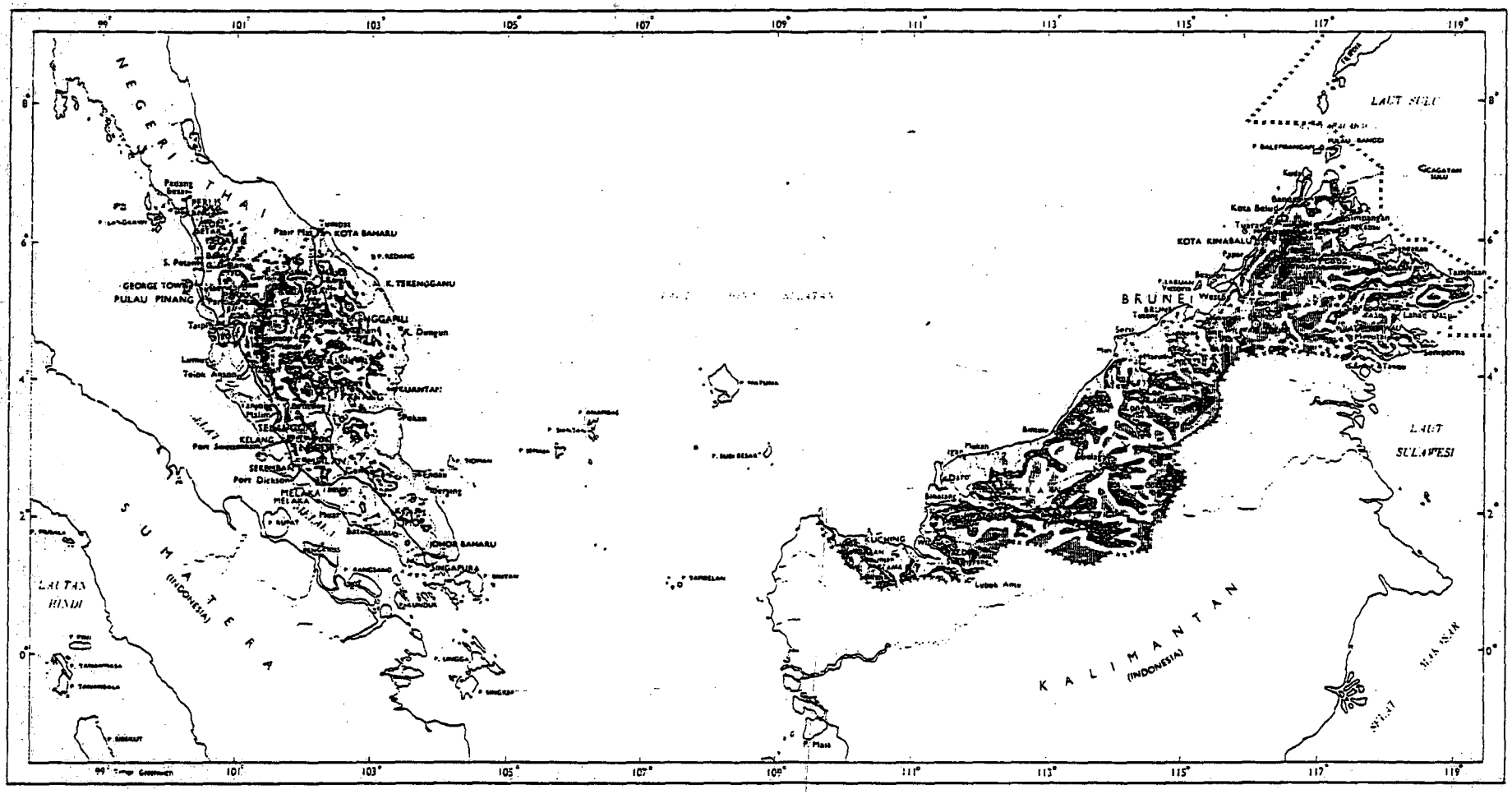
The Head of State is King Bhumibol Adulyadej. His majesty King Bhumibol was coronated in 1950 and is the 9th king of the Chakri Dynasty.

General Chatichai Choonavan is the present Prime Minister who heads the government. Chatichai won a mandate in the 1988 general elections to take over from General Prem Tinsulananda who stepped down.

On the whole, King Bhumibol provides focus for the majority of Thais. There are some chronic military problems along the borders with Kampuchea and Laos and occasional problems with Muslim separatists along the Malaysian border.

MALAYSIA

BENTOK MUKA BUMI



Skala: 106 Batu sa-inchi

PETUNJUK

Mengikut kaki	Mengikut meter
Lebih daripada 3281	Lebih daripada 1000
1640–3280	500–999
656–1639	200–499
327 – 655	100–199
0 – 326	0 – 99

MALAYSIA

Projecting from the Isthmus Of Kra down South is the Malay Peninsula now called West Malaysia. East Malaysia has carved out a sizeable portion of the Island of Borneo. East and West Malaysia are separated by the South China Sea. Malaysia's immediate neighbours are Indonesia, Singapore, Thailand and Philippines.

Total land area is 329,293 sq. km and the population is 17 million to be exact. The official religion is Islam but all major religions are represented.

Malaysia has a constitutional monarchy system similar to that of the United Kingdom. The King or the Yang Di Pertuan Agong is the Head Of State of the country.

Of the 17 million people, the majority of them are Malays who are Muslims. The Chinese come in second and they are Buddhists, Christians or Taoists. There are also some who have converted to Islam. The Indians form the minority and they are either Hindus, Christians or Muslims.

Malaysia's main exports are manufactured goods, petroleum, sawn logs, rubber, palm oil and liquefied petroleum gas. The country has a labour force of 6.3 million.

Overall the country is stable and threat from the communists are

minimal. Unlike many nations which have introduced National Service, this system is not practised in Malaysia. Malaysia is a member of the U.N, GATT, Commonwealth and the ASEAN.

12 STATISTICAL PROFILE | THAILAND

General

Land area :514,000 sq.km

Climate

Monsoonal. Normal temperature ranges from 20 degrees C to 38 degrees C. Mean annual rainfall varies from 1,000 mm in the North East to 5,000 mm in the South.

Population

53.8 million in 1987 with average annual growth rate of 2%. Life expectancy is 63 years.

Religion

Over 90% Buddhist. Strong Muslim presence in the South. Other major religions also represented.

National Leaders

Head of state is King Bhumibol Adulyadej. The Prime Minister is Mr.Chatichai Choonavan.

Economic

G.N.P

US$43.8 billion in 1987,estimated US$46.8 billion in 1988. Per capita income is US$893.

Economic Growth Rate

6.6% in 1987, estimated 7% in 1988.

Currency

Baht, 25.78 Baht to US$1, 42.3 Baht to Pound Sterling, 14.3 Baht to 1DM, 17.9 Baht to 100 yen, 17 Baht to Swiss Franc, 10.2 Baht to Malaysian $1, 12.3 Baht to Singapore $1, 3.3 Baht to H.K$1.

Budget

1987 / 1988 government revenue was 226 billion Baht, government expenditure was 270.5 billion Baht. Of total expenditure 20.3 billion Baht was on agriculture, 0.9 billion Baht was on industry and minining, 14.2 billion Baht was on transport and communications, 1.9 billion Baht was on commerce and tourism, 1.5 billion Baht was on science, technology energy and environment, 48.8 billion Baht was on education, 11.9 billion Baht on public health, 9.4 billion Baht on social service, 49.9 billion Baht on national security, 34.8 billion Baht on government administration and 66.4 billion Baht for loan repayment.

Trade

1987 total exports was 296.5 billion Baht. Major exports were textiles 13.9%, rice 7.7%, tapioca products 6.7%, rubber 6.5%, gems and jewellery 3.9%, integrated circuits 4.9%, canned seafood 4.3%, maize 1.4%, prawns 1.8%, sugar 3.2%, canned pineapple 1.1%, tin 1%.

Total imports were 349.1 billion Baht. Major imports were capital goods 32.9%, intermediate goods and raw materials 34.6%, consumer goods 9.6%, fuel and lubricants 12.7%, others 10.1%.

Major trading partners were Japan, U.S, West Germany, U.K, Hong

Kong, Singapore, Malaysia.

Balance Of Payment

Trade deficit 45.5 billion Baht in 1987,current account deficit of 14.9 billion Baht, net surplus and unrequisted transfers 30.6 billion Baht, total balance of payments in surplus of 18.2 billion Baht. International reserves at end of 1987 - gold U.S$1.2 billion, S.D.R's U.S$60.4 million, foreign exchange U.S$3.9 billion, reserve position in the I.M.F U.S$40.8 million. Total foreign reserves U.S$5.2 billion.

Interest rates : average domestic rates as at end of 1987 :- bank rates 8.0 , ceiling loans 15, repurchase rates (3 days) 5.31, interbank call rate 7.08, BIBOR (7 days) 6.41, MCR 11.5, MOR 11.5, fixed deposits (1 year) 7.25, savings deposits 5.54.

Manufacturing

1987 production :- 9.9 million tonnnes of cement, 10.7 billion litres of petroleum products, 15,334 tonnes of tin metal, 119,319 tonnes of tin plate, 29,333 passenger cars, 68,815 commercial vehicles, 302,195 motorcycles, 171,666 tonnes of galvanised iron sheet , 97,293 litre tonnes of beer, 23,373 litre tonnes of liquor, 1.6 billion bottles of soft drinks.

Mining

1987 estimated production of 341,145 metric tonnes of Zinc ore, 178,655.6 million standard cubic feet of natural gas, 5.5 million barrels of condensate and 6.1 million barrels of crude oil.

Agriculture

1987 / 1988 estimated production of 18.6 million tonnes of padi, 2.3 million tonnes of maize, 19.5 million tonnes of cassava, 910 million tonnes of rubber, 2.6 million tonnes of fishery products.

Prices

Average wholesale prices of commodities per ton as at end 1987 was padi No.1 at 3,015 Baht, rice (5%) 5,073 Baht, maize 2,501 Baht, tapioca pellets 2,582 Baht, rubber (grade 3) 18,939 Baht, tin concentrate 113,732 Baht, black matpe bean 6,370 Baht.

Power

Current total installed generating capacity over 6,700 MW of which 30% hydro, 13% lignite,27% natural gas and 30 % fuel oil and disel.

Resource

Estimated potential oil and condensate reserves 179.1 million barrels, estimated natural gas resources 12.9 trillion cu.ft.

Infrastructure

104,000 km roads, 4,450 km of rail track. Major port is Bangkok. The other ports are at Phuket, Songkla, Sattahip, Mab Ta Phut and Laem Chabang. International airports are at Bangkok, Phuket, Songkla and Chiang Mai. There are 5,900 km of rivers and canals, of which only 1,000 km are usable.

Banking

Total commercial bank deposits at end of 1987 was 746.6 billion

Baht. Estimated money supply (M1) at end 1987 was 131.1 billion Baht, (M2) 805 billion Baht. The Central Bank of Thailand is the Bank Of Thailand

Foreign Investment

Estimated direct foreign capital investment was 4.55 billion Baht in 1987.

Investment Policy

Foreign investment welcomed in specific sectors at government discretion. Tax incentives, includes corporate income tax and import duty relief.

Tourism

Estimated 3.5 million visitors in 1987 with 46 billion Baht in receipts.

Social

Labour force :- 28 million in 1987 with an unemployment rate of 4.1 %. Of the total employed 62% were in agriculture, 8.9% in manufacturing and 25% in other related fields.

Health

13 hospital beds and 1.5 doctors per 10,000 population.

Military

Army 166,000, navy 42,000, air force 48,000, reserves 500,000

Country Risk

Chronic military problems along the borders with Kampuchea and Laos, and occasional Muslim separatists along the Malysian border. King Bhumibol provides stable focus for the majority of Thais, offsetting a general lack of strength in the government. Economically the country is heading towards N.I.C status. Asian Business rating for the next 12 months (one to five stars) :- 4 stars.

STATISTICAL PROFILE :MALAYSIA

13 **Land Area**

329,293 sq.km.

Climate

Hot and Equatorial. Temperature ranges from 22.2 degrees C to 32.6 degrees C. Mean annual rainfall is 2,500 mm.

Population

17 million with an annual growth rate of 2.50 %. Life expectancy in Peninsular Malaysia is 70 years, Sabah 63 years and Sarawak 66 years.

Religion

Islam is the national religion but all major religions are represented.

National leaders

The Head Of State is The Yang Di- Pertuan Agong. Prime Minister since 1981 and the Home Affairs Minister is Dato Seri Dr. Mahatir Mohamad ; Deputy Prime Minister and National and Rural Development Minister is Abdul Ghafar Baba; Foreign Minister Dato Abu Hassan bin Haji Omar; Defence Minister Tengku Dato Ahmed Rithaudden Tengku Ismail; Finance Minister Datuk Paduka Daim Zainuddin; Trade and Industry Minister Datin Paduka Rafidah Aziz; Transport Minister Dato Dr. Ling Liong Sik; Public Works Minister Datuk Leo Moggie; Primary Industries Minister Dato Dr. Lim Kheng

Yaik; Telecommunications and Post Minister Dato Samy Velu; Land and Regional Development Minister Datuk Dr. Haji Sulaiman; Agriculture Minister Dato Seri Sanusi Junid; Science and Technology Minister Datuk Amar Stephen Yong Kuet Tze; Education Minister Encik Anwar Ibrahim.

Next election :- before 1992.

Economic

Currency : Malaysian ringgit (M$); 2.62 to U.S$1

G.N.P (at current prices) : M$69.7 billion in 1987, estimated M$75.3 billion in 1988.

G.D.P (at current prices) : M$75.2 billion in 1987,estimated at M$81.2 billion in 1988.

Per capita G.N.P : M$4,412 in 1987.

Personal income tax ceiling : 40%

Economic growth rate : 4.7% in 1987, estimated 6% in 1988

Inflation rate : 0.8% in 1987, estimated 2% in 1988.

Budget

1988 forecast, federal government revenue M$20.8 billion, operating expenditure M$21.2 billion, development expenditure (net) M$5.9 billion. Overall deficit M$6.3 billion.

Trade

1987 exports M$45.1 billion - comprising M$20.2 billion in manufactured goods, M$6.3 billion in petroleum, M$4.3 billion in sawn logs, M$3.9 billion in rubber, M$3.3 billion in palm oil, M$1.7 billion in liquefied natural gas (L.N.G), M$1.7 billion in sawn timber, M$840 million in tin, M$442 million in palm kernel oil and M$2.4 billion in others.

Imports :- M$29.8 billion; machinery and transport equipment M$14.3 billion , manufactured goods M$7 billion, chemicals M$3.3 billion, food beverages and tobacco M$3.1 billion, mineral fuels and lubricants M$2.4 billion, crude materials M$1.3 billion, others M$530 million.

Balance of payments: 1987 actual overall balance M$2.9 billion. Current account M$5.9 billion, merchandise balance M$14.7 billion, services balance M$9.1 billion, net transfers M$358 million, net long term capital M$1.1 billion, basic balance M$ 4.8 billion. 1988 projected current account surplus M$2 billion. Total external debt end 1987 M$51 billion. External debt services ratio in 1987 was 15.2%.

Manufacturing

Estimated 1987 production - 699,500 cubic meters of plywood, 36 million litres of paint, 4.1 million tyres, 3 million tonnes of cement, 644,360 tonnes of iron and steel bars/rods. Malaysia assembled 9,000 passenger cars, 31,000 motor cycles and processed 2.1 million tonnes of palm oil.

Mining And Energy

1987 production - 30,400 tonnnes of tin, 498,000 U.S barrels of petroleum a day, 5.9 million tonnes of L.N.G and 127,987 tonnes of copper.

Agriculture

1987 production 4.4 million tonnes of palm oil, 1.6 million tonnes of rubber, 1.6 million tonnes of padi, 803,616 tonnes of palm kernel, 30.7 million cubic meters of sawn timber.

Services

Value added to the service sector by wholesale and retail trade, hotels and restaurants was M$6.3 billion. Finance, insurance and real estate was M$5.2 billion, transport, storage and communications was M$4.1 billion, electricity, water and gas being M$1.1 billion.

Banking

Bank Negara is the Central Bank. The total international reserves as at end 1987 was M$19.4 billion. Money supply as at the end of January 1988 -(M1) M$16 billion, (M2) M$57.1 billion.

Foreign investment : The total capital investment was M$3.9 billion. 333 applications were approved with potential employment of 59,779 workers. Major investors were Japan, Singapore and Taiwan.

Investment incentives : Tax free pioneer status for up to 10 years, investment tax allowance of up to 100% , tax abatement of up to 50% depending on the level of export. Firms with less than M$2.5 million in shareholders funds are exempted from applying for a licence under the Industrial Co-ordination Act, and are exempted from having to comply with any condition with regard to equity, employment, distribution network and export. Foreign firms can hold up to 100% equity depending on levels of export.

Tourism

1987 arrivals (Peninsular Malaysia) : 3.146 million, bringing revenue of M$1.73 billion. Forecast for 1990 (visit Malaysia year) is 3.84 million arrivals, bringing revenue of M$3.05

billion.

Social

Labour force : 6.3 million, total employment 5.7 million. The unemployment rate is 9.5%.

Health

17 hospital beds and 3.2 doctors per 10,000 population.

Military

Army 90,000 ; Navy 9,000 ; Air force 11,000 ; Reserves 350,000.

In spite of lingering suspicions about the underlying strength and purpose of the government, tensions are considerably eased from a year ago, and the Mahatir administration has shown itself to be firmly in charge. No external threats; problems with communist insurgents minimal.

Asian Business rating for the next 12 months (maximum five stars):- 4 stars.

STATISTICAL PROFILE | SINGAPORE

14 General:

Land area : 621 sq.km.

Climate : temperature ranges from 24 degrees C to 31 degrees C. The 1986 annual rainfall was 2,536 mm.

Population : 2.6 million in mid 1986 with an annual growth rate of 1%. Life expectancy is 68 years for males and 74 years for females.

Religion : all major religions represented.

National Leaders

President Wee Kim Wee, Prime Minister Lee Kuan Yew, First Deputy Prime Minister Goh Chok Tong, Second Deputy Minister Ong Teng Cheong, Minister For Foreign Affairs And Minister For National Development S.Dhanabalan, Minister For Finance Dr.Richard Hu, Minister Of Trade And Industry Brig. Gen Lee Hsien Loong, Minister Of Labour Lee Yock Suan, Minister For Education Dr.Tony Tan.

Economic

G.N.P : S$39.2 billion in 1986, S$41.7 billion in 1987.

Per Capita G.N.P : S$13,088 in 1986, S$13,938 in 1987.

Economic growth rate : 1.8% in 1986, 6.5% in 1987.

Corporate tax base rate :33%

Currency : Singapore dollar , S$2.11 to U.S$1

Budget : 1987/1988 government expenditure S$18.7 billion (S$9 billion recurrent, S$7 billion development). Of total expenditure

29% is on public housing, 15% public debt servicing, 10% defence, 8% land development, 18% grants, subsidies and other services. 1987/1988 government revenue was S$15 billion. Of total S$4.6 billion is tax revenue of which 42% is from income tax.

Trade

1986 total imports was S$55.55 billion. Major imports were machinery and transport equipment (37%), mineral fuels (19%), manufactured goods (13%), miscellaneous manufactured articles (8%), food (6%),chemicals and chemical products (5%).

Major suppliers :- Japan (34%), U.S.A (14%), Malaysia (13%), China (5%), Taiwan (4%).

1986 total exports was S$49 billion. Major exports were machinery and transport equipment (38%), mineral fuels (20%), manufactured goods (7%), chemicals (5%), miscellaneous manufactured articles (8%), food (5%).

Major markets :- U.S.A (29%), Malaysia (10%), Japan (10%), Hong Kong (6%), Thailand (3%). 1987 imports S$57.8 billion and exports being S$51.7 billion.

Balance of payments : Surplus of S$1 billion in 1986. Total foreign reserves at end of 1986 being S$28.2 billion.

Manufacturing

1986 production of 96,008 tonnes of vegetable cooking oil, 167,000 tonnes of animal fodder, 152 million kilo litres of soft drink, 51 million sq. meters of plywood, 35,381 kilos of paint, 22,753 tonnes of soap, 1,691,000 television sets, 12,824,000 radios, 7.4 million cu. meters of broken granite, 162 million bricks, 1,897,000 tonnes of cement.

Agriculture

1986 production :- 20,279 tonnes of fish, S$7.9 million worth of day old chicks, S$10.3 million worth of cut orchids exported.

Power

1986 electricity production was 10.6 billion kwh, consumption being 9,475 kwh. Of total consumption, 84% by industry, 16% domestic sector. 1986 gas production 577 million kwh, consumption 549 million kwh. Of total consumption, 53% by domestic sector, 44% commercial sector, 1% industrial sector.

Infrastructure

2,686 km of roads, 72 post offices, 1.2 million telephones, 236 primary schools, 157 secondary schools and pre - universities, junior colleges, 15 technical and vocational institutes, 3 polytechnics, 1 institute of education, 1 university.
Sea ports handled 112.8 million freight tonnes in 1986, airport handled 352,808 freight tonnes.

Banking

Total deposits of non bank customers at commercial banks S$30.6 billion. Money supply at end of 1986 (M1) S$9.8 million, (M2) S$30.95 billion.

Foreign investments

Foreign investment commitments in 1986 estimated S$1.4 billion. Major investors were U.S.A, Europe, Japan. Major invested areas were in industries producing electronic equipment components and computer related products.

Investment policy

Government provides various investment incentives including pioneer status, accelerated depreciation allowance, tax exemption on interest on approved foreign loans, concessionary tax, infrastructure is also upgraded to encourage foreign investment in capital intensive/ higher technology industries. The government has entered into double tax agreements and investments gurantees with countries that have trading and other interests with Singapore.

Tourism

1986 tourism arrivals was 3,191,058 with about S$4 billion receipts. About 61 hotels with 22,080 rooms at end of 1986.

Social

Labour : 1.2 million at end of 1986 with an unemployment rate of 6.5%. Of total work force, 23% are in commerce and services, 25% in manufacturing, 22% in other services, 8% in construction and 0.7% in agriculture and fishing. Average weekly earnings S$196 for agriculture and fishing, S$224 for manufacturing, S$205 for construction, S$248 for transport and communications, S$194 for financial and business services.

Health

9,974 hospital beds, 1.06 doctors per 1,000 population.

Military

Army 45,000 (30,000 conscripts), navy 4,500, air force 6,000, reserves 150,000. Also 7,500 police/ marine police, 30,000 home

guards.

Country risk

There are no immediate external threats to Singapore, but instability in either Malaysia or Indonesia could threaten harmony among the different races and religons. The major threat to internal security, now that the recession has bottomed out and business confidence is returning, is dissension within the P.A.P and a power struggle among the young guards.

Asian Business rating for the next 12 months (maximum five full stars): 4 1/2 stars.

THE MALAYSIAN HEALTH SERVICE

15 In the year of independence, 1957, the Malaysian Government inherited a health service in which facilities and manpower were unevenly distributed in terms of service sectors and geographic coverage. Since independence the Government has been working towards the expansion, improvement and redistribution of facilities.

The various mortality rates which are commonly used as indicators of a country's health status has increased significantly and the health services have shown marked improvement. The increase in the number of rural health centres and in specialised units in hospitals has been impressive. At the same time demand for health care has increased as people became more aware of the importance of health.

The Malaysian Medical Association in its publication says that in 1970 the median age in Malaysia was 17.3 years with 64.1% of the population below the age of 24 and 44.9% below the age of 14. The population of Malaysia is predominantly rural, although over the last 20 years it has witnessed a large increase in size of the urban population. As mentioned earlier, the infant mortality rate is a general indicator of the general health status of a country. The figure below throws some light from 1947 till 1976.

16

TYPE OF MORTALITY	1947	1957	1967	1976
Infant mortality	102	75.5	45	30.7
Maternal mortality	7	2.9	1.7	0.8
Neonatal mortality	40	30	24	19
Toddler mortality	N.A	11.0	5.0	2.6

The infant mortality rate declined from 102 in 1947 to 30.7 in 1976 while the toddler mortality rate, which is sometimes used to indicate the nutritional status of a country has declined from 11 in 1957 to 2.6 in 1976. Similarly the maternal mortality rate has declined significantly from 7 in 1947 to 0.8 in 1976. However the improvements in the general health status are not enjoyed equally by all parts of the country. The less advanced states reveal mortality rates which are much higher than the average figure for Peninsular Malaysia as well as the more advanced states suggesting a poverty : mortality relationship. The difference between the advanced states such as Selangor, Penang and Malacca and the less advanced states such as Kelantan, Kedah and Trengganu are highlighted.

17 MORTALITY RATES BY STATES, PENINSULAR MALAYSIA - 1976

STATES	INFANT	MATERNAL	TODDLER
KELANTAN	38.68	1.23	4.01
KEDAH	33.69	1.54	3.09
TRENGGANU	36.01	1.07	4.59
PAHANG	31.84	1.45	3.01
PERLIS	31.19	0.52	2.82

SELANGOR	28.87	0.41	1.76
PERAK	30.59	0.72	2.82
PENANG	26.72	0.51	1.38
MALACCA	26.55	0.36	1.81
N.SEMBILAN	27.22	0.54	2.03
JOHORE	28.76	0.51	2.15
PEN. MALAYSIA	30.74	0.78	2.56

CROSS NATIONAL COMPARISONS

Cross national comparisons of health indices among several selected countries show that Malaysia compares quite favourably with countries in the same group, but in some respects is behind the high income countries. In the ASEAN region, in particular, Malaysia's state of health is not favourable as that of Singapore's but is better than that of Indonesia, Thailand and Philippines (please refer to page 49).

It has been observed that the broad base of the population pyramid has become narrower and the age dependency ratio lower. Population growth rate has stabilised. Child mortality has declined. Health indicators on infant, toddler and maternal mortality rates show that a higher level of health all round and life expectancies have lengthened .

18 Disease patterns show a definite shift from diseases of underdevelopment to diseases of developed countries. Heart and cardio - vascular diseases have been the leading causes of death

since 1980. Other problems which have assumed importance are neoplasms and accidents.

19 Major killers such as Malaria, Pulmonary T.B, Gastroenteritis, Pneumonia and other infectious diseases have declined as causes of death. People no longer die of deficiency diseases such as beri - beri anymore. However, diseases of early infancy are still significant causes of death and bronchopneumonia and Gastro enteritis remain important causes of infant and toddler deaths.

20 In terms of ethnic differentials, the Chinese enjoy better health than the other two ethnic groups ie. the Malays and Indians. This is because most of the Chinese households dominate the urban population and enjoy higher incomes, and spend more money on medical and health services than the other races.

21 In a study conducted by Dr. Abdul Khalid Sahan, the Director General Of the Ministry Of Health, it is seen that the higher morbidity rates are :

1) In certain states (Kelantan, Trengganu, Kedah, Perlis and Pahang).
2) Among Indians.
3) Income below M$300 to M$1,000.
4) Among agricultural, forestry and fishery workers followed by factory workers.
5) Unsatisfactory water supply.
6) Children under 5 and elderly over 55.

In the case of self medication, Dr. Khalid says that 61% of the

people who were ill and did not use services (government or private) were using self medication.

22 ILLNESS RELATED VISIT

1) 1.27 visits / person / year to private clinics

2) 0.57 visits to government hospitals / urban clinics

3) 0.44 visits to government rural clinics.

Generally persons with lower household income use government rather than private facilities. 35% with house hold income less than M$300 use private facilities. 25% with household income M$2000 - M$4999 use government facilities. 94% with household income below M$1000 and 76% with household income M$1000 - M$1999 were admitted to government hospitals.

23 COST

Payments on the average - government hospital M$2.60

- government clinic M$1.50

In the case of private clinics most patients paid a sum of M$5 to M$14 as medical charges.

24 METHOD OF PAYMENT

It is estimated that nearly 48% of the patients pay their medical bills out of their pockets. About 13% are compensated by their employers or insurance. The remaining are believed to enjoy free medical treatment.

25 COMMON CAUSES OF MORTALITY AND MORBIDITY IN PENINSULAR MALAYSIA (1947 - 1976)

The common causes of mortality between the post war years and independence were mainly communicable diseases such as tuberculosis, malaria and gastro - enteritis. Those diseases have been commonly associated with underdevelopment and poverty. However, in the 1970's the common causes of mortality are reflecting diseases that are more related to development and modernization such as cardiovascular and heart diseases, neoplasms and motor accidents.

A striking feature of the system of health delivery in Malaysia is the rigid separation of government health services from those rendered by the private sector. Government health services are often inconvenient and time consumuing to use whereas private services are expensive for many people.

The growth of the private sector in medicine has been striking, lagging only slightly behind the government sector. Between 1957 and 1976 the number of private doctors increased from 456 to 1,110 marking an increase of 2.45 times. The corresponding increase of doctors in the government sector was from 401 to 1401 an increase of 3.49 times. For 1976, the ratio of private to government doctors was 1 : 1.26. It has been estimated that of the 1,401 doctors in the government service in 1976, 70% were young doctors under compulsory service. The older and more experienced doctors have moved into the private practice. The

major part of the National Health Budget goes into curative medical and health care rather than preventive medicine. Nearly 3/4 of the total current expenditure in 1973 was spent on curative care.

Malaysia has developed a comprehensive rural health system of main and sub health centres as well as mid wife clinics - cum quarters. In the delivery of health care, this very extensive rural system plays a primary role.

The rural health system relies to an overwhelming degree on the paramedics and physicians often act more in a supervisory rather than operational capacity.

EXPENDITURE

In Malaysia the expenditure incurred by the government on health is lower than that of other essential services.

26 Fig 3 MINISTRY OF HEALTH FINANCIAL APPROPRIATION

YEAR	TOTAL	% TO NATIONAL BUDGET	% GNP	PER CAPITA ALLOCATION
1961	M$112,663,747	7.97	2	13.45
1965	M$142,660,938	5.94	1.92	15.20
1970	M$183,033,101	5.64	1.51	17.39
1975	M$405,011,250	5.78	2.39	33.97
1980	M$895,579,857	5.27	3.53	66.65
1985	M$1,256,333,300	4.3	2.23	80.13
1986	M$1,273,622,440	4.13	2.14	79.13

In comparison with her ASEAN counterparts, Malaysia's health budget as a percentage of the national budget was second only to Singapore in 1975, and perhaps equal with the Philippines for which no figures are available.

27 Fig 4 HEALTH BUDGET AS A PERCENTAGE OF NATIONAL BUDGET (1975) FOR ASEAN

Malaysia		5.9
Singapore		10.77
Indonesia		2.0
Thailand		3.14
Philippines	(1971)	5.63

While the allocation for patient care services under the 3rd Malaysia plan as compared to the 1st Malaysia plan increasesd by 34%, the allocation for public health services rose by 121% showing the increasing attention of the government towards the promotional and preventive aspects of health. The most important component of the public health sector is the rural health service. Investment in the rural health services has a vital role in the New Economic Policy.

The health of her people is a nation's most important investment, followed by education. Recognition of the need to sustain the health services by ensuring an adequate and reliable supply of both qualified professionals as well as paramedics to meet an increasing population needs is being met by increased allocations for training programmes under the first, second and third Malaysia plans. Comparatively, population and family health

programmes receive more allocations than training programmes.

28 MANPOWER

As the years progressed a greater percentage of Malaysians have joined the medical profession. Till the 70's only the University Of Malaya was producing doctors but now the University Sains Penang and the University Kebangsaan in Bangi have been graduating physicians. The housemen or "freshies" as they are called have a bad taste of the Malaysian Medical System. They work 48 hours non -stop at times and are normally on call 3 times a week. Furthermore they are poorly paid. The recent economic conditions forced the government to abandon plans to recruit 400 doctors from the local and foreign universities. The Deputy Health Minister then, Mr. Pathmanaban, took the issue to the Public Services Commission and finally won approval to get the 400 to work for the government. Most doctors wait to complete their housemanship and the required 3 years of government service before leaving for the private practice. But with the economy in bad shape and many doctors in private practice, business has indeed become dull. Thus these doctors prefer to stay around for the time being. The smarter ones sit for M.R.C.P or F.R.C.S exams to have additional qualification or migrate to the U.S or U.K.

The many reasons for leaving the government are :-

1) no proper incentives.
2) unsatisfactory promotional prospects.
3) unsatisfactory working hours.
4) lack of opportunities to work in " one's " choice of specialisation.

5) need to pass the Bahasa Malaysia exams.

6) inadequate training opportunities.

7) frequent transfers.

8) poor relations between superiors and subordinates.

9) rural posting.

10) lack of opportunities to participate in administration decision making.

11) special treatment for the Malays.

In addition to these many doctors emigrate due to the following reasons.

1) uncertain future.

2) childrens education.

3) training opportunities.

4) financial reasons .

Nobody wants to work for the Government for the rest of their lives. In terms of monetary gain one would retire from the government on a M$3,000 / month salary but in the private sector the figure ranges from M$3,000 to M$10,000 a month.

Thus with the brain drain taking place the Malaysian Medical system is going to face a manpower crisis. Malaysia's loss would be a gain for Canada, U.K, Australia and New Zealand.

HEALTH SERVICES IN SINGAPORE

29 The Ministry Of Health provides the curative, preventive and rehabilitative health services. Its organisation comprises a headquarters with 8 main divisions and individual operational institutions, departments and units.

Curative services are provided by the hospitals, five of which are general hospitals. The other five hospitals specialise in obstetrics and gynaecology, psychiatry, dermatology and venereology, infectious diseases and children's rehabilitation. The general hospitals provide multi - disciplinary inpatient and specialist outpatient services and a 24 hour accident and emergency service. The hospital services are supplemented by a network of general outpatient and dental clinics.

Health education and preventive health services are provided through the Maternal And Child Health, School Health and School Dental services and the Training and Health Education Department. Support services of the Ministry include Biomedical Engineering, blood transfusion, Computer information, pathology and pharmaceutical services. The School Of Nursing undertakes the training of nurses to serve the needs of both the public and private sectors. Administrative support is provided by the Planning and Development, Finance And computer Services, and Personnel And Administrative Divisions.

30 STATE OF HEALTH

The general health status of the people in Singapore remained

good in 1986. There were no major outbreaks of communicable diseases. The estimated mid - year population was 2.59 million, reflecting a growth of 1.1% over the previous year. By age groupings, 23.9% of the population were below 15 years, 68.1% between 15 to 59 years and 8% who were 60 years and over.

The crude birth declined from 16.6 the previous year to 15.2 per 1000 population in 1986. The crude death rate and the infant mortality rate have remained fairly stable over the past few years at 5.0 per 1000 population and 9.1 per 1000 live births respectively.

The main causes of death continued to be heart disease, cancer, cardiovascular disease, pneumonia and accidents. The pattern of morbidity among hospital patients also remained unchanged. Amongst males, the main causes of hospitalisation were accidents and diseases of the circulatory and digestive systems. For females, other than pregnancy and childbirth, the most common causes of hospitalisation was diseases of the genito-urinary system.

Tuberculosis remained the most frequently notified communicable disease with 1,765 new cases reported compared with 1,952 cases the previous year. The other main communicable diseases were viral hepatitis (730 cases), malaria (180 cases) and typhoid and paratyphoid fever (158 cases).

31 PRIMARY HEALTH DIVISION

Primary medical care is available to the public at the Division's

25 outpatient clinics; preventive health care for mothers and children at the 24 maternal and child health centres and health care for the school children and the elderly by the School Health Service and the Health Service for the elderly respectively. The Division's Training And Health Education Department, is responsible for the planning and co-ordination of all health education activities, the provision of health education over the mass media and group educational activities for specific target groups in the community.

Attendance at the outpatient clinics totalled 2,344,081 for medical consultations and minor surgical procedures. During the year, the clinics served a total of 645,500 persons. The common medical conditions seen in the clinics are upper respiratory tract infections, hypertension and diabetes mellitus. In April an epidemic of influenza lasting six weeks occurred in Singapore. The number of attendances of such cases rose to a peak of 34,000 per week compared with the average of 12,000 per week normally. Special veneral disease screening and supervised outpatient treatment of tuberculosis were also conducted in the clinics.

At the maternal and child health clinics, attendances by women for ante - natal and post - natal care and family planning were 282,657 and by new born infants and pre - school children for medical and developmental assessment and immunisation was 483,262. In all about 76% of all babies born in 1986 attended the maternal and child health clinics. Postpartum nursing, follow up of at risk babies and defaulter visiting amounted to 187,069. The number of home visits showed a decline of 19% compared with the

previous year as more mothers who defaulted from follow up care were contacted through the telephone.

During the year, the School Health Service provided full medical examination for 118,446 school children at Primary 1 and 4 and secondary 4 levels. Another 295,933 students received medical examination for various specific conditions. The immunisation programme for school children and the reinforcement of the message of healthy living to school children were also undertaken by the School Health Service. Besides giving talks to school children, three health fairs were conducted during the year. Children with specific medical problems were followed up at the School Health Specialist Clinics. The common health problems identified among school children were visual defects (42.9%), obesity (10.4%), minimal scoliosis (6.2%), asthma (2.5%) and cardiac disorders (1.4%).

Health education activities and programmes were stepped up. It was estimated that 1.6 million people had participated in the 28 exhibitions, 1,343 talks, 11,936 film shows and 388 displays and demonstrations organised by the Training And Health Education Department (THE). During the year, about 2,000 different types of health education materials were produced. "T.H.E" also developed and offered training courses and workskops for teachers and factory nurses on family life education and co-ordinated the abortion counselling training for nurses.

32 DENTAL DIVISION

The Dental Division provides a comprehensive dental programme to

render and maintain school children dentally fit. It also provides routine and specialised dental treatment to the public and trains dental auxiliaries for public service. A 24 hour emergency dental service is also available.

In 1986 a total of 1,165,610 attendances and 1,910,525 procedures were carried out, an increase of 0.1% and 4.9% respectively, compared to the previous year. The school dental health programme extended its coverage of school children by 5.3% to 251,254 children in primary and 86,909 children in secondary schools. 91% of the school children were rendered dentally fit. The emphasis continued to be on preventive dentistry.

Attendances at the five hospital dental clinics were 159,999 and 196,960 procedures were carried out, reflecting increase of 7.1% and 7.8% respectively, over the previous year.

The community dental clinics recorded 185,193 attendances and 244,258 procedures reflecting decreases of 25.7% and 22.9% respectively, compared with the previous year. The leasing out of another 2 community dental clinics to private dentists caused these reductions.

Fifteen student dental nurses, 7 assistant nurses (dental) and 2 dental technicians were trained by the Dental Training Department in 1986.

33 ATTENDANCES AT DENTAL CLINICS :1980, 1984 -1986.

Dental clinics	1980	1884	1985	1986
School	539,459	660,597	750,157	804,504
Hospital	201,638	146,949	146,949	159,999
Community	356,957	325,721	264,542	201,107
Total	1,098,054	1,133,267	1,164,031	1,165,610

HOSPITAL PHARMACIES

The dispensing service was extended and since April, a 24 hour dispensing service is available in 4 general hospitals ie. Singapore General, Tan Tock Seng, Toa Payoh and Alexandra Hospitals. Computerisation of the Inventory Control System in these 4 hospitals and the Kandang Kerbau Hospitals was implemented in stages and completed in June. A notable feature of the system is a direct order entry to the Pharmaceutical Department to improve productivity and cut down paper work.

HOSPITAL DEVELOPMENT PLAN

The Ministry has adopted a target provision of 4.0 beds per 1,000 population for 1990 and 4.2 beds per 1,000 population for 1995. Over the next decade, the existing hospitals will be redeveloped to meet the demands for better quality accomodation and to provide additional support facilities which are currently lacking. More class A, B1 and B2 beds will be provided. The major hospital developments over the next 4 to 5 years include the following :

a) Woodbridge Hospital will be redeveloped into a 2,560 bedded hospital.

b) Tan Tock Seng Hospital will be renovated and redeveloped to 1,200 beds with about 350 Class A and B1 beds.

c) Toa Payoh Hospital will increase its beds to 560 with about 145 Class A and B1 beds.

d) Kandang Kerbau Hospital will have about 390 Obstetrics and Gynaecology beds and 86 neonatal beds, and with about 180 class A and B1 Obstetrics and Gynaecology beds.

e) An additional 200 bedded Community Hospital will be built in Ang Mo Kio.

34 PERSONNEL AND ADMINISTRATION DIVISION

As at December 1986, the Ministry had a total staff strength of 12,733 comprising 12,649 monthly rated and 84 daily rated employees. This is a decrease of 214 over the precvious year, due mainly to the reduction of recruitment of Division 4 staff.

35 MAJOR DEVELOPMENT PROJECTS

a) Skin Disease Centre : commenced construction in May 1986. It cost S$19 million and is expected to be completed at the end of 1987.

b) College Of Medicine Building : Renovations began in November 1985. It cost S$14.42 million and is expected to be completed by February 1987.

c) National Blood Centre : building works started in October 1986. It cost S$34.34 million and is expected to be completed in early 1988.

d) Toa Payoh and Jurong East Polyclinics : construction of Tao

Payoh Polyclinic commenced in June 1986 and cost S$2.4 million and is expected to be completed in August 1987. Construction of Jurong East Polyclinic commenced in August 1986 and cost S$2.5 million. The project is expected to be completed in October 1987.

e) Woodbridge Hospital : Principle approval for redevelopment was received in June 1986. The project cost S$170.8 million and is expected to be completed in December 1990.

f) National University Hospital : The development work has been fully completed. Officially inaugrated on 17 June 1986 and cost S$293.72 million and is expected to be fully commissioned in 1987.

36 STAFF STRENGTH

Doctors (including housemen)	1,086
Dental officers	97
Nurses	4,967
Dental nurses	321
Administrative, executive, statistical and clerical staff	802
Engineering, scientific and other professional staff	93
Medical ancillary and technical staff	890
Health attendants	3,229
Other general workers	1,164
Daily rated employees	84
Total	12,733

37 RECURRENT EXPENDITURE AND REVENUE

The Ministry's total recurrent expenditure in FY 1986 was S$374 million representing a decrease of S$41 million or 9.9% less than FY 1985 expenditure. The reduction in health expenditure was due mainly to the wage restraint policy. Expenditure on manpower accounted for S$271 million or 72.5%. This was S$33 million or 10.9% less than the expenditure in FY 1985.

The hospitals continued to be the largest user of health budget, consuming S$258 million or 69% of the total recurrent expenditure. Support services accounted for S$48 million (13%) of the recurrent expenditure. Primary Health Care and Health Education Division accounted for S$36 million or 10% and the Dental Division accounted for S$15 million or 4%.

The Ministry collected S$129.7 million in revenue in FY 1986, an increase of S$6.7 million or 5.5% over the previous year. This was due mainly to more patients opting for higher class wards with the extension of Medisave to pay the full Class A bills from January 1, 1986. The bulk of the revenue collected, S$108.7 million (83.8%) came from hospitals. Total revenue collected represented 34.7% of total recurrent expenditure.

The basic split in the health care provision is between primary health care services and hospital services rather than between public and private.

Primary care is widely available, provided mainly by private doctors in clinics who usually dispense medicines themselves.

Private companies often provide medical benefits for their employees for primary care. Government clinics and dispensaries also provide primary care. Charges are considered reasonable.

Hospital services are supplied mainly by the government. Although there are equal numbers of private and public hospitals, private hospitals provide only 21% of the beds. Hospitalisation charges are covered by the Medisave savings scheme and by limited private insurance.

There is an adequate number of doctors but a shortage is seen among nurses and dentists. The government aims to increase the number of the latter and decrease the ratio of "population" versus "doctor".

A considerable number of traditional Chinese physicians practice mainly in the less populated areas. Singapore has a fairly uncontrolled pharmaceutical market as the 1975 Medicines act has not been fully implemented. Only the regulation of advertising, promotion and clinical trials and the registration of pharmacies has been enforced by 1987. However in response to requests from the local industry a product registration procedure and licensing of manufacturers, importers and wholesalers are being introduced from 1987.

Singapore has an active local manufacturing industry and is a net exporter of pharmaceuticals. Imports of medical equipment in 1983 reached U.S$34 million, of which it is estimated that up to 50% may be re - exported. The local industry is small but growing.

38 HOSPITAL SERVICES

The cost of hospital treatment is covered by the Medisave scheme. Medisave is part of the Central Provident Fund. All employees make a compulsory contribution from their salary to an account in the C.P.F. This contribution is matched by their employer. The account attracts interest at 6.75%. Apart from Medisave the C.P.F is designed to help the account holder to finance the purchase of housing and to see them through retirement or permanent incapacity. An amount equal to 6% of salary goes to the employee's Medisave account, up to a maxium total of S$360 per month. The self - employed (who pay 6% of their income) are encouraged to join. The account is used to pay hospital expenses incurred by the account holder or their immediate family (spouse, children, parents or grandparents).

Medisave covers all expenses which are incurred during hospitalisation at government establishments, including ward charges, operational fees, pharmaceuticals and x - rays and has been expanded to include some expensive minor surgery which does not involve hospitalisation. Since 1986, it can also be used to cover hospitalisation at private hospitals, subject to a daily maximum (which depends on the illness).

Medisave does not cover certain investigative or laboratory procedures, nor outpatient services from hospitals, except the minor surgery mentioned above.

If hospital expenses exceed the amount in the account, the patient must pay the difference. Overdrawn accounts are paid back

by future contributions, but may incur charges at C.P.F rates until the balance is positive again.

HEALTH SERVICES IN THAILAND

39 The administration of the Public Health Services is under several government agencies and administration namely the Ministry of Public Health, The Ministry Of University Affairs where all the university hospitals belong, Armed Forces and Police Medical Services, and local authorities, particulary various provincial municipalities and The Bangkok Metropolis. University hospitals are the largest and not only possesss the most sophisticated facilities, but also are leading institutions for training of medical specialists of all major and minor sub- specialities. There are at present 8 university hospitals. All health services up country are under the office of the Permanent Secretary of the M.O.P.H, whereas in Bangkok, hospitals are under the Department Of Medical services of the same ministry. Medical services outside Bangkok are under the Provincial Health Officer.

The health service system of the country covers all the essential elements of primary health care with the addition of mental health and dental health activities to be included in the primary health care setting. The health infrastructure reaches down to the Tambon (sub district) level. There are at present 7,542 health centres at the Tambon level. 482 district hospitals and 72 general hospitals plus 15 regional central hospitals at the provincial level. In the villages, 419,304 health volunteers are promoting good health. This helps to make the basic services available to almost every village.

40 MEDICAL EDUCATION

The number of medical schools remains at 8 but the number of doctors produced annually has increased from 510 in 1980 to around 700 this year. All newly qualified doctors are still required to do 3 years compulsory government service, where majority of them are placed " up country ". As a result of this requirement, the maldistribution of doctors in the country is rapidly being corrected. A 1982 study revealed the total number of doctors in the country to be 8,644, of this the largest number (ie. 5,069 doctors or 59.87% were in Bangkok where the population of 5.3 million was a mere 11.14% of the whole country. The ratio of doctors to the population in the country in 1982 was 1 : 5539. As expected Bangkok had the best ratio 1 : 1050.7. The province in the North East ie. Kalasin showed the worst figure of 1 : 36,767.05. But when compared with the population 4 years ago it became evident that the ratio has decreased considerably, particulary in the North East region, where the 1978 figure showed the ratio to be 1: 16,239.21 as compared to 1 : 7,695 in 1982 or a 111.04% decrease over the previous figure.

Most of the qualified doctors practice in Bangkok and attempts are being made to correct this maldistribution. There is also a maldistribution of other health personnel particulary dentists and pharmacists. Out of the total of 4,574 pharmacists in the country in 1983, 3,477 were based in Bangkok. For dentists the total number in the country in 1986 was 2,788 and the majority of tham practised in Bangkok.

41 NUMBER OF HEALTH CARE PERSONNEL IN 1986

Physicians	13,612
Dentists	2,778
Pharmacists	6,015
Midwives / Nurses	27,582
Midwives	8,821

42 HEALTH STATUS

Health status of the population can be evaluated by several indices which are mentioned below.

1) Nutritional status

The best available information on the nutritional status of children of (0 -5 years) is as follows

	1982	1984
	%	%
1st degree	35.61	28.53
2nd degree	13	5.9
3rd degree	2.01	0.8

On the average the nutritional status of pre- school children has improved ever since the intensive nutritional improvement programme started. A significant change can be observed in the 3rd degree malnutrition which dropped from 2.01% in 1982 to 0.8% in 1984.

43 INFANT MORTATITY RATES

The infant mortality rates collected from various sources differs considerably. The prime reason for this is believed to be the ignorance of the parents in reporting infant deaths. The figures from the survey are believed to be closer to and reflect the real situation.

REGION	REGISTRATION SYSTEM	SURVEY	NSO
	1983	1983	1960
North	16.3	51.8	57.8
North East	9.7	56.6	52.8
Central (excluding Bangkok)	12.9	35.3	39.0
South	10.2	45.2	39.4
Bangkok	16.9	18.8	26.5
Whole country	12.4	45.3	47.7

LIFE EXPECTANCY AT BIRTH

The life expectancy of both sexes has increased during the past 10 years. This can be attributed to the improved general health status as a result of the economic development, better availability of basic education and health services.

44 LIFE EXPECTANCY AT BIRTH

PERIOD	EXPECTANCY OF LIFE AT BIRTH	
	MALE	FEMALE
1970 - 1975	57.73	61.57
1975 - 1980	59.25	63.19
1980 - 1985	60.77	64.76

LEADING CAUSES OF DEATH

The table shows the 10 leading causes of death for the year 1981 - 1983. The mortality rates of the 10 leading causes of death do not differ much from the 1979 figures. It can be said that Thailand is now facing problems seen in both developing and developed countries.

As seen in the figures given in the later part of the text, government expenditure on health for the year 1980 - 1984 ranges from 298.13 to 506.45 million U.S dollars or an equivalent of 5.84% to 6.29% of the total government expenditure. Although the figures of the actual expenditures have increased steadily, a closer scrutiny reveals that in some years the total government expenditure on health compared as a percentage of the total government expenditure apparently is lower than in other years. Many factors seem to have contributed to this fluctation particulary political and others like the fluctation in the national budget. The expenditure of the private sector on health is 2.7 times more than that of the government contribution.

Various foreign governments and international organisations contribute health care aid to Thailand. In recent years foreign assistance has contributed between 1 - 3% of the Thai health care expenditure.

As a rapidly developing country, Thailand is facing problems experienced by both underdeveloped and developed societies. There are at present an insufficient number of almost all categories of health personnel as well as maldistribution. Total expenditures for health services and medical care have grown rapidly in real terms in recent terms years ie. 3.5% of the G.N.P in 1979 to 4.6% in 1983. Per capita expenditures on health in Thailand between 1979 and 1983 increased at an annual rate of 7.5% higher than any industrialised nation. Health sector expenditure are financed by private sources mainly by households and corporations. In 1979, private expenditures were 66% of the total expenditures increasing to 69% in 1985. Furthermore, private expenditures are mainly for curative services. With a society rapidly changing towards "Western" standard, the demand for health services will definitely increase at an equally rapid pace.

45 Fig 5 LEADING CAUSES OF DEATH THAILAND

1981 - 1983

	1981	1982	1983
Diseases of the pulmonary circulation and other forms of heart disease	29.7	32.2	31.2
Gastroenteritis including acute diarrhoeal disease	22.7	24.2	22.3
Other accidents including late effects	10.3	17.7	20.3
Homicide and injuries purposely inflicted by other persons	26.3	21.9	16.6
Malignant neoplasm of other and unspecified sites	11.4	12.8	13.3
Motor vehicle traffic accidents	13.8	13.1	12.8
Cerebrovascular disease	10.9	11.5	12.8
Pulmonary tuberculosis	11.8	11.9	-

Diseases of the nervous system	10.8	10.6	10.7
Pneumonia	8.9	9.6	10.0
Other diseases	-	-	-
Total	504.2	510.2	510.7

46 Fig 6 HEALTH EXPENDITURE CONTRIBUTION

(ADJUSTED TO 1983 CURRENCY VALUE IN %)

	Ministry of Public Health	Other Government Organisations	Household and private Enterprise
1979	20.27	13.00	66.30
1980	17.70	13.00	69.00
1981	18.10	14.00	67.60
1982	18.50	12.00	68.70
1983	19.20	12.00	68.00
Projections			
1984	12.10	11.90	70.00
1985	18.30	11.70	70.00
1986	18.50	11.60	69.90
1987	18.80	11.40	69.80
1988	19.00	11.30	69.70
1989	19.20	11.10	69.60
1990	19.50	11.00	69.50
1991	19.70	10.90	69.40

Fig 7

MARKET SHARE BY THERAPEUTIC CLASS

Therapeutic Class	Malaysia	Indonesia	Philippines	Singapore	Thailand
1. Anti-infectives	15%	30.3%	25.2%	15.2%	21.8%
2. Cardiovascular & diuretics	13.5%	7.6%	5.7%	12.3%	6.3%
3. Neuro-muscular & CNS	13.5%	11.4%	10.2%	13.2%	16.6%
4. Respiratory	12.4%	10.4%	18.1%	11.5%	11.4%
5. Dermatologicals	12.3%	7.4%	4.9%	10.1%	9%
6. Gastro-Intestinal	9.8%	18.6%	17.1%	21.1%	10.4%
7. Vitamins & Minerals	4.8%	2.9%	7.4%	2.5%	11%
8. Eye, Ear & Nose	2.9%	1.8%	1.7%	2.1%	
9. Endocrine	2.4%	2.1%	1.7%	1.3%	5.5%
10. Genito-Urinary & Sex hormones	1.8%	4.4%	3.1%	4.7%	
	(1986)	(1987)	(1986)	(1987)	(1984)

Source : Ministry of Public Health

Market Segmentation 1987

Therapeutic Class	Market 1987	
	B + 000	%
Alimentary T & Metabolism	756,773	19.5
Blood & B. Forming organ	73,200	1.9
Cardiovascular System	111,185	2.9
Dermatologicals	423,993	10.9
G.U. system & Sex Hormones	134,184	3.5
Systemic Hormones	30,030	0.8
Systemic Anti-infectives	457,800	1.8
Cytostatics	1,355	0.0
Musculo - Skeletal System	146,540	3.8
Central Nervous System	868,505	22.4
Parasitology	39,489	1.0
Respiratory System	652,199	16.8
Sensory Organs	70,283	1.8
Various	108,918	2.8
Total Market	3,874,452	

Source : IMS 1987

Fig 8

47 TOTAL HEALTH CARE EXPENDITURE, ACTUAL AND PROJECTED 1979 - 1991

ADJUSTED TO 1983 CURRENCY VALUE 23 BAHT EQUALS U.S$1

Year	Total Expenditure	Expenditure G.N.P %	Per Capita U.S $
1979	1268.83	3.5	27.52
1980	1349.43	3.8	29.04
1981	1492.22	4.1	31.43
1982	1651.65	4.5	34.52
1983	1816.13	4.6	36.74
Projections			
1984	2008.09	4.8 - 4.9	39.96
1985	2220.35	5.0 - 5.3	43.52
1986	2455.04	5.2 - 5.6	47.35
1987	2714.52	5.5 - 6.0	51.52
1988	3001.48	5.7 - 6.4	56.09
1989	3318.74	5.9 - 6.9	61.00
1990	3669.52	6.2 - 7.3	66.44
1991	4057.39	6.4 - 7.9	72.26

Fig 9

48

BASIC INFORMATION

	1980	1981	1982	1983	1984
Total government expenditure on health (million U.S$)	298.13	355.19	419.10	470.37	506.45
Total government expenditure (million U.S$)	6260.87	6086.96	7000.00	7695.65	8347.83
Gross national product	29236.52	33233.87	35641.74	38994.78	41756.74
Population	46.45	47.49	48.49	49.46	50.39
Per capita	629.35	699.83	735.04	790.17	823.52
Total government expenditure on health as a % of total government expenditure G.N.P	6.25	5.84	5.99	6.11	6.07
Ministry of Public Health expenditure	4.12	3.96	4.13	4.46	4.49

as a % of total government expenditure					
Total government expenditure on health as a % of G.N.P	1.02	1.07	1.17	1.20	1.21
Per capita government expenditure on health (U.S$)	6.42	7.48	8.62	9.48	10.05
Private expenditure on health (million U.S$)	825.52	976.43	1171.09	1344.39	1496.57
Per capita private expenditure on health as a % of G.N.P	2.82	2.94	3.29	3.44	3.58
Ratio of per capita government expenditure on health to per	1|2.72	1|2.75	1|2.79	1|2.86	1|2.96

capita private expenditure on health					
Government and private expenditure	3.84	4.01	4.46	4.64	4.79
Ministry of Public Health expenditure as a % of G.N.P	0.67	0.73	0.81	0.88	0.90

MARKETING OF PHARMACEUTICALS

49 During the period from 1930's to 1940's when sulphonamides and penicillins were first introduced, the pharmaceutical companies had to just sell them. Features like product concept, trial launch, promotional mix, organising seminars were unheard of. Today the scenario has completely changed. Company image, marketing concepts, marketing plans, detailing cycle, journal advertising, seminar sponsorship, promotional gifts are some of the methods adopted by multinational companies. These days multinational companies which are involved in R & D cannot compete on price alone.

Image and trust, people (medical representatives), promotion activities, communication channels are all currently being used to get that market share.

50 IMAGE AND TRUST

This has been capitalised by multinationals who are engaged in R & D. Efficacy, safety and quality of products has been much emphasised as attributes. The question on pricing is related not to how cheap or expensive the product is but that the products give good value for money. Many companies build their image and service by sponsoring seminars and international conferences for the medical profession. Some have gone further by engaging in activities that show their concern for the welfare of the total community and country.

51 PHARMACEUTICAL TRADE

The current world market for drugs and pharmaceuticals is estimated to be over U.S$130 billion with the U.S and Japan as the leading markets. The U.S pharmaceutical industry continues to invest heavily in research and development of new drugs. Current estimate of R & D expenditure is U.S$4.5 million, which represents 15% of U.S pharmaceutical sales. The estimated cost for developing and marketing a new drug in the U.S is close to U.S$100 million.

For most of Asia, poor or affluent, the drug business is flourishing. Sales of pharmaceutical products are growing at a fast pace and projections are for even higher growth rates. At present Asia (excluding industrialised Japan) is the world's fourth largest pharmaceutical market. Europe is in third place. Industry analysts estimate that developing Asia will overtake Japan by the year 2000 to become the second largest market, only 5% smaller than North America.

52 In the poorer countries of the region such as those in the sub-continent (India, Bangladesh and Pakistan) where health gross expenditure are less than 1% of the G.N.P (or around U.S$1 per head per year), compared with Japan, with U.S$200 , there is enormous scope for expansion of cheaper and common disease combating drugs in the rural areas while the urban centres will continue to be highly receptive to more expensive preparations such as diet pills, stimulants, depressants, vitamin combinations and tonics.

Many countries in Asia have no allocation or plans for developing a pharmaceutical industry of their own. Where there is an industry, it mainly consists of formulating and packing. Patents are a sensitive subject for international companies and governments of developing countries alike. Drug companies argue that the vast sums of money spent in research and development can only be fully recouped through patent protection. This allows the company to determine prices indexed to market place acceptance.

Many countries in Asia respect the patent laws, though generic copies continue to slip through. For instance Smith Kline & French's best selling anti ulcer drug sells for about HK$12 (U.S $1.54) a tablet in Hong Kong while generic copies made by various Taiwan companies are available through doctors for third of that price of the patented compound.

All the world's leading drug companies are represented in Asia either as joint ventures or full subsidiaries. Foreign firms have the lion's share of the retail market in most Asian markets. Japan is the only Asian nation which has a well developed pharmaceutical industry, and it is seeking to internationalise further to reduce its dependence on the domestic market.

53 MARKETING IN THE SOUTH EAST ASIAN ARENA

As multinational health care companies consider opportunities for expanding sales and profits, they often turn to Asia. Asia is composed of many different countries, however, each with its own requirements for successful market entry. Multinationals these days are focusing on Asia's least known or understood area, South

East Asia.

When most health care managers in Asia hear "South East Asia", they think of the ASEAN nations. The Association Of South East Asian Nations (ASEAN) was formed in 1967 in response to military and political ramifications of the Vietnam conflict. Today, six ASEAN nations ie. Indonesia, Malaysia, Philippines, Singapore, Thailand and Brunei - share trade as well as political and military alliances.

Among the ASEAN nations, Indonesia has the largest population, followed by the Philippines, Thailand, Malaysia, Singapore, and Brunei. Drug consumption statistics, however, are much harder to determine.

First of all industry audits exist in only three of the five nations - Indonesia, Thailand, and the Philippines although I.M.S, the research company based in Singapore has indicated that it may begin audits of Malaysia and Singapore in 1988. Despite margins of error, a relative indication of the sizes of certain market segments and therapeutic classes can be achieved by examining both I.M.S audits and industry association reports.

When conducting business in South East Asia, more important than understanding the varying nature of the region's distinct health care markets. Most important of all is to refrain from trying to fit ASEAN nations into the Western concept of health care marketing and instead to understand the basic differences among ASEAN nations. Their markets can be categorised in several ways -

prescription based, doctor - dispensing, O.T.C - ethical, and consumer health care - and then discuss the implications for these markets.

54 PRESCRIPTION BASED MARKETS

Only one market, the Philippines, fits the American mould of health care marketing to any degree. In the Philippines, doctors write prescriptions that pharmacies fill. These are many exceptions of the rule, however.

The economy being what it is, Philippine physicians find strong motivation to supplement their income by selling samples that they receive from health care companies. The class A general practitioner in the Philippines can see 25 - 30 pharmaceutical sales representatives a day, so sampling can quite believably become a major additional and non taxed source of income.

Samples are also given to patients in the "free clinics" funded by the Philippines government. Because representatives tend to visit doctors in their private clinics, however, samples probably reach paying patients in private clinics more frequently than patients in free clinics.

Indonesia is a prescription based market, although physicians not near pharmacies tend to dispense. Thailand, Malaysia and Singapore are physician dispensing markets too, although Singapore is clearly moving towards becoming a prescription based nation by the end of the decade.

When this happens, presssure will fall on Malaysia to follow. At least 10 years will pass, however, before Malaysia gains a sufficient number of pharmacists to support a prescription based system.

Although Thailand has a large number of pharmacists, physicians there depend heavily upon profits from clinic dispensary sales. Thai doctors, therefore, probably won't accept becoming prescribers - certainly not within the next decade.

55 O.T.C ETICAL MARKETS

O.T.C ethical markets are those in which patients obtain prescription drugs either from the doctor or directly from the pharmacies. In Malaysia, Indonesia and Singapore, a person can obtain many kinds of medication by signing a registration book at a registered pharmacy.

In Malaysia and Indonesia, however where supplying medicines to rural areas presents substantial problems, one quickly realizes that these are "open" markets. Medicines that should only be dispensed through a registered pharmacy are in fact readily available without a prescription.

Chinese and Malay medicine and sundry shops in Malaysia often sell such registered medications, a few pills at a time, in unmarked plastic bags. Indonesia has apotiks - apothecaries or pharmacies - and drugstores that sell medicines but do not employ registered pharmacists. Indonesia also has "Toko Obats", which can be any retail outlet, from a sidewalk drugstore to a crate

on a bicycle, where medicines are purchased in relatively small quantities and at highly competitive prices.

Although Singapore also can be classifed as an O.T.C ethical market, it is placing increasingly strict controls on pharmaceutical purchases without prescriptions and most likely will be the next nation to convert to prescription only status.

56 DOCTOR DISPENSING MARKETS

Paralleling the O.T.C ethical markets are the doctor dispensing markets. In Thailand, Malaysia, and Singapore, doctors typically dispense their patients medications. Although this might appear an efficient system, the profit motive behind it has become a significant ethical problem. Physicians look for cheap generic substitutes for expensinve products from research based companies. Their objectives are to either cut costs when medication is included in the consultation fee or to maximise profits when patients pay for medications separately.

In most instances, doctors do not write medication names on containers when they dispense, primarily because they do not want patients to know what they are dispensing. They believe that patients might self diagnose their illness the next time around and purchase the drug directly from a pharmacy. The doctors would then lose subsequent consultation income.

Consequently, dispensing doctors prefer medicines that are unmarked by code numbers or brand names and lack distinctive tablet or capsule shapes or colours that would allow patients and

pharmacists to identify which drugs have been dispensed.

57 CONSUMER MARKETS

Of the five major ASEAN nations, Thailand probably has the truest consumer oriented health care market. Despite the Thai government's intentions of controlling drug dispensing, virtually any pharmaceutical product is available there without a prescription.

Thailand has also taken perhaps a strict approach to controlling marketing efforts. The governments screens all print and broadcast media carefully and critically. Almost no therapeutic claims may be made by the products that use T.V, radio or print advertising. Nor may they make any direct brand comparisions.

Even so , it is truly a buyer's market in Thailand. For example many years ago antibiotics were advertised through mass media. Although this is no longer permitted, direct - to - consumer sales of antibiotics are still growing.

Despite such cases, unit and price values of the Thai pharmaceutical market are in fact declining. The main reasons for this decline are threefold. First, Thailand's Government Pharmaceutical Organization (G.P.O) has made a point of producing its own generics to compete with all other companies and has a virtual monopoly on government hospital businesses and government funded clinics.

Lack of industrial rights in Thailand permits G.P.O to rapidly

copy new drugs. In some cases, G.P.O and local generic manufacturers have even beaten the brand originator out of the market. Consequently, multinational companies that have depended on hospital sales elsewhere must in Thailand either enter the generics price war or diversify into the more lucrative O.T.C market to survive. Some companies, such as Merrel Dow, which depended on Government sales of Rifampin products, have had prices so severely undercut that they have thrown in the towel on tender business altogether. More companies can be expected to follow suit.

The second reason for Thailand's decline in unit and price values is the plethora of generic companies that have complete freedom to produce and market pharmaceuticals in Thailand without the regulatory and operational constraints placed on their Western counterparts. Thailand lacks not only patent protection but also trademark and other forms of industrial protection.

Pfizer, in fact, is spearheading the industrial rights movement in Thailand. This is hardly surprising, considering that its Feldene (piroxicam) has more than four branded generic competitors, most of which were introduced within a year or two of Pfizer's launch.

Roche recently decided to move an ethically positioned topical antifungal into the Thai O.T.C sector. It spent a huge amount of effort and funds on the direct - to - consumer campaign, only to find that at least eight new branded generic competitors were ready to jump in within three weeks of Roche's launch campaign.

These competitors had created almost identical packaging and brand names to capitalise on Roche's promotional investment.

The third and perhaps most critical reason for the decline in the total value of the Thai pharmaceutical market is a dirct result of changes in the nation's economy. Hard times are causing many Thai consumers to change from the traditional purchase of two to four pills at a time to one to two pills. So while treatment incidence is on the increase, the length of each course of therapy is shortening and decreasing in value.

The other nation that has a " consumer " health care market is Indonesia. Indonesia is much like that of Thailand, especially in the rural areas, which support 80% of its population. The Indonesian government has drug marketing controls that rival those in Thailand and is making more and more of an effort to control promotion and distribution of drugs.

Indonesia, like Thailand, is directly involved in production of generics. The Indonesian market is still relatively competitive, however. The biggest marketing problem there is the difficulty multinational companies have in obtaining new drug registrations. This is easier for Indonesian companies, and so local companies can rapidly produce generics and often beat the original product to market.

One such case in Indonesia was the 1986 launch of Rantin (ranitidine) by a local manufacturer before Glaxo could get Zantac registered. In both Indonesia and Thailand, the increase

in branded and unbranded generic competition has created additional pressure to distribute and sell drugs through direct consumer channels wherever and whenever possible.

58 TRENDS AND ADAPTATIONS

What marketing implications do these varying circumstances in South East Asia create for U.S companies, and what trends and changes confront those who enter South East Asian markets ?

PACKAGE SIZE

One company marketing a leading analgesic in Indonesia in boxes of 2 strips of 10 found that in fact consumers were not buying 20 tablets at a time, but 2 tablets - 10 times over. By converting to packs of fours, volume and sales in rural areas increased significantly.

This finding is consistent with those in nations such as Thailand and Malaysia, where consumers usually purchase no more than one day's therapy, or perhaps even a single dose at a time. Again, the reason is related to the basic economy. When the per capita annual spending on drugs is less than U.S$5, it indicates that consumers maintain no inventory of medicine but buy only when and what they need as cheaply as possible.

For marketers considering a move into the O.T.C sector in South East Asian markets, this pattern of retail purchasing means that smaller pack sizes can be critical to consumer trial and repeat purchase. Distribution must also efficiently reach mass markets; otherwise, any O.T.C efforts will probably not be cost effective.

A study conducted in the Philippines by Eduardo Roberto, Professor at The Asian Institute Of Management in Manila and President of E.R Associates, examined consumer purchasing changes during economic downtrends, especially in the health care industry. One change was the middle size packs, dropped in popularity. Purchasers instead bought smaller packs, as discussed earlier, or larger ones, where trade offers and quantity discounts were significant.

This creates its own problems, however, when companies push retailers to trade up to bigger packs. One problem is a high rate of returned goods. Especially in the hot and humid climates of South East Asia, large bottles or open packs of medicines may not be stored or handled properly, and products simply do not hold up well.

In some countries, such as Malaysia, this has also caused an estimated two year market inventory level. Offering such trade incentives will appeal to companies less and less as problems with collections and returned goods mount.

59 CONSUMER APPEAL

In all markets, we are seeing more and more effort among major companies to attract consumers by developing packaging that encourages repeat purchases - even if a consumer originally bought the product from a dispensing doctor. Distinctive packaging , point of sales materials, and better retail servicing are becoming the hallmarks of successful companies in South East Asia.

60 O.T.C VERSUS ETHICALS

More companies are looking for O.T.C products to introduce, because these are factors and perhaps easier to register. They also suffer less from generic competition compared to some ethicals and may not suffer as much from direct government competition and de facto price controls.

The major problem here, however, is the naivete of ethical companies that view consumer health care products as solutions to their growth problems. The companies that are already entrenched in the consumer health care field are big and highly competitive. Their level of marketing expertise is also far ahead of ethical based companies that newer entrants to the O.T.C market will likely have a painful and costly learning experience.

American companies are also pained to find they are years behind European and British firms in penerating markets like Malaysia, Singapore, and Indonesia and that a reputation as a leading American O.T.C brand loses its advantage there.

61 EUROPEAN DOMINATION

In most pharmaceutical markets, a handful of companies control the lion's share of the market. But in South East Asia, American companies are in for a shock. The companies in control may be regional ones, such as the giant United Laboratories, based in the Philippines; British based firms (Glaxo, Welcome); Swiss based (Roche, Ciba Geigy, Sandoz); German (E. Merck, Schering A.G , Hoechst, Boehringer Ingelheim); or Swedish (Astra). The

Americans are not well represented.

Distribution, which is absolutely critical to marketing success in South East Asia, is also dominated by a few non American companies. F.E. Zuellig or Diethelm, both Swiss based distribution giants in South East Asia, have approaches to management that probably ensure that they will stay in the lead.

This means that manufacturers must work closely and co - operatively with their distributors to compete with other companies represented by the same distributor. American companies tend to want exclusivity in a distributor, which is not feasible for most distributors in South East Asia.

A more common criticism of American companies is that they are too short term. Their managers change jobs frequently - they stay an average two to three years, compared to European managers who stay four to five years, or even longer. Another criticism is that American managers do not involve themselves in local business communities during such short assignments. Asian, European, and British managers, on the other hand, take great pride in maintaining their company's reputation, programmes, and approaches to the markets they participate in.

B.Braun, for example, was the first Western company to build a complete suture and surgical supplies manufacturing centre in South East Asia - Penang, Malysia. Managers from the company's German headquarters came to work in the region with a minimum five year contract. On a short term, say 10 year basis, an

American firm probably would find the investment unacceptable. But B.Braun's inroads in the market penetration have already surpassed its expectations, and the investment has indeed been worthwhile.

Unlike any other area of the world, pharmaceutical marketing in South East Asia is made even more highly competitive by the presence of Japanese and other Asian companies. Inroads made by these companies make competition for even minor market share more intensive. Some of them for example in the Philippines the " United Laboratories " with its branded generics; Japan's Meishi, with its antibiotics; and Eisai, with its range of ethicals and vitamins; Singapore's Guardian Pharmacies, with its dominance in retail pharmacy market and its entry into wholesale distribution and house brand manufacture; and Malaysia's Sime Darby, the government backed corporation that has made a goal of controlling Malaysia's pharmaceutical market.

62 DISTRIBUTORS

South Est Asia is experiencing a clear trend towards using distributors, unlike a decade ago, when companies explored self distribution. The reasons for this trend are varied.

In Indonesia, for example the government forbids direct distribution by manufacturers in most cases. In other ASEAN countries, however, distributors are sought to help with tremendous inventory control and collection problems. Government and retail accounts often have receivables of 120 - 180 days or longer, which is unacceptable to most American firms, who look

at 90 days or even 60 days in horror.

Furthermore, ASEAN markets such as Thailand, Malaysia and Singapore are relatively small. There is questionable cost effectiveness in maintaining individual marketing, sales and distribution in these countries.

Finally, the big distributors in each of the ASEAN markets are becoming more and more sophisticated. In particular, distributors like F.E Zuellig and Diethelm enable companies to appoint and manage a marketing and sales team dedicated to their own product line but working within the nucleus of the distributors organizations. For example, medium sized companies such as Les Laboratories Servier of France or Lederle of the United States would have a marketing manager and a few sales representatives with their own offices inside F.E.Zuellig's office complex.

Technically such dedicated marketing and sales teams would be on F.E.Zuellig's payroll, but they would report to the regional marketing directors of Servier and Lederle located elsewhere. Marketing and sales team costs are incorporated in the terms of distribution, which works well for both distributor and principal.

In making distribution policy, companies should understand that no one distributor effectively handles all of South East Asia's trade. F.E Zuellig is the strongest in the Philippines, and is also strong in Thailand, Malaysia and Singapore, and Hong Kong. The company is establishing itself in Taiwan. Diethelm is strong

in Thailand, Malaysia and Singapore but less so elsewhere.

Other distributors, to name are Summit in Thailand, Singapore and Malaysia; Guardian in Singapore; and Marketlink / Sime Darby in Singapore and Malaysia are worth looking into. None, however have any presence in Indonesia, where distribution systems are completely controlled by Indonesian companies.

63 CO - MARKETING AND CROSS - LICENSING

The South East Asian market is highly competitive with its increasing regulatory contraints and pressure on profits. A trend in South East Asia towards co - marketing and cross - licensing drugs is one expected result. Some companies have product lines that cannot profitabily support a marketing investment; examples are small biotechnology firms with anti - cancer or other highly specialised products that are often too sophisticated for general use or cater to use by a limited number of specialists.

These small firms look to companies like Schering Plough or Bristol Myers to represent them in South East Asia. Other companies like Glaxo, with good ethical products and marketing expertise, look for O.T.C and consumer health care product lines to maintain the growth they have come to expect in the region. Some companies, such as the Japanese firms, will split their product lines between distributors or other companies in their search for greater ease of registration and market penetration.

Most current co - marketing and cross licensing arrangements are nation and company specific. In some instances two companies that

compete directly in one market will team up in another. The key to this is personal contacts, which European, Asian and especially Japanese firms understand and work at developing. American companies don't, by and large.

64 INCREASED REGULATIONS

As mentioned, South East Asian governments will grow more and more supportive of generic and local producers, with the possible exception of Singapore. It seems likely that lack of patent, trademark, and copyright protection, coupled with government backed production of drugs for profit or to reduce national health care costs as in Thailand and Indonesia will wreck havoc on multinational companies that are less to simultaneous competition from so many directions.

In addition, governments will increase their control of price and promotion of existing pharmaceuticals. In Thailand and Singapore, for example, it is now extremly difficult to obtain necessary approvals for any drug advertising from the Ministries Of Health.

Indonesia and Thailand presumably have no price controls, but to compete in the government sector would be to sell at a loss. And despite the absence of official price control, both nations control price increase approvals. For example, although the Indonesian currency suffered a devaluation of more than 40% in September 1986, the government permitted drug price increase of only 15%.

The governments of South East Asia are also increasingly regulating use of their citizens for phase 3 research before drugs are approved in major Western pharmaceutical markets. Malaysia recently began enforcing drug registration based on laws enacted in 1986. The laws require free sales certificates (FSC's), which show permission to sell the drug in the home nation, for new drug approval.

Singapore initiated formal drug registration requirements, yet refuses hospital formulary approvals unless the drug is already sold in Western markets. Thailand and Indonesia require that multinational companies - but not necessarily local ones - provide proof of registration in the home nation as well as FSC's from other major Western markets. And registration in the Philippines can only be assured within a resonable time frame if the product is already registered with the F.D.A in the United States.

In fact a great deal of concern has been expressed in the ASEAN newspapers over proposals to allow the export of drugs from the United States prior to F.D.A approval. Such publicity will probably lead to further incentives to local companies to develop drug manufacturing capabilities. This in turn will lead to greater control of South East Asian health care markets by local companies and less risk to ASEAN nations of control by multinationals.

Even with the above trends, the developing nations of South East

Asia will likely take a long time to become sophisticated in the ways of medical marketing, compared to their western cousins. Technology in South East Asia is changing quickly, but only in the major metropolitan areas. Furthermore, marketing technologies such as interactive video - discs, direct mail, tele marketing, when available, are so costly as to raise questions about their feasibility.

Asian medical sales representatives also need much more training to reach even basic skill levels of the newest representatives in the Western markets. In most markets, doctors themselves have a hard time keeping abreast of new medical technology and are leery of sales representatives ability to help educate them. In a study conducted in August 1985, it was determined that the average time South East Asian doctors spent with representatives ranged from less than 30 seconds to 2 minitues. Asked what a representative can sell in such a short time, the general response was, " Sell ? He's not selling - he's an overpaid sample dropper ".

The point is well taken. In South East Asia, the key words in pharmaceutical marketing are " back to basics " - and will be so for some time to come.

OTHER ISSUES

PATENTS

Other than Malaysia and Singapore who have established patent laws and regulations it was totally impossible to introduce this in Thailand and due to this many European and American companies lose millions of dollars because of patent infringements and generics. On the other hand, patent protection only exists on the " process " involved for the manufacture of pharmaceuticals.

65 Smith Kline and French expected its sales in Thailand to total U.S$2.7 million in 1986. It could have been U.S$7.6 million if Thai manufacturers were unable to sell compounds patented by SK & F in other markets. This was disclosed by SK & F to the Wall Street Journal.

Over 25 generic versions of Cimetidine (SK & F's Tagamet) are sold in Thailand with prices as low U.S$0.34 for one day's therapy compared with U.S$1.68 for Tagamet.

Pfizer told the Wall Street Journal that 12 of its U.S patented products had revenues totalling U.S$2.2 million in 1984 compared with sales of about U.S$4.2 million by other manufacturers.

Both local and multinational companies believe that Thailand will adopt some form of patent legislation for pharmaceuticals, although many believe it will be difficult to pass such laws because several legislators hold stakes in local drug companies. Thailand has more than 190 pharmaceutical companies with 1985

output of U.S$255 million, compared to U.S$88 million in 1981.

66 The pharmaceutical industry is fairly optimistic that some form of patent protection could be introduced in the next couple of years. Several U.S trade delegations, Ambassadors of various European countries have raised the issue and have made representations to the Thai government. Thailand is one of the countries where pharmaceutical patent protection is a problem. SK & F and Pfizer have lost revenues because of copying by local manufacturers. Pharmaceuticals were specifically excluded from the Thai patent law which was introduced in 1979. Processes are patentable but this is insignificant in a market where there is no chemical synthesis industry.

67 The United States has decided to remove G.S.P benefits to Thailand if the nation refused to introduce adequate intellectual property protection. U.S trade representative who was in the Reagen Administration gave December 15,1988 as the deadline for an improvement in the level of protection. The decision to impose a deadline was taken by President Reagen during his annual review of the G.S.P system. Thai Foreign Minister Siddhi Savetsila planned a visit to Washington in April 1989, so as to ask the U.S Government more time to resolve the issue of pharmaceutical patents.

68 On April 28th 1989, an attempt was made in Washington by Thailand to resolve the country's long running dispute with the U.S on pharmaceutical patents. The Thai delegation proposed a 2 year monitoring system to prevent the copying of new drugs that enter the Thai market during the period. It is understood that

no laws need to be changed to implement the 2 year monitoring system which will prohibit " for safety purposes " the making of generic copies from the day a new U.S drug is registered in the Thai market until the Thai Food And Drug Administration gives approval of its sale.

The proposal means that only a foreign drug manufacturer will be able to import and sell the new drug at limited places such as hospitals. The Thai generic manufacturer during this period must conduct bio - equivalency tests to be approved by the Thai F.D.A.

The system is in fact a measure to protect new drugs until the patent act is amended. Prior to this 2 years proposal, Thailand had proposed implementation of an 18 month interim measure that would protect new U.S drugs entering Thai market.

Meanwhile, in Thailand private groups indicated that there could be a monopolistic practise whereby only a drug producing company be given the sole right to monitor consumer safety in its drugs. The group hinted that the United States safety monitoring regulatory system, was an attempt to have American drug companies monopolise the local market with new drugs. It was agreed that drug producing firms should not be allowed to monitor consumer safety without the participation of a government agency or public organisation. Thailand needs to take the patents issue seriously and show progress in the talks with the Americans so as to avert possible U.S trade retaliation under section 301 of the U.S Trade Act.

69 PATENTS (SINGAPORE)

Pharmaceutical patents are available for both products and processes. Patents which are registered in the U.K may be registered in Singapore, but registration must be carried out within three years of the date on which the patent was issued in the U.K. Application must be made by a resident agent and should include a certified copy of the specification of the U.K or European (U.K) patent.

A patent lasts as long as the corresponding U.K or European (U.K) patent, from the date of a Certificate Of Registration. Under the compulsory licensing provisions of the Singapore Patents Act, the government reserves the right to buy pharmaceuticals from sources other than the patent holder, or a licensee, for use in government hospitals, institutions and dispensaries only.

70 TRADEMARKS (SINGAPORE)

Trademarks are available indefinitely, subject to the payment of periodic renewal fees. A trademark may be withdrawn by the proprietor at any time.

Registration of the trademarks is governed by the legislation contained in the Trademarks Act and the Trademark rules 1968. Foreign trademarks receive no protection unless registered in Singapore. Applications must be made through a local resident. There are no special provisions concerning pharmaceutical trademarks exclusively.

FACTORS EFFECTING THE MARKETING SYSTEM OF PHARMACEUTICALS IN THE REGION

71 PARALLEL IMPORTS (SINGAPORE)

To a certain degree we find parallel imports very common in Singapore. In the Scrip report of June 10/87 a series of successful prosecutions by multinational pharmaceutical companies of firms parallel importing products into Singapore appears to have had the effect of discouraging parallel importers from engaging in this practise. It is expected that the new drug registration scheme will help reduce the number of parallel imports on the market.

Scrip announced that in early 1987, Glaxo was awarded an injunction by the Singapore High Court preventing a local company, Regent Pharmacy from importing Zantac (ranitidine) from an undisclosed U.K source. Regent was sued on the grounds of patent infringement and the firm undertook in future only to purchase Zantac from Glaxo's local subsidary.

SK & F was also successful in preventing parallel importing of Tagamet and Wellcome also has taken legal actions on the same grounds. Under the new product registration scheme an import licence will be awarded to any party wishing to import a preparation whose product licence is held by any other company provided that he can prove the product is in every respect identical to that which carries a product licence and that it is manufactured by the same manufacturer. Import licences issued under these conditions will be granted only on a per consignment

basis. Despite the fact there is adequate patent protection in Singapore (any patent granted in the U.K can be automatically be registered in Singapore) there is still some controversy over the compulsory licensing clause which is written into patent legislation and which allows the government to purchase parallel imports or copy products for use in the government maintained medical institutions without legal reprisals from the originating company.

The government is required by law to notify the patent holder whenever it imports a product from another source, but the law does not specify what information must be provided by the government and it is understood that companies can find it difficult to ascertain the source of the product and the price paid. Royalties must be paid to the patent holder, but these shall in no case exceed 5% of the net ex - factory sale price in bulk.

A letter to The News Straits Times described the compulsory licensing clause as " an instrument to circumvent patents mercy in order to save money ". While the industry maintains that it does not oppose the compulsory licensing legislation in principle since it empowers the government to obtain important products which for commercial reasons, a patent holder might choose not to market it in Singapore it argues that it needs to be kept more fully informed by the government in order to guard against situation arising in which part of the consignment is diverted to the private sector.

72 LABELLING REQUIREMENTS

With effect from April 1987, the pharmaceutical companies in Singapore are required to label certain medicinal products with expiry dates under the new medicines (labelling) regulations. The scheduled products are :

1) Acetylsalicylic acids and its salts
2) Alpha Tocopherol and its salts
3) Anaesthetic Ether
4) Antibiotics and antifungal agents
5) Antitoxins
6) Ascorbic acid and its antifungal agents
7) Antitoxins
8) Ascorbic acid and its salts
9) Blood products
10) Chloral Hydrate
11) Cyanocobalamin
12) Ferrous salts
13) Glyceryl Trinitrate
14) Insulins
15) Nicotinamide
16) Paracetamol
17) Parldehyde (oral and systemic)
18) Pyridoxine Hydrogen chloride
19) Retinol and its salts
20) Sodium Nitrite
21) Sodium thiosulphate injection
22) Thiamine / aneurine and their salts
23) Vaccines

Under the new regulations all dispensed medicines must be clearly labelled with the following particulars:

1) Name of patient.

2) Name and address of the institution where the product is dispensed.

3) Date of dispensing.

4) Directions for use.

5) Either generic or brand name. If generic name is used, the quantity of active ingredient.

It is hoped that these measures will contribute to greater safety since some doctors have traditonally been reluctant to provide patients with information on the medicines they are taking in an attempt to prevent them from purchasing the product elsewhere. This had dangerous consequences on occasions such as in the case of accidental or suicidal overdose when hospitals have been unable to identify the product.

73 TRIAL TENDERS

The Singapore government will in future experiment with issuing tenders to the private sector pharmaceutical industry to obtain supplies of medicines for use in government maintained hospitals and dispensaries. If the new system proves to be economically advantageous, government pharmaceutical manufacturing will cease to operate. The government's manufacturing facilities have reportedly become too small for the demands placed on them, and need to be updated. It was therefore decided to ascertain whether purchasing pharmaceuticals from the private sector would be cheaper than the costs involved in upgrading the government's own plant.

While the industry agrees that the new area of business represented by the government tenders is of considerable importance, it notes that the profit margins are extremely slender since the price offered must be low enough to undercut parallel imports and generics. The government tender will definitely lend to further growth in the private sector and greatly enhance the attraction of Singapore for further pharmaceutical investments.

THAILAND

74 DRUG ACT AMENDED IN THAILAND

Thailand's main body of legislation controlling pharmaceutical provision and the pharmaceutical industry has been amended. Several significant changes have been introduced but the most important is concerning the new labelling requirements. Under the amended act which comes into effect after 31/12/88 the following information must be contained on the product label at the time of the product's entry into Thailand.

Previously certain items can be added in Thailand before sale ie.:

1) Drug name.
2) Thai registration number.
3) Quantity of the drug.
4) Name and quantity or strength of the active ingredients of the drug must correspond with the drug formula registration.
5) A number or letter indicating the time of production or analysis.

6) Name of the city and country of origin.

7) The day, month, and year of production.

8) The words " dangerous drug ", " especially controlled drug", " drug for external use ", or " drug for local use ", in clearly visible letters.

9) The words household medicines if applicable.

10) The words for veterinary use if applicable.

11) The words expiry date in Thai (a new requirement) and the day, month and year of the expiry in the case of antibiotics, vaccines and serum products only.

Another requirement which did not feature in the original act is that each imported product must show the name of the importer and the city where the company is registered. International companies will find the new requirements very difficult to follow, since all the imported drugs uniformly produced for sale world wide and it would be very inconvenient to be forced to produce local labels with the expiry date in Thai and to enter all the required information on both outer, and inner packaging as well as on very small labels, ampoules and vials in the new legislation.

In its submission to the Thai F.D.A, the P.P.A argues that it will be time consuming and costly to open all imported pharmaceuticals to add the required details to inner labels and that to break the seals will also enable adulteration and illegal subtitution of drugs.

The Thai F.D.A has made new provisions for the industry. In future pharmaceutical companies will no longer be classified as

retail outlets and will therefore be free to move premises without being affected by the country's dispensary quota rule.

The F.D.A has also introduced changes to the Thai Red Cross and the G.P.O. At present, these bodies are free to produce, sell or import pharmaceuticals without needing to apply to the F.D.A for registration. With the new ruling, the G.P.O will be brought within the framework of the law. It is also seen that in future government hospitals will no longer be permitted to import pharmaceuticals which are not registered in Thailand for the purpose of clinical trials.

75 EXPIRED DRUGS

The Malaysian government takes a very serious stand point on drugs. It has banned 7 pharmaceuticals drugs in 1987, but has failed in its attempts to prevent expired drugs from being channelled to consumers.

All medical drugs sold have a shelf life and it is common in Western countries that old or expired stock are destroyed or replaced. In fact it is an offence to sell medical drugs past the printed expiry date. With proper and tough legislation the consumers are protected. But in Malaysia it is a different story in medicine shops and pharmacies. The main reason is the fact a few giant pharmaceutical companies practise a unilateral regulation. All products referred to in the price list are sold on a non - returnable basis. The company does not accept the return of expired goods for credit or replacement. The poor owner or trader in this field is thus saddled with stale medical drugs

and where the shelf life has expired. He has to sell them off to the unsuspected public to recoup his losses. Unless the government takes a positive stand on this, the Malaysian consumers will be victims and be ripped of by the pharmaceutical giants.

76 PROBLEM DRUGS

Many developed countries have banned or restricted the use of a number of drugs that are readily available in the 3rd world. The best known example is anabolic steroids used to stimulate growth or appetite in children. It has been banned in the West because of side effects like irreversible virilisation in females and liver damage.

Antibiotics have been used to treat colds and diarrhoea. Medical journals have pointed out that they are useless against such illness. Colds are caused by viruses and antibiotics are only effective against bacteria. According to the British formulary, many forms of diarrhoea are not caused by bacteria. But even if bacteria is suspected, antibiotics should be avoided in many cases because they may prolong rather then shorten the time taken to control diarrhoea.

In Thailand a virtual " drug cocktail " is on sale as a popular cure all. The " Yachud Package " contains an assortment of tablets purporting to cure a variety of illness from food poisoning to V.D. The package contains Dexamethasone (a corticosteroid , paracetamol (analgesic), an aspirin phenacetin

caffeine combination, chlordiazepoxide (tranquiliser) and chlorpheniramine and cyprohetadine (antihistamines). Benoxaprofen an anti inflammatory analgesic marketed by Eli Lilly as (Opren) or (Oraflex) has been removed from the U.K because of 61 deaths. However the company maintains that the drug is safe when used as directed.

Ciba Geigy's antidiarrhoea drug Entero Vioform (Clioquinol) has been withdrawn but is still on sale as an O.T.C product in Thailand and Indonesia. In Malaysia, where enforcement is slack, dumping of sub standard drugs occurs. The former Malaysian Deputy Minister Of Health Mr.Pathmanaban warned of the growing illegal imports and dumping of poor quality drugs. New regulations promulgated in Malaysia last year to control the manufacture and sale of drugs have yet to be widely enforced.

77 THE ISSUE OF " HALAL " FOR MUSLIMS

The Muslims in Malaysia are becoming concerned these days on the issue of gelatin and alcohol in toiletries, cosmetics and pharmaceuticals. As one is aware, Muslims are forbidden to touch pork and alcohol because of religious reasons. Somehow or the other products containing gelatin and alcohol reach the hands of Muslims and this issue has been having some disturbing effects.

Sometimes it is unavoidable if a person consumes a cough mixture which contains alcohol, menthol or swallows capsules with gelatin coating. Two schools of thought has developed on the issue of " halal " ie. the Egyptian version and the Iranian ideas. The following article published in Cairo with English and Malay

MUSLIM BASED TOILETRIES

Manufacturer/Distributor	Branding
1) Zaitun Industries Sdn Bhd	Zaitun
2) Bristol Myers (M) Sdn Bhd	Mawar
3) Aslam (M) Sdn Bhd	Safi
4) Perindustrian Medinah	Medinah
5) Aisyah	Aisyah
6) Pernas Sime Darby	Al Murni

	Brand	Products
1)	Zaitun	Talcum Powder, Shampoo, Lotion, Cream
2)	Mawar	Talcum Powder, Shampoo, Lotion
3)	Safi	Talcum Powder, Shampoo
4)	Medinah	Talcum Powder
5)	Aisyah	Talcum Powder
6)	Al Murni	Shampoo

Source : Johnson & Johnson Malaysia

MINYAK WANGI BERALKOHOL HALAL DIPAKAI OLEH ORANG2 ISLAM — AHLI FATWA AZHAR

Dari Zainol Fakir

KAIRO 13 Feb. — Minyak wangi atau sebarang jenis bau - bauan sama ada yang mengandungi alkohol ataupun tidak, adalah halal dipakai oleh orang - orang Islam sekalipun ketika dalam mengerjakan sembahyang atau ibadat yang lain.

Demikian dijelaskan oleh seorang anggota Majlis Fatwa Azhar, Sheikh Ahmad Hassan Mussalam yang ditemui di sini baru - baru ini.

Katanya, hukum syarak menentukan bahawa arak atau alkohol itu kalau jadi cuka atau beku, maka bertukar daripada bentuk asalnya oleh yang demikian maka hukum terhadapnya juga berubah.

Beliau menjelaskan bahawa arak atau alkohol bila berubah bentuk melalui campuran seperti dalam minyak wangi, bau - bauan atau atar tidak sepatutnya dikatakan arak yang diharamkan oleh hukum syarak.

Sheikh Ahmad Hassan menjelaskan bahawa arak dan akhohol adalah haram diminum kerana memabukkan dan perkara ini adalah jelas dalam hukum syarak.

Tetapi, katanya, minyak wangi, bau - bauan beralkohol ataupun yang tidak mempunyai kewangian dan sedap, tidak patut dikatakan dari arak yang diharamkan oleh hukum syarak.

SHEIKH AHMAD HASSAN

"Perkara tersebut, adalah tidak munasabah lebih - lebih lagi kita mengetahui bahawa minyak wangi dan atar adalah menjadi bahan yang boleh memusnahkan kuman - kuman dalam udara yang memudaratkan manusia," katanya.

Beliau menegaskan bahawa arak dan alkohol bila berubah bentuk melalui campuran akan berubah pula hukum terhadapnya.

Dagi soal sembahyang pula, Sheikh Abu Salam menjelaskan bahawa soal syarat 'sah' sembahyang ialah pakaian dan diri kita suci dari najis.

Dalam hubungan itu beliau berkata bahawa minyak wangi, atar dan esen yang mengandungi arak atau alkohol itu bukan najis.

Dengan itu maka sahlah sembahyang seseorang sekiranya dengan memakai bau - bauan dan minyak wangi yang mengandungi arak atau alkohol, jelasnya.

Perlu dijelaskan bahawa fatwa mengenai halal memakai minyak wangi beralkohol telah dikeluarkan oleh Majlis Fatwa Azhar beberapa tahun yang lalu di Mesir. Soalan itu ditanya kepada Sheikh Abu Salam untuk pengetahuan masyarakat Islam di Malaysia.

Source : Utusan Malaysia, 4th Feb 1988

translations are given below. It was extracted from the Utusan Malaysia on February 4th, 1988. The article is self explanatory.

Zainol Fakir's article says that perfumeries or any kind of perfumed items with or without alcohol can be used by Muslims even during prayers. This ruling was made recently by Sheikh Ahmad Hassan Mussalam, a member of the Muslim Judicial Council (Majilis Fatwa Azhar - is an authoritative Muslim Judicial Council)

He said that Muslim law stipulates that when the original form of liquor or alcohol is altered, therefore the ruling to it (the altered liquor or alcohol) also changed accordingly. It was added that it was improper to rule that the liquor or alcohol which is mixed with perfume oil as " haram " (not acceptable to Islam) because the liquor or alcohol has changed its original form. But he mentioned that the liquor or alcohol is " haram " for drinking because of its intoxicating nature and this ruling is clear in the Muslim Law.

Sheikh Ahmad added that perfumeries or items mixed with liquor or alcohol must not be categorised with that type / kind of liquor or alcohol which is defined as unacceptable in the Muslim law. The issue is more unreasonable when it is seen that perfumeries are elements which can kill germs (harmful to human beings) in the air. On the question of prayers, it is mentioned that the condition on whether the prayers are acceptable or otherwise depend on whether the clothes and the human body were free from filth.

In relation to this it is seen that perfumeries or alcohol cannot be defined as filth. Therefore, prayers performed by someone using perfumeries mixed with liquor or alcohol is acceptable.

It is worth noting that the same ruling was made by the Council a few years ago in Egypt. The same question was posed to Sheikh Abu Salam for the benefit of Malaysian Muslims.

Thus, from this article it can be concluded that to a certain extent the rules can be relaxed. Most multinationals, American and European are careful in what they produce and sell since they do not wish to be caught in the religious issue.

Many Muslim based companies which have mushroomed these days have headed for the toiletries market and are trying to tap the Muslim consumers. As mentioned earlier the religious issue has still not penetrated the pharmaceutical segment yet but it will not be long when people will be concerned on alcohol and gelatin in the medications they consume.

INTER COUNTRY PRICING

An inter country pricing study was conducted by comparing the prices of pharmaceutical products of multinational companies in Thailand, Malaysia and Singapore.

The multinational companies chosen for this exercise were Janssen which belongs to the Johnson & Johnson group of companies, Roussel, May & Baker, and Pfizer. The pharmaceutical products were picked at random from the price lists and were not judged from their sales, efficacy or performance.

The only major criteria involved was that their strengths and packaging remained the same in all 3 countries thus making the calculations much simpler.

The prices of the drugs were adjusted to Malaysian ringgit from Thai Bahts and Singapore dollars. For calculation purposes, 100 Singapore dollars was fixed as equivalent to Malaysian Ringgit $142 and 100 Malaysian ringgit as equivalent to 1110 Thai Bahts.

Analysis on the prices showed that the prices of pharmaceutical products were extremely high in Singapore when compared with the 3 countries. This is due to the following reasons :-

1) The strong Singapore dollar which makes prices expensive.
2) The sky rocketing cost of health care treatment in Singapore.

Fig 10

COMPARATIVE PRICE EVALUATION

Product	Strength	Packaging	Malaysia Pricing M$	Singapore Pricing		Thailand Pricing	
				S$	M$	Baht	M$
JANSSEN							
DAKTACORT CREAM	15gm	TUBE	13.45	10.30	14.63	43	3.87
STUGERON	25mg	250's	54.00	42.00	59.64	497	44.77
MOTILIUM	10mg	500's	159.66	100.00	142.00	1000	90.09
HISMANAL	10mg	100's	53.33	40.00	56.80	450	40.54
ROUSSEL							
SOFRA-TULLE	10cmx10cm	50's	40.00	35.00	49.70	375	33.78
TOPICORTE SKIN CREAM	15g		7.38	6.40	9.09	66	5.95
TOPIFRAM SKIN CREAM	15g		7.70	7.00	9.94	72	6.49
PROCTOSEDYL SUPPOSITORIES		12's	6.60	6.00	8.52	44	3.96
PROCTOSEDYL OINTMENT		15g	7.29	6.60	9.37	44	3.96
RYTHMODAN CAPS	100mg	100's	46.40	46.40	65.89	360	32.43
SOFRADEX E/E DROPS	8ml		5.05	4.60	6.53	44	3.96

Source : Pfizer, Roussel, May & Baker, Janssen

COMPARATIVE PRICE EVALUATION

Fig 11

Product	Strength	Packaging	Malaysia Pricing M$	Singapore Pricing		Thailand Pricing	
				S$	M$	Baht	M$
SOFRADEX E/E OINTMENT	5g		4.84	4.40	6.25	39	3.51
MAY & BAKER							
ASCABIOL EMULSION	200ml		12.60	13.20	18.74	100	9.00
AVOMINE TABS	25mg	250	44.80	38.40	54.53	405	40.50
DE-NOL TABS	120mg	112	112.00	106.00	150.52	1337	120.45
FLAGYL TABS	200mg	250	108.30	100.30	142.43	616	55.50
	400mg	100	77.00	64.80	92.02	500	45.05
INJECTION	100ml	10	266.70	282.70	401.43	1895	170.72
INTRAVAL SODIUM INJECTION 5%	1.0gm	10 Vials	60.80	50.80	72.14	653	59.82
LARGACTIL TABS	25mg	500	37.80	41.60	59.07	242	21.80
INTRAVAL INJ. 2.5%	2ml	10	18.00	17.60	24.99	169	15.23
ORUVAIL CAPS	100mg	100	97.60	82.70	117.43	842	75.96

Source : Pfizer, Roussel, May & Baker, Janssen

COMPARATIVE PRICE EVALUATION **Fig 12**

Product	Strength	Packaging	Malaysia Pricing M$	Singapore Pricing		Thailand Pricing	
				S$	M$	Baht	M$
PHENERGAN INJECTION 2.5%	2ml	10	18.00	17.60	24.99	170	15.31
PIPORTIL INJECTION	1ml	10	128.00	132.00	187.44	1263	113.78
SECADREX		28	26.40	19.60	27.83	232	20.90
SECTRAL CAPSULES	200mg	500	290.00	276.00	391.92	2600	234.23
SURMONTIL TABS	25mg	500	158.00	144.00	204.48	1225	110.36
PFIZER							
VIBRAMYCIN CAPSULE	100mg	100's	246.00	246.00	343.64	1430.5	128.87
FCT	100mg	100's	246.00	246.00	343.64	1105	99.55
TERRAMYCIN CAPSULE	250mg	100's	104.00	104.00	147.66	600	54.05
CEFOBID IM/IV	1.0gm	Vial	34.70	34.70	49.27	270.5	24.37
MINIPRESS TABLET	1mg	250's	82.50	82.50	117.15	554	49.90
	2mg	250's	122.60	122.60	173.24	815	73.42

Source : Pfizer, Roussel, May & Baker, Janssen

Fig 13

COMPARATIVE PRICE EVALUATION

Product	Strength	Packaging	Malaysia Pricing M$	Singapore Pricing		Thailand Pricing	
				S$	M$	Baht	M$
COMBANTRIN TABLET	125mg	100's	66.00	66.00	93.72	416	37.48
DIABINESE TABLET	250mg	1000's	340.00	340.00	482.80	2171	195.59
FASIGYN TABLET	500mg	100's	150.00	150.00	213.00	1115	100.45
VISINE OPHTHALMIC SOLUTION		15ml	5.00	5.00	7.10	50	4.50

S $100 = M $142
M $100 = BATH 1110

Source : Pfizer, Roussel, May & Baker, Janssen

Eventhough Singapore has a duty free port status it has not helped much to reduce the cost of drugs.

Malaysia comes in second after Singapore as far as prices are concerned. Thailand happens to be the cheapest of the 3 countries. This shows that with a broad based pharmaceutical industry and the government promoting more of generics, the prices of drugs are low and remain within the reach of the lowest wage earner.

78 PRICE CONTROL

A sub committee on drugs and medical supplies has been set up in Thailand as part of the government's price fixing and antimonopoly policies. The industry is concerned that this may be precursor to the private sector price controls in what has been until now a relatively free market.

The main area of responsibility of the new pricing committee would be to study and analyse pharmaceutical prices and the conditions giving rise to them with a view to introducing "controlling measures". While rigorous price controls exist for products on Thailand's National List Of Essential Drug the extent of control on prices in the private sector has traditionally been restricted to exhortations on the part of The Ministry Of Public Health for companies not to be excessive when implementing price increases.

Many industry executives argue that the price system has actually resulted in increased government pharmaceutical spending, since

companies whose products would have suffered very radical price cuts withdrew from N.L.E.D leaving only local generics which under the new system were permitted considerable price rises.

In Malaysia, eventhough the Ministry of Health has introduced registration requirements through the Drug Control Authority the Ministry has not done much on price controls. For example the price range for brands of paracetamol (an analgesic) sold in Malaysia shows a seven times difference between the cheapest and the most expensive. Thus because of this price difference, the Consumer Association of Penang has called on the Government to fix a level for prices of essential drugs needed for primary health care and related raw materials. The C.A.P also wants the Government to ensure that all raw materials and packaging materials are of an acceptable quality and are procured from international sources at competitive prices.

79 Privatisation

The Malaysian government is considering the privatisation of the pharmaceutical laboratory and store. The government intends to hand over the responsibility of buying and storing medicines for its hospitals and health centres to a private company. In this way the government hopes to save money which would otherwise has to be tied up in supplies which it has to maintain. The general medical store supplies M$70 million worth of drugs and other medical items to government hospitals, clinics and health centres. Of this only 10% - a variety of drugs, ointments and solutions are manufactured by its own laboratories. The rest

come from private companies which import 50% of the items supplied and manufacture the remaining 40%.

The plans for privatisation of the government medical store has sent shock waves through the pharmaceutical industry. It is believed that the profit motive of a private company taking over the store would mean an increase in the price of the medicines. At the same time the existing industry is left out. More than half the local manufacturers will have to close up as they rely mainly on Government purchases. The company which has been chosen to privatise the medical store is United Engineers Malaysia, which is owned by U.M.N.O the main component party of Barisian National which rules the country. It is believed that such a privatisation move could discourage foreign investment in this field and would cripple the many " Bumiputra " firms tender to supply drugs. These " Bumiputra " firms were established in line with the New Economic Policy. Thus the Government should seriously think about its privatisation policies before it is implemented. One wrong move could damage the nation's credibility.

80 <u>DUTIES AND SURCHARGES (Malaysia)</u>

The continuing duties and surcharges levied on both active and inactive process materials result in a disincentive against more local drug manufacturing investment. Only very few raw materials are available locally. Imported finished products are duty free while for raw materials there is a 5% surtax on some formulations categorised as non - poisons. Other items such as flavouring agents , food, colouring and glass containers are taxed 5%, 25%,

and 50% respectively. Other Government structures also trouble the industry such as a revision to the the patents legislation in 1983 that enables the government to waive patents in tendering for public health supplies.

According to the Managing Director of Sterling Drug, Mr. Burt Nyberg the abolition of import duties on raw pharmaceutical materials may provide a powerful impetus for the growth of the local pharmaceutical industry and also help local pharmaceutical companies to be more competitive. Mr. Nyberg said, like other local pharmaceutical companies Sterling Drug imported nearly 100% of its raw materials. Furthermore the pharmaceutical industry in Malaysia is in an infant stage and the local market is too small to justify the heavy capital investment in manufacturing them locally. Sterling Drug on the other hand has captured major share of the pharmaceutical market. Its major products such as Panadol, Cortal and Eye Mo controls some 60% of the respective pain relief, medicine and eye drop markets while Breacol is still the leader in the local cough mixture market controlling 40%.

THE MALAYSIAN PHARMACEUTICAL INDUSTRY

81 The pharmaceutical industry in Malaysia was worth M$350 million in 1985 which jumped by 66% from a figure of M$210 in 1981. It is expected in 1988 the business will be worth more than M$400 million. Growth during the past few years has been between 10% to 15%. It has been reported that the per capita spending on drugs has increased from $15 in 1980 to $23 in 1985. This figure is still below the Japanese capita spending of $184 in 1984. Thus there is room for growth in the Malaysian pharmaceutical industry.

According to the Malaysian Industrial Development Authority, pharmaceuticals encompass an extremely wide range of products from human to veterinary medicaments, and includes cosmetics, toiletries and certain borderline agriculture products.
There has been some conflicting reports as far as manufacturing is concerned. According to M.I.D.A the industry produces some M$50 million ringgit worth of pharmaceuticals per year but the Permodalan Nasional report speculates the pharmaceuticals manufactured to be worth M$155 milllion in 1985, a significant improvement from M$62 million in 1980. Malaysia definitely lags behind Thailand, Indonesia and Taiwan by 10 -20 years in terms of pharmaceutical technology and manufacturing capabilities. As it is seen, the pharmaceutical processing is termed as secondary manufacturing.

About 2/3 of the local drugs and medicines in Malaysia are

imported. However, significant increase in production has improved the percentage of local production to import from 26.4% in 1980 to 37% in 1985. Based on average growth rate of 10% per annum the pharmaceutical industry is expected to grow from M$600 million in 1990 to M$1 billion in the year 2000.

82 THE MARKET

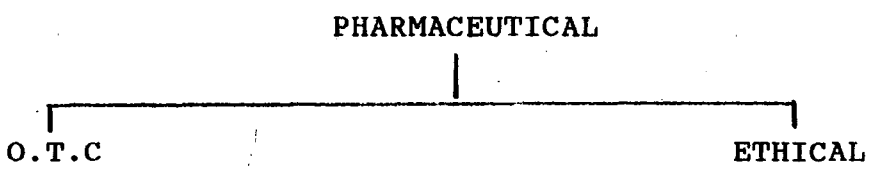
There are about 20,000 different drugs available in the market. This information was issued by the Consumer Association of Penang. They can be classified under 19 categories.

Pharmaceutical Classification	Market Share(%) 1977	1980	1983
1) Alimentary system	2.88	5.72	9.59
2) Cardiovascular system & diuretics	4.88	8.68	8.52
3) Respiratory system	7.27	9.83	8.61
4) Neuro Muscular system	25.61	16.96	16.66
5) Endocrine drug	1.05	1.71	1.45
6) Contraceptive agents	2.38	1.46	1.19
7) Antibiotics	17.43	18.13	16.62
8) Other Chemotherapeutics	9.37	9.49	4.19
9) Genito urinary system	1.15	1.82	1.5
10) Metabolism	0.77	1.38	0.26
11) Vitamins & minerals	4.00	4.75	7.60
12) Nutritions	6.83	3.69	5.67
13) Eye,ear, mouth/throat	4.40	2.43	6.16
14) Dermatologicals	8.90	11.66	8.34
15) Anaesthetics -local &	1.43	0.63	0.56

	general			
16)	Diagnostic aid & test preperation	0.64	0.84	0.46
17)	Antidotes & immunologicals	0.30	0.26	0.96
18)	Intravenous solutions	0.11	0.36	1.19
19)	Miscellaneous	0.60	0.20	0.47
	Total	100.00	100.00	100.00

As indicated in the table the market share for circulatory ailment drugs has increased from 41.79% in 1977 to 43.60% in 1983. The increase highlights the changes in disease pattern in the last decade, which moved from infectious disease to disease of the circulatory system. These changes have necessitated the introduction of new drugs tailored to counter these ailments. Thus, the demand for drugs used in the treatment of circulatory system ailments is expected to increase further.

Pharmaceuticals and medicines can be broken down into 2 major categories ie. prescription or ethical drugs and over the counter medications (O.T.C)



In Malaysia it is normal for doctors to dispense drugs.. The percentage of prescription and over the conter (O.T.C) drugs in 1985 was 60% and 40% respectively.

However the situation could turn around in the year 2000 when O.T.C would grab about 60% of the market. The growing trend towards self medication could probably be the answer for the O.T.C's growth. Self medication is more popular among the populace because it is cheaper and more convenient than seeking treatment in clinics and hospitals. In developed countries self medication accounts for 60% of the total drugs consumed as compared to 40% in Malaysia. The other factors that could contribute to the reversed scenario are 1) population growth 2) improved economic conditions 3) improved lifespan 4) increase in the number of drugs given O.T.C status.

83 TRADITIONAL DRUGS

In Malaysia and rest of Asia it is not peculiar to see traditional medicines being preferred to Western medication. In Malaysia traditional drugs preferred by Malaysians are largely influenced by their ethnic origins.

The traditional drugs of the Malays are made from the mixture of herbs, leaves etc. and is in powdered form. The composition are kept strictly within the family. In addition to these in the rural areas there is the "Pa Wang" who heads a village and the rural folks especially the Malays look towards him for help during natural calamities. If there is an outbreak of cholera the "Pa Wang" has spiritual powers to stop it. Next to the "Pa Wang" there is the "Tok Bomoh" who is somewhat like the African medicinal man. He is more or less a farmer and in most instances

his expertise with traditional medicine is unbelievable. Last of all there is the "Florence Nightingale" of the village who is the village nurse or the "Bidan". Her services are sought during child birth and she takes care of the mother and child after the delivery of the baby.

The Chinese community prefer their traditional Chinese drugs. These medications are sold by Chinese druggist who number about 3,500. They supply roots, herbs, ginsengs etc which are from China and Korea. No wonder it is surprising that the Chinese community in Singapore reacted strongly to the governments proposal to regulate the traditional drug business in the republic.

The Indians on the other hand rely on their Ayurvedic medications which are imported directly from India.

84 THE DRUG COMPANIES IN MALAYSIA

The P.A consulting services carried a major research on the industry with the help of the MPTMA (Malaysian Pharmaceutical And Trade Manufacturers Association). In its report for 1986, Glaxo was the top company with a total sales of $13.6 million. Astra came in second with $12.1 million in sales and Pfizer was third with $10.8 million sales. For the first quarter of 1987, Glaxo remained at the top with $4.4 million in sales, Sandoz was second with $2.0 million and Astra was third with $1.8 million.

TOTAL MARKET SHARE OF COMPANIES OPEN REPORT

85 COMPANY 1987 (QUARTERLY)

	$	%
1) Glaxo	4440491	24.25
2) Sandoz - Wander	2029192	11.08
3) Astra	1871041	10.22
4) May & Baker	1741483	9.51
5) Ciba - Geigy	1488021	8.13
6) Roche	1251977	6.84
7) Warrick	1050271	5.71
8) Hoechst	1036451	5.66
9) Pfizer	1022385	5.58
10) I.C.I	744932	4.07
11) Sterling Drug	679357	3.71
12) Johnson & Johnson	513967	2.81
13) Cheah & Fam	441082	2.41

86 TOTAL MARKET SHARE OF COMPANIES OPEN REPORT

COMPANY 1986

	$	%
1) Glaxo	13659534	17.98
2) Astra	12188722	16.05
3) Pfizer	10846081	14.28
4) May & Baker	6350742	8.36
5) Ciba - Geigy	4566200	8.36

6) Warrick	4511650	5.93
7) Roche	4388466	5.78
8) Hoechst	4308563	5.67
9) Sandoz - Wander	4041715	5.32
10) I.C.I	3364378	4.43
11) Sterling Drug	2764723	3.64
12) Johnson & Johnson	2726797	3.59
13) Cheah & Fam	2246898	2.96
Total Sales	75964796	100.0

Thus Glaxo, the British giant has outshined its competitors. Merck Laboratories, one of the world's most respected pharmaceutical companies has not made its presence felt. Even Johnson & Johnson, the world's largest health care company has not established a firm footing in the Malaysian pharmaceutical industry. The pharmaceutical industry comprises of at least 500 establishments ie. manufacturers/distributors, wholesalers, agents, pharmacies and other drug retailers in Malaysia. In all there are 68 distributors marketing 20,000 different drugs.

Drugs and medicines channelled through private clinics and hospitals are also on the increase. Their share of total drugs consumed has increased from 36% to 46.8% in 1985. The growth is due to the increase in number of medical establishments and patients seeking treatment. There are 130 private hospitals and 1,200 private clinics in 1985 as compared to 71 private hospitals and 1,166 private clinics in 1981.

87 PHARMACEUTICAL MANUFACTURING

The size of the current drugs and medicine business in Malaysia should be able to accomodate twenty manufacturing establishments. Pharmaceutical manufacturing can be divided into two stages :

Primary manufacturing such as the manufacture of penicillin and ampicillin (producing raw materials for secondary manufacturers), is absent in Malaysia. This is mainly due to the lack of R & D facilities as understandably, the domestic market is small and there is keen international competition. Although investors have shown interest in the manufacturing of ampicillin, they are reluctant to venture into this field due to the foregoing factors.

These shortcomings are surmountable and the country should look into the possibility of utilising its abundant resources, such as palm oil and petroleum, to form the base for primary pharmaceutical manufacturing. Palm oil is found to be rich with vitamin A,C,E, while Paracetamol can be extracted from crude petroleum derivaties.

88 SECONDARY MANUFACTURING

Secondary manufacturers convert the products of primary manufacturers into saleable products. Some characteristics of the local secondary manufacturing activity are :

1) Less than 20 medium and large establishments where the paid up capital ranges from M$1 million to M$ 10 million.
2) Dominated by foreign owned companies. Locally owned

pharmaceutical manufacturers are few who manufacture mainly generic drugs.

3) Production is directed to relatively simple products which do not require high technology and sophisticated machines.

4) Research and development is insignificant. The cost of developing a new drug in the United States and Japan has escalated eight times over the last 20 years. The time required to develop a new drug has also inceased from 2 years in the early 1960's to 10 -15 years in 1984.

The simpleness of the industry in Malaysia is due mainly to the high cost of production. Given the tarrif structure, it is cheaper to import drugs. The 25% import tarrif on final pharmaceutical products will not reduce imports, nor encourage local manufacturing since the import duty on raw materials such as injection bottles, is high as 46%. Local producers are dependent on foreign manufacturers for the supply of raw materials. Hence, the local manufacturers cannot effectively compete with non Malaysian manufacturing.

89 AGEING POPULATION

Although Malaysia is a relatively young nation, the percentage of people above 65 years of age has grown from 2.7% in 1957 to 3.8% in 1984. Despite the low percentage as compared to many developed countries, the increase in the ageing population will increase the need for medical health care in the future.

Number of new patients receiving hospital and clinical care (Government institution)

	1970	1980
New inpatients ('000)	490	700
Outpatients ('000)	58	75
Average number of hospital days	9	7
Utilisation rate of hospital beds (%)	40.6	53.0

Source : Bulletin Perangkaan Sosial Malaysia ; 1971 and 1981

Ratio of elderly (65years and above) to population

	year	(%)
Malaysia	1984	3.8
Japan	1982	9.6
U.S.A	1981	11.5
France	1982	13.5
West Germany	1981	15.4
Britain	1980	15.1

Source : Long Term Credit Bank Of Japan, March/April 1985 and P.N.B research.

A survey done in England in 1980 revealed that the elderly (defined as people of 65 years and above) were dispensed twice as many participants per year as the national average of six. Drugs, to the majority of people are taken to cure diseases. For

the elderly, however, drugs are taken to alleviate the symptoms of old age such as malfuctioning of the cardiovascular and nervous systems.

90 SOCIETY'S INCREASING LEVEL OF AFFLUENCE

In the past 14 years, Malaysia's per capita G.N.P has increased more than four fold from $1,170 in 1970 to $4,867 in 1984. Malaysians are becoming more health conscious as the level of education and standard of living increased. Per capita spending of drugs has increased from $15.5 in 1980 to $23 in 1985, but is still far below than in major developed countries.

91 FINANCIAL PERFORMANCE OF MARKET LEADERS

Generally the financial performances of the companies in the pharmaceutical industry had improved over the period of 1981 to 1984. Table summarises the average financial results of the market leaders.

	1981	1982	1983	1984
Turnover ($'000)	6490	7460	8230	9420
Profitability ratio				
Gross profit margin (%)	-0.18	1.98	3.14	6.92
Net profit margin (%)	-1.06	0.70	1.10	3.49
Gross return on assets (%)	3.80	5.16	6.97	11.48
Gross return on capital employed (%)	8.42	10.52	10.48	16.30

Gross E.P.S ($)	0.21	0.41	0.52	0.32
Net E.P.S ($)	0.08	0.19	0.23	0.17
Liquidity position				
Current ratio (x)	1.41	1.44	1.33	1.42
Acid test ratio (x)	0.70	0.74	0.72	0.76
Leverage ratio				
Debt to equity (x)	2.95	2.74	2.54	1.52
Debt to assets (x)	0.59	0.58	0.64	0.53
Activity ratio				
Inventory turnover (x)	3.07	4.77	5.02	4.20
Asset turnover (x)	1.32	1.48	1.46	1.50
Dividends ratio				
Dividend per share (%)	13.02	13.85	15.12	18.69
Net dividend cover (x)	1.54	1.33	0.36	1.25
Dividend yield	9.54	10.69	12.89	15.69

The average turnover of the companies had increased from M$6.49 million in 1981 to M$9.42 million in 1984. This was due to an increase in the number of retail outlets in the country, especially in the Klang valley and other major towns in Malaysia. The increase in turnover was also due to the entrance of many new drugs into the the Malaysian market, coupled with the improved advertising performance of many pharmaceutical companies.

Gross profit margins recorded by those companies also indicated

a substantial increase from a negative 0.18% in 1981 to 6.92% in 1984. This was due to an increase in wholesale and retail business as compared to government purchase. Government tenders stagnated at about M$80 million per year for the past few years while market size increased at an average of 10% annually. The margins from government purchases are much lower than that from the private sector, due to the system of tendering adopted by the government.

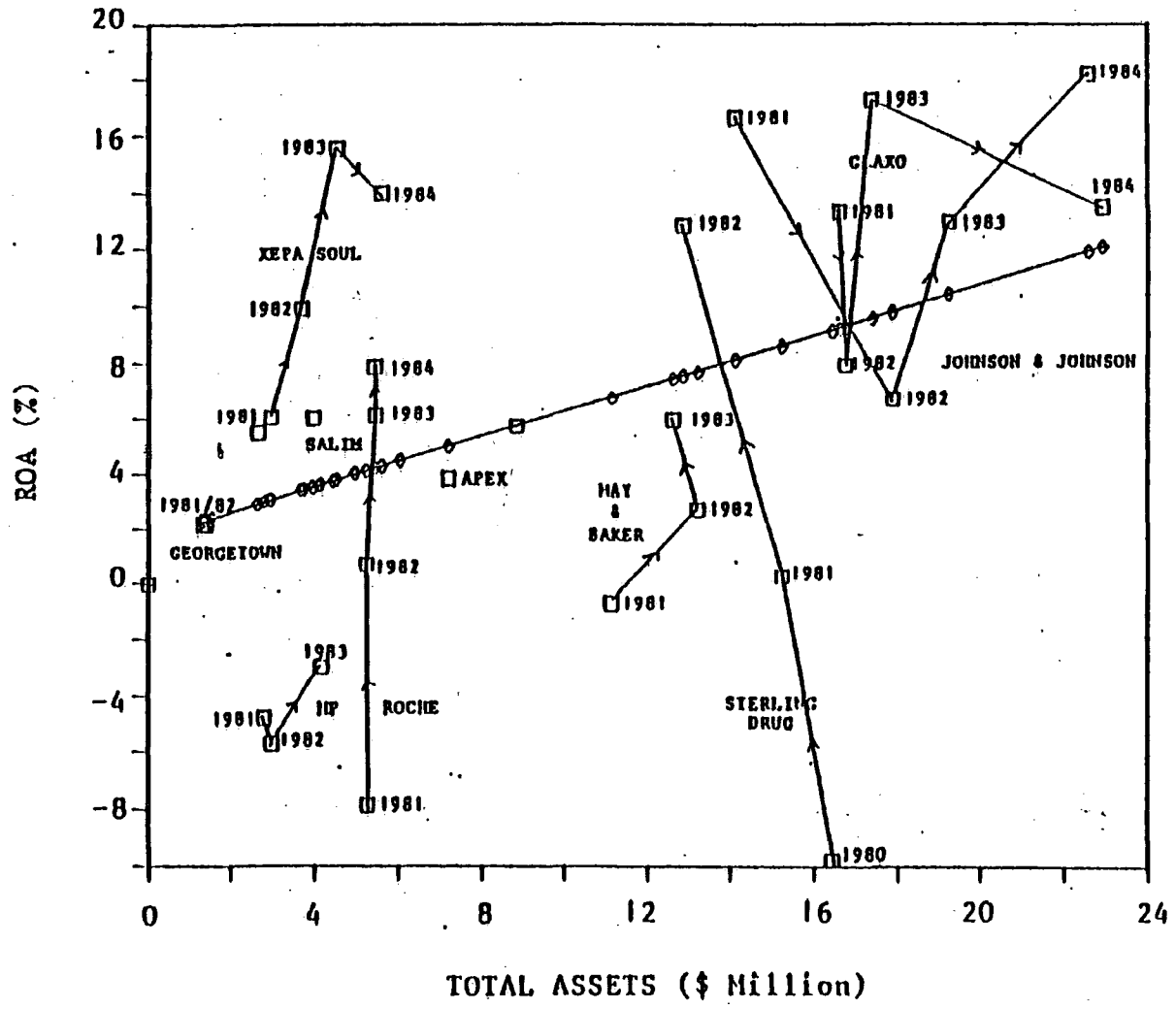
Figure shows the competitive positions of companies in terms of net margin and turnover. A statistical average line indicates a growing trend of margin versus turnover. As turnover increases, the margin also increases. This is indicative of an infant industry in which the market size is expanding.
Xepa Soul Pattinson Sdn Bhd is positioned at the highest point to the margin, while May & Baker Sdn Bhd has the highest turnover with an improved trend in margin. Xepa Soul has an advantage in distribution channels, since it is under Apex Pharmacy Holdings Sdn Bhd a retail chain outlet. Apex pharmacy has an established distribution network throughout the country. However, Apex pharmacy has not been recording better margins due to its diversification into the sales of various products such as toiletries, which yield lower margins. These are, however complimentary items sold together with the drugs and medicines to attract more customers.

Return on assets and return on capital employed also showed an increasing trend. Figures show that position and trend of ROA and ROCE of the companies.

Glaxo Malysia, Syarikat Salim and Xepa Soul performed better than the others. However an improved trend can be seen in the performance of Roche, Sterling Drug and Johnson & Johnson. The statistical average line shows a positive slope indicating that as asset or capital employed increases, the return will also increase. This indicates that the industry is still in its infant stage but it is generally efficient in utilising assets or capitals.

Fig 14

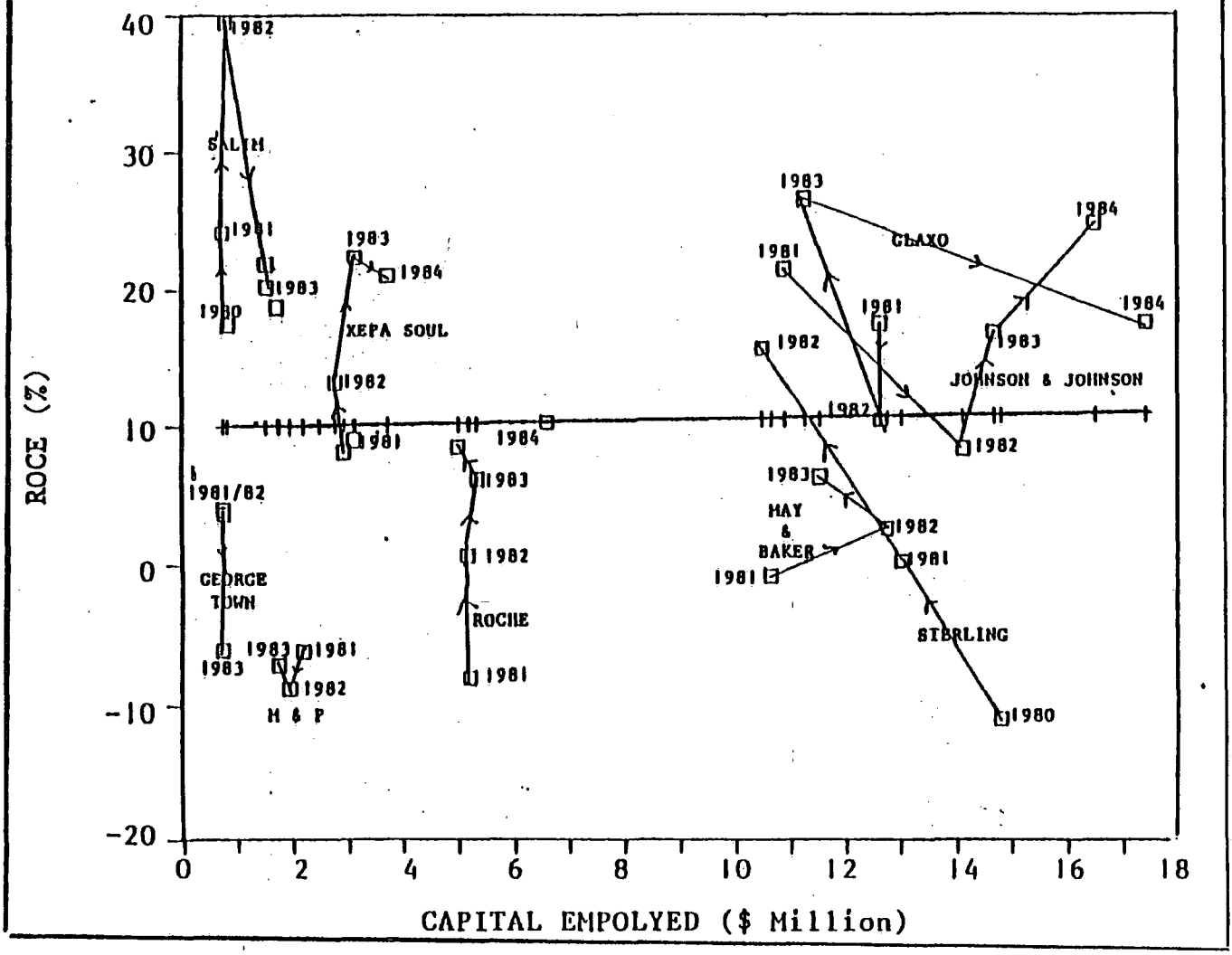
Figure : ROA vs. Total Asset



Source: Permodalan Nasional Berhad. Quarterly Economic & Investment Review, Jan-Mar 1986, Pg 70-86

Fig 15

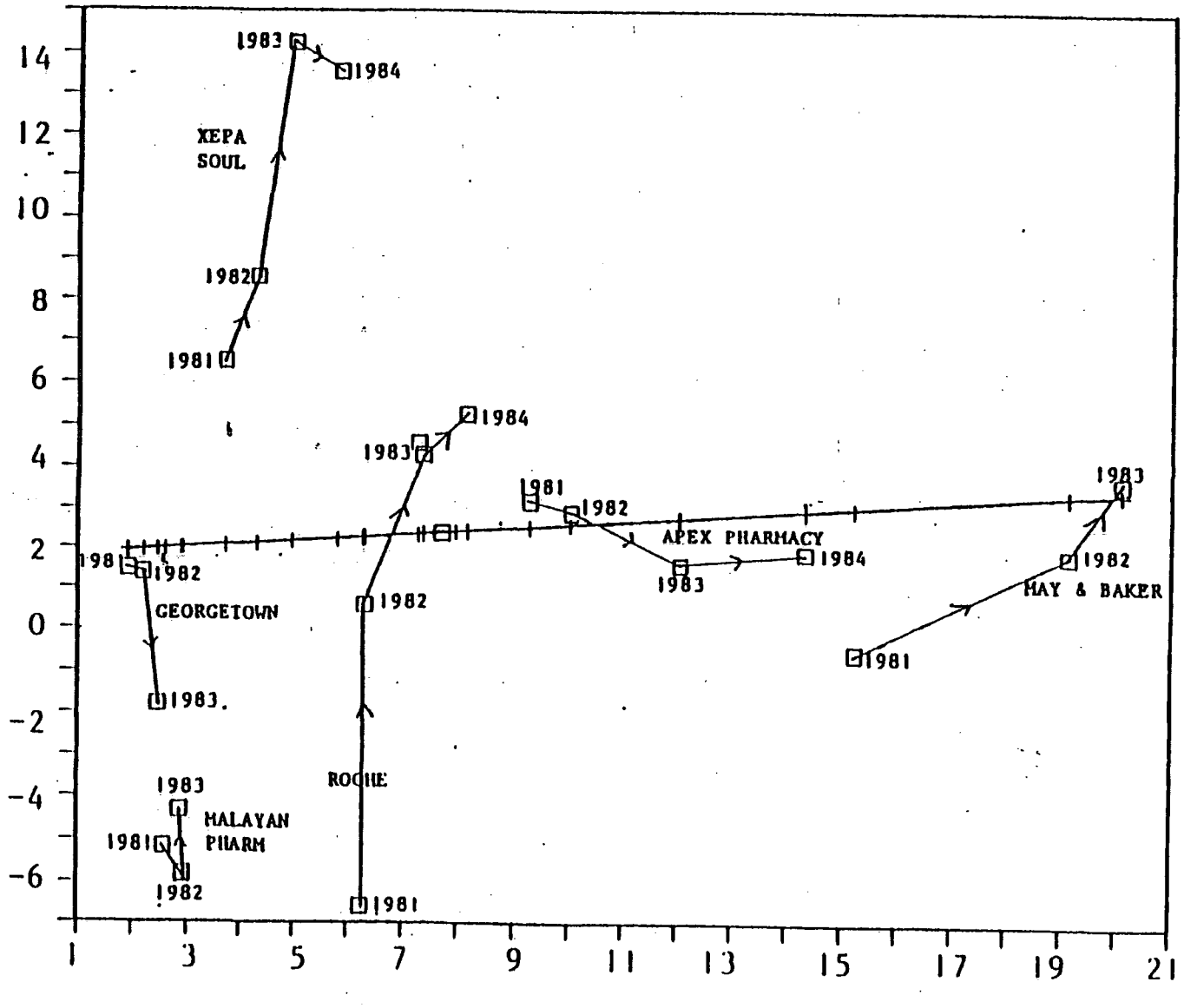
Figure : ROCE vs. Capital Employed



Source: Permodalan Nasional Berhad. Quarterly Economic & Investment Review, Jan-Mar 1986, Pg 70-86

Fig 16

gure : Margin vs. Turnover



Source: Permodalan Nasional Berhad. Quarterly Economic & Investment Review, Jan-Mar 1986, Pg 70-86

MALAYSIA - WORLD'S POTENTIAL VITAMIN E PRODUCER

92 Having proved in its ability to serve as a viable off shore base for the electronic industry, Malaysia will soon stake its claim to become the future world centre for the production and marketing of Vitamin E. In the process it will establish the fact that the palm oil industry not only can contribute to the alleviation of the world malnutrition and hunger but also to the overall health and vitality of rich and poor alike in many countries. A Vitamin E plant (pilot) has already been commissioned in Malaysia and it is the first of its kind anywhere in the world. Vitamin E as it is commonly called contains 2 compounds called Tocopherols and Tocotrienols. Besides its usual positive effect on the general health, Vitamin E is known for its " anti oxidant " ability to slow down the ageing process and to give protection to chronic degenerative illness as well as to promote fertility.

Vitamin E, which comes from traditional sources such as soya bean scum is not enough to meet the world demand, roughly estimated at 7,000 tonnes a year. As the world's 2nd largest source for fats and oils today, palm oil holds the potential to become an alternative or additional source for vitamin E.

On the basis of the current availability of Vitamin E in 1987, the Malaysian palm oil industry could earn as much as M$68 million a year in additional income. This was based on the prevailing Vitamin E price of M$1,000 per kilogramme. By the year 2,000, Vitamin E production from palm oil is estimated to total

1,088 tonnes valued at M$108.0 million a year at current market prices. The Vitamin E produced at the pilot plant comes from a by product of palm oil refining called palm fatty acid distillate (PFAD). The Vitamin E content of PFAD has been estimated at 0.4% a tonne. Based on the Malaysian palm oil output of 4.5 million tonnes in 1987, a total of 170,000 tonnes of PFAD can be obtained from which some 680 tonnes of Vitamin E can be extracted annually.

PHARMACEUTICAL INDUSTRY IN SINGAPORE

93 STATISTICS

There were 31 pharmaceutical companies in 1984, of which 17 manufactured locally. In addition there were 45 agents holding distribution rights for multinational companies.

Total production of pharmaceuticals (by value) in 1984 was S$ 599.3 million of which S$581.5 million was accounted for by exports. In 1982, production was S$109 million of raw materials and S$316.4 million of finished products.

94 PHARMACEUTICAL TRADE

About 97% of locally manufactured pharmaceuticals are exported. Most goods, including pharmaceuticals, enter Singapore duty free. In 1987, a system of import licences was introduced. Importers of products in Category one must obtain a licence by July 1988; licences for pharmaceuticals in other categories will follow. The license is issued by the Ministry Of Health (Inspectorate Section) and is valid as long as the product licence of the products imported, or until a date set on the license. Licenses are only issued to companies registered with the Registry Of Businesses and Companies.

A license is not necessary for the importation of pharmaceuticals which are to be re- exported. However a certificate of approval will be necessary from the Ministry from July 1988.

95 TRADE

The 1975 Medicines Act contains provisions, not yet enforced, for the certification of approval for export of medicines. Pharmaceutical exports are generally 1.5 times the value of imports. The main destinations for the pharmaceutical exports are Hong Kong, Japan, Pakistan and Saudi Arabia. The main sources of imports are China, West Germany, Japan, Malaysia, Switerzland, U.K and U.S.A.

96 CONTROL OF MANUFACTURE

Licensing of local manufacturers is to be introduced in July 1988. Applications for licenses are required to be submitted by 30th September 1987. Application forms are available through the Inspectorate Division Of The Ministry Of Health.

97 PHARMACEUTICAL RESEARCH

The 1975 Medicines Act requires that clinical trials be approved and certified by the Ministry Of Health prior to their commencement.

PHARMACEUTICAL PRICING

The manufacturer or importer may set pharmaceutical prices freely. There is no current government intention to change this.

LABELLING AND PACKAGING

Proposed packaging copy and package inserts will be required to be pre - cleared at registration, when the product registration system is implemented.

The following information will be required on the packaging copy; trade name, name and address of the manufacturer (and importer/ distributor), chemical name, strength, number of doses, full details of excipients, route of administration, dose, directions for use, indications, contra - indications, side effects, warnings, storage instructions, batch number, expiry date, date of manufacture, and product license number. Scheduled poisons must carry a poisons label, and controlled pharmaceutical drug label.

Package inserts will be required to state the following; trade name, chemical name, strength, number of doses, excipients, route of administration, dose, directions for use, indications, contra - indications, side effects and warnings.

The New Medicines (labelling) Regulations 1986 require that an expiry date be displayed on medicines. Initially, this will apply only to a specified list of unstable pharmaceuticals (including aspirin, blood products, vaccines, antibiotics, insulins, certain vitamins, iron salts and others). This has been enforced from April 1987.

98 PRODUCT REGISTRATION

The following products are exempted from registration : raw materials, traditional medicines, extemporaneous preperations, products manufactured for export only and quasi - medical products such as medicated shampoos. Products imported for small

numbers of patients or solely for re - export need not be registered but prior approval must be obtained from the Ministry Of Health.

Each application must include the following : pharmaceutical and pharmacological data, a summary of the manufacturing process (not full details), certificates of analysis from the government analyst or private laboratory, a certificate of free sale from the countries of orign, and samples of the packaging or labels, draft packaging copy and samples of the product.

A separate license is required for each strength, colour, shape and presentation of the product. A product license will be valid for five years, unless a provisional license is issued for three years.

Applications are required for category one products by September 1987. It is envisaged that they will all be licensed or withdrawn by July 1988. No dates for the remaining categories have been issued. Guide books on registration are available from the cashier section of the Ministry of Health and application forms from the Inspectorate section. During the first phase of drug registration, 2,654 products were registered, 2,182 were approved, 51 were rejected, 106 were withdrawn and 315 pending additional information. Registration of phase 2 was fixed till September 30, 1988. Approvals are expected by mid 1989.

99 LEGISLATION

The 1975 Medicines act covers all areas of pharmaceutical manufacture and distribution. However, only the parts relating to promotion, advertising, clinical trials and the registration of pharmacies were being fully enforced by 1987. The Poisons Act and The Misuse Of Drugs Act control the importation of some drugs. New legislation requiring the labelling of the expiry dates of 22 unstable pharmaceutical products was introduced in September 1986. This is to ensure that such products will still be effective when administered to or consumed by end users. More pharmaceutical products will come under this legislation which will be enforced from April 1, 1987 to give sufficient time for pharmaceutical firms to prepare the necessary labelling.

100 PHARMACEUTICAL POLICY

The government is encouraging local manufacture by offering incentives to the medical and pharmaceutical industry in the form of tax concessions (for up to ten years), financial aid, help for support industries and for forign companies free repatriation of profits. Meanwhile, the Ministry Of Health intends to expand its own pharmaceutical production facilities to cope with the increasing demand.

101 THE PHARMACEUTICAL INDUSTRY

In 1987, new legislation was introduced requiring companies to obtain a license for the manufacture or import of pharmaceuticals. They must be obtained by July 1988 and will only be given to companies registered with the Registry Of Businesses and Companies.

The local manufacturing industry is small by international standards, but expanding. A number of multinational companies manufacture their raw materials locally eg. Glaxo manufactures half of its world supply of Ranitidine in Singapore. Much of local production is exported, although 80% of domestic needs are met by local manufacture. The Ministry of Health owns a company which formulates, compounds and packs generics for government establishments.

102 DRUG REGISTRATION

Following the recent announcement by the Minister Of Health that preparations are being made to introduce drug registration in Singapore, members of S.A.P.I held a special meeting with the officials of the Ministry Of Health on the issue. The Ministry officials explained that a separate product licence was required for colour, shape and strength of the same presentation of the same medicinal product. Thus for example a separate product licence will be required for each of the following products :

1) Inj. tetracycline
2) Tab. tetracycline 250 mg. shaped round and coloured red
3) Tab. tetracycline shaped round and coloured green.

However different package sizes of the same product in the same strength may be sold under one product licence eg. tetracycline capsules 250 mg. packing of 100's, 500's and 1000's need only one product licence. Any changes of the colour or shape of tablets after product licence has been issued would render the licence invalid. At the time of application of product it is necessary

to enclose samples of packaging and their respective labels. Changes in the label, particularly with new indications for the use of the product, should be reported to the Ministry Of Health for suitable amendment of the particulars of the product licence in question.

To facilitate processing of applications for product licences, applicants will not be required to give full details of the manufacturing process, but summaries of such processes.

103 NEW PRODUCTS

Products which have not had sale transaction in Singapore prior to 30th June 1987 will be deemed to be new products. Products imported before that date but with no sale transaction will still be considered as new products.

104 POST REGISTRATION

Any changes to the information submitted to the Ministry Of Health in an application for a product licence must be notified to the Ministry, or the licence will be invalidated.

105 PHARMACEUTICAL PROMOTION

According to the 1975 Medicines Act, three year permits are required from licensing authorities before pharmaceutical products can be promoted to the public; this does not apply to promotion to doctors or to Chinese drugstore owners. Door to door sales and street peddling are prohibited. Since many doctors dispense, bonusing is a common practice. Advertising in most

journals and trade advertisements ie. like price lists, catalogues and other literature require authorisation. Exemptions to these are the medical advertisements issued by public authorities or authorised by the Ministry Of Health. Once approved by the licensing authority, advertising material cannot be amended without written permission.

106 POST MARKETING SURVEILLANCE

Following the introduction of product registration, the Ministry Of Health intends to carry out random checks on market stocks of products to ensure quality is maintained. The product license holder will be required to report adverse reactions to the Ministry Of Health within 7 days of themselves receiving a report.

107 PHARMACEUTICAL MARKET

The total sales of pharmaceuticals through all outlets in 1986 was an estimated S$96 million (U.S$44 million) at manufacturers selling price. The average consumption of pharmaceuticals per head of population was U.S$17 for that year.

108 GOVERNMENT TENDERS

Tenders must ensure that the medicinal products they offer have all been given product licences, information on which may be obtained from the Ministry Of Health.

109 PARALLEL IMPORTS

An import licence can be given to anyone wanting to import a product, the product licence of which is held by another firm,

provided that the importer can show proof that his products carries a product licence and that it is manufactured by the same manufacturer. Such import licences will be given on a per consignment basis. Batch numbers must be specified by parallel importers.

VALIDITY OF IMPORT LICENCES

Import licences issued to persons authorised by the relevant product licence holders shall, in so far as each item of product in the licence is concerned, be valid for as long as the product licence for that item remains valid or up to the validity date stated in the import licence whichever is the earlier. If a product or a number of products are to be imported solely for re - export then no import or product licence is required; however, a certificate is required for such purposes.

VOLUNTARY DEREGISTRATION

Holders of product licences for products which are manufactured in several countries, may apply to the licensing authority to deregister any one or more countries of manufacture or may apply to deregister certain strengths, colour, shape or packagings of such products.

CERTIFICATE OF ANALYSIS

Applications for product licences must be accompanied by Certificate Of Analysis issued by the government analyst or any private analytical laboratory in Singapore or any other country. Subsequently it is not necessary to submit Certificates Of Analysis for each batch to the Ministry Of Health. Random checks

by Ministry Officials will also be made on market stocks.

110 CERTIFICATE OF FREE SALE

These are issued by the health authorities of the country of origin stating that the product is manufactured in the country by a licensed manufacturer and that the product is allowed for free sale in the country.

Every application for product licence must be supported by a Free Sale Certificate. However if the application relates to more than one product, all of which are manufactured by the same manufacturer, then one certificate, listing all the products and their respective presentations (tablets, injections, ointment etc.) would suffice. If a product happens not to be sold in the country of origin, then the reasons why it is not sold should be stated in the certificate. All certificates need to be authenticated by the Singapore Embassy, Consulate Trade Mission or its representative embassy etc.in the countries where they are issued.

When submitting applications for product licences, evidence of sale in countries other than the countries of orign, in the form of Free Sale Certificates would be helpful but this is not mandatory.

111 MULTIPLE COUNTRIES OF ORIGIN

Where a product is manufactured by a company with factories in several countries where stocks are drawn, only one product licence is necessary for such a product, provided specifications

for that product remains identical, and Certificate Of Free Sale are obtained from the relevant authorities of each of the countries where the product is manufactured. If, however subsequent to the issue of a product licence, it is intended to draw stocks from factories in other countries not listed in the product licence (ie. new countries of origin), then the product licence should be submitted to the Ministry Of Health for the necessary amendment.

112 PRODUCT GROUPING UNDER VARIOUS PHASES OF IMPLEMENTATION OF DRUG REGISTRATION

CATEGORY ONE

1) Hypnotics, sedatives, tranquilisers, antidepressants and narcotic drugs.
2) Cardiovascular drugs and diuretics.
3) Antibiotics, antibacterials, antivirals, antifungals, anticancer drugs, antituberculosis agents, antileprotics, antimalarials, antiparasitic agents and sulphonamides.
4) Vaccines and human blood products.

CATEGORY TWO

1) Drugs for alimentary system.
2) Drugs for genito urinary system.
3) Drugs for respiratory system. (including antihistamines cough and cold preparations)

CATEGORY THREE

1) Hormones, contraceptives and drugs for metabolism.

2) Eye, ear, nose, mouth and throat preparations.

3) Dermatological preparations.

CATEGORY FOUR

1) Vitamins and nutritional preparations.

2) Analgesic, antipyretic, anti - inflammatory and anaesthetic preparations (including antirheumatic and gout preparations).

3) Other preparations not mentioned above.

From the schedule it is seen that antibiotics are in category 1. If a firm has different presentations of the same antibiotics, eg. tetracycline in capsules, eye drops, injections etc. then applications for these products should be sent in during the registration period for category 1 products. However, if the application is for only one tetracycline product, namely eye drops, then the application is best submitted during the period for category 3 products, viz. eye preparations. Where a product comes under two categories, it is advisable to liase with the Ministry to determine the proper date for submitting application for product licence.

113 DRUGS AND DRUG LIST

Pharmaceuticals classified as poisons under the Poisons Act are theoretically only available from doctors or from pharmacies on presentation of a prescription. The list of products classified as poisons is regularly updated : blood products were added to the list in April 1988 in response to the spread of Aids.

Products classified as Controlled Drugs under the Misuse of Drugs 1973 are subjected to more stringent controls.

There is the Ministry Of Health Standard Drug List of about 500 products from all therapeutic classes. This must be used by prescribers in government clinics and hospitals. The products are selected by a board of consultants and pharmacists and the list is updated annually. New products are considered for addition to the list when prescribers apply to use them.

114 PHARMACEUTICAL DISTRIBUTION

Prescription pharmaceuticals (poisons) are available from doctors, pharmacies and illegally from Chinese drugstores. Non prescription pharmaceuticals are available through pharmacies and Chinese drugstores. A licence is required from the Ministry Of Health to import, store or sell (wholesale or retail) pharmaceuticals.

Fig 17

115 .

SINGAPORE ASSOCIATION OF PHARMACEUTICAL INDUSTRIES
ANNUAL SALES TURNOVER SURVEY 1986/1987

OPEN REPORT

COMPANY	S$'000 1987 SALES	S$'000 1986 SALES
1. Roche Singapore Pte. Ltd.	5,470.00	5,073.00
2. Summit Co.(S) Pte.Ltd - Merck Sharp & Dome	5,038.00	4,192.00
3. Glaxo Singapore Pte. Ltd.	3,870.00	3,657.00
4. I.C.I Singapore Pte. Ltd.	3,847.00	3,898.00
5. Ciba Geigy S.E.A Pte. Ltd.	3,708.00	3,756.00
6. May & Baker Singapore Pte. Ltd.	2,772.00	2,307.00
7. Hoechst Singapore Pte. Ltd.	2,443.00	1.820.00
8. Asiamed. Pharm. Products	2,389.60	1,983.50
9. Boots Co. (F.E) Pte. Ltd.	2,210.00	2,229.70
10. Beechams Pharm. Pte. Ltd.	2,133.30	2,608.90
11. Essex Asia Ltd.	1,787.60	1,529.30
12. Far East Drug Co. Pte. Ltd.	1,672.00	1,603.00
13. Johnson & Johnson Pte. Ltd.	1,553.00	1,434.00
14. Drug Houses Of Australia	1,540.00	1,362.00
15. Squibb (F.E) Ltd.	1,371.00	1,231.00
16. Takeda Chemical Industries Ltd.	1,323.00	1,308.20
17. Bristol Myers Singapore Pte. Ltd.	1,309.00	1,061.00
18. Summit Co. (S) Pte. Ltd.	977.00	936.00
19. Boehringer Ingelheim	940.20	828.70
20. Searle Representative Office	870.00	1,025.00
21. F.E Zuellig (T) Pte. Ltd.	554.00	218.00
22. Cynamid (F.E) Ltd.	467.30	362.10
23. Eisai Asia Regional Services	388.40	379.50

24.	Guardian Pharmacy	347.90	326.80
25.	Stiefel Laboratories (Pte) Ltd.	344.00	95.00
26.	Diethelm Singapore Pte.Ltd - Cilag	332.10	311.90
27.	Cheah & Fam (S) Pte. Ltd - Biochemie	327.00	185.20
28.	Diethelm Singapore Pte. Ltd - Lipha	311.00	259.30
29.	Rorer Pharm (S) Pte. Ltd.	244.90	238.40
30.	Boehringer Mannheim (F.E)	187.20	183.00
31.	K.S Pang Trading Pte. Ltd	164.50	104.60
32.	Diethelm Singapore Pte. Ltd. - Swiss Serum	128.00	102.00
33.	Cheah & Fam (S) Pte. Ltd - Weber	123.20	83.30
34.	Diethelm Singapore Pte. Ltd - Geitslich	119.00	251.00
35.	Diethelm Singapore Pte. Ltd. - Luitpold Werk	116.00	120.00
36.	Diethelm Singapore Pte. Ltd. - Carter Wallace	70.00	64.00
37.	Diethelm Singapore Pte. Ltd. - Medinova	65.00	73.00
38.	Cheah & Fam (S) Pte. Ltd. - Sumitomo	65.00	20.30
39.	Cheah & Fam (S) Pte. Ltd. - Ciech Polfa	35.50	27.50
40.	Cheah & Fam (S) Pte. Ltd. - Leiras	23.20	10.70
41.	Guardian Pharmacy - Ciba O.T.C	7.00	21.10

Principals represented by Summit Co.
Mack
Merz
Schwarzhaupt
Dr. Thilo
Whitehall Int.
Nippon Kayaku

THE PHARMACEUTICAL INDUSTRY IN THAILAND

116 Since the proclamation of the Industrial Promotion Act in 1962, the Thai Pharmaceutical Industry has been gearing ahead. The number of pharmaceutical plants has increased from 148 in 1969 to 189 in 1988. Out of these factories more than 20 of them are foreign investment or joint ventures. The government of the Kingdom of Thailand has two state run plants ie. The Government Pharmaceutical organisation (G.P.O) and the Military Pharmaceutical factory.

The actual pharmaceutical market is worth about 12,000 million Bahts. The figure includes 3,500 Million Bahts as imports and 8,500 million Bahts as local production.

The government intends to produce and sell house hold drugs/ remedies at reduced price so as to prevent the branded pharmaceutical items from having a total control of the market. The Military Pharmaceutical Factory manufactures and distributes most of its production to the military hospitals or health centres which are located throughout the country. The 1982 statistics showed that 700 pharmacists were employed in the pharmaceutical manufacturing industry ie. production, quality control etc. Eventhough the manufacturing of drugs has not been that sophisticated, it is eventually predicted that the industry will make a major breakthrough in upgrading itself with the latest technology.

117 MANUFACTURE OF PHARMACEUTICALS

As discussed earlier, Thailand's manufacturing system is quite advanced. Eventhough the industry claims to have a strict code of G.M.P that is good manufacturing practice, some companies do not comply to the strict code of ethics. For multinationals it has become more of a necessity to manufacture their products locally so that it gives them an added advantage of having the product sold cheaply and at a competitive price. Companies are liable to pay a hefty duty as high as 30% if they import. This 30% in import duty is a requirement if there exists similar products by other companies that have local registration/ production.

If the drug imported is sophisticated and there happens to be no competition in the category, then the import duty involved is only 12%. Many companies in Thailand act as the sub contract manufacturers for multinationals. One good example is OLIC THAILAND which manufacturers pharmaceuticals for Janssen, Cilag, Astra, Beechams etc. OLIC THAILAND is part of the Diethelem group which has a strong foothold in Malaysia, Singapore and Thailand.

OLIC has an extensive manufacturing programme which caters the following menu :

1) tablets which could be plain, film coated or sugar coated.
2) capsules.
3) Liquid preparations which could be syrups, drops or elixirs.
4) Creams and ointments.
5) Sterile product ie. injectable products.

OLIC was planned and constructed with the help of Swedish and Japanese experts and is one of the most modern in South East Asia. Other than OLIC, Diethelem and F.E Zuellig are the other contract manufacturers to name.

Compared to her Southern neighbours, Malaysia and Singapore, the Thai manufacturing capabilities for pharmaceuticals is way upfront but it still needs to import drugs from Japan, Western Europe and North America.

A 1987 study by the Department of Business Economics, Ministry Of Commerce gave the following figures for imports and exports of pharmaceutical products. The figure below shows the 1985 value of exports ie. 213.3 million Baht. There was a 8.06% growth in 1986, and the value recorded was 230.5 million Baht. In 1987, the growth increased by 15.9%. Value of exports monitored by the Ministry of Commerce was 267.1 million Baht.

The import of pharmaceuticals into the Kingdom of Thailand for the years 1985, 1986 and 1987 showed the import value as 1,739.5, 1,658.6 and 1,517.4 million Bahts respectively.

EXPORT FOR PHARMACEUTICAL PRODUCTS FOR THAILAND

(1985 - 1987)

	1985	1986	1987
Value in Millions of Bahts	213.3	230.5	267.1
Growth	-	8.06	15.9

Export markets in 1987 were Hong Kong, Singapore, Laos and Australia.

A 1987 survey on the importation of pharmaceuticals show the quantity of different pharmaceutical products imported with the respective values. Vaccines microbial, vitamins, cathartic and laxatives, contraceptives and other medicaments formed the largest quantity of items to be imported into Thailand in kilo weight. On the other hand in terms of value, toxins, toxoids and crypts formed the biggest imports. The figure given below gives details of the importation of pharmaceuticals.

118 PHARMACEUTICAL SALES

It is difficut to assess the extent of the market value of pharmaceuticals in Thailand. The Pharmaceutical Products Association of Thailand which has 62 member companies under its wing has its own research activities to determine the size of the pharmaceutical market. The Pharmaceutical Products Association is an organisation which tries to promote high professional standards and the availability of high quality products to the

Thai people. In an open sales exchange for the year 1988, Roche Thailand amassed sales of Baht 261,666,000 follwed by Hoechst Thai, Glaxo, and Merck, Sharp and Dome which cleared the 200 million Baht mark. Out of the 62 P.P.A members only 54 P.P.A companies were represented in this open sales programme.

The open sales exchange for December 1988 showed that Smith Kline and French achieved 91.7% growth in December to rank first but in overall sales it was 9th. Abbot laboratories achieved 29.5% growth in December only to find itself 41 in the overall sales. Given as attachments are the open sales exchange which reflects total sales achieved for 1988. (Please refer to page 167)

119 NATIONAL DRUG POLICY

As drugs are one of the most important components for the implementation of the country's health services leading to " Health for all by the year 2000 ", the Ministry of Public Health, in April 1981, issued the National Drug Policy emphasising the following points :

1) Supply of safe and good quality drugs at reasonable price right up to the rural areas with special stress on primary health care. This will include the improvement of the logistics of drug supply and promotion of local drug production both in private and public sectors.

2) Wastage of drugs will be curbed by strict adherence to the National Formulary and Essential Lists and dissemination of comprehensive informations to the Medical profession regarding drugs and treatment regimens.

3) As an important component of the quality assurance scheme, augmentation of drug analytical facilities, including the testing of biological and immunological products and development of a responsible organisation for drug standards, drug analysis and reference substances will be carried out.

4) To survey the indigeneous raw materials available in the country and to investigate the possibility of developing bulk drug production utilising local resources.

5) Explore intensively the therapeutic potential for traditional drugs for safe and efficacious use, especially in the field of primary health care.

120 FACTORS AFFECTING THE THAI PHARMACEUTICAL INDUSTRY

There are many factors affecting the progress of the pharmaceutical industry in Thailand.

1) Raw materials

As most of the raw materials are imported, the manufacturers have to pay higher prices due to the transportation cost, import duty and taxes. The inventory must be kept high enough to cover the lead time which usually takes about 3 months. This will build into the cost of the goods where by reducing the competitiveness of the pharmaceuticals produced in Thailand.

2) Technology and Quality

For the foreign investments and the big local factories, technology and qauality are considered acceptable and comparable to the products produced by the developed countries, due to the lack of modern equipment and research

and development activities. The outputs from these factories may not measure up to the international standards but they must comply with the standards set.

3) Market

The size of the domestic market is quite limited. The same type of the product may be produced by many manufacturers causing a lot of competition in the market. Distribution of drugs from the manufacturers to the government units and hospitals which are under the control of the Ministry Of Public Health can be done only through the G.P.O if the payment for the drugs come from the budget provided by The Ministry of Public Health, but there is exception in some cases. These problems may lead to suspension in investment in the local pharmaceutical industry.

4) Pricing

Due to the strong competition in the pharmaceutical business, pricing varies from one another. The manufacturers who produce the drugs of quality at high cost will face a problem in terms of selling their products.

121 PROTECTION

The local industry is quite protected by laws and regulations. First of all there is a 30% tarrif duty on import of finished pharmaceutical goods. For production they receive investment promotion previleges from The Board of Investment such as tax holidays, duty free imports of machinery and raw materials. It is well recognised that if a high degree of protection is given to the domestic industry for a lengthy period of time it can give

rise to inefficiency in production as well as low profit margins to producers due to lack of competition from foreign supply. It can also be seen that a comparison of the retail prices and C.I.F price at full factory cost shows a high level of mark up which partly reflect high profit margins. The inefficiency in the production pattern is clearly related to the nature of trade and investment policies. From the point of view of an industrial development strategy there is now an increasing awareness within the official circles that high levels of protection given to the domestic industry have to be reduced so that efficency in production will be improved so that industries can be competitive in the international market.

122 Fig 18 OPEN SALES EXCHANGE (1988)

RANK	COMPANY	SALES (BAHTS)
1	Roche	261,666,000
2	Hoechst	250,956,000
3	Glaxo	230,372,000
4	Merck Sharp & Dome	230,566,000
5	Thai Otsuka	167,666,000
6	Ciba Geigy	139,976,000
7	Sandoz	139,056,000
8	Schering	135,004,000
9	Smith Kline & French	133,812,000
10	Warner Lambert	125,433,000
11	Astra	119,917,000
12	Pfizer	118,775,000
13	Westnont	118,725,000
14	Eli Lilly	116,187,000
15	Squibb	116,036,000
16	Richardson Vicks	112,387,000
17	Boots	109,520,000
18	May & Baker	109,501,000
19	Janssen	103,817,000
20	Cyanamid	103,314,000
21	Bayer	102,392,000
22	Paiboon Watane	99,410,000
23	Bristol Myers	90,526,000
24	Wellcome	90,451,000
25	Boehringer Ingelheim	84,404,000

26	Organon	84,012,000
27	Farmitalia	81,589,000
28	I.C.I	80,807,000
29	Merrel Dow	78,904,000
30	Upjohn	70,891,000
31	Medimpex	65,015,000
32	Beecham	62,892,000
33	Sterling Drug	55,018,000
34	Roussel	54,678,000
35	Essex	54,477,000
36	G.D Searle	50,738,000
37	Les Lab Servier	47,183,000
38	Boehringer Mannheim	41,598,000
39	E.Merck	35,895,000
40	A.H. Robins	34,744,000
41	Abbot	30,606,000
42	Sanofi	30,071,000
43	Hausmann	29,814,000
44	United A.Pharma	29,684,000
45	Syntex	27,513,000
46	Mack	27,400,000
47	Biomedics	27,322,000
48	Degussa	26,713,000
49	Unichem	23,253,000
50	Eisai	23,069,000
51	Stuart	12,312,000
52	Carter Wallace	6,121,000
53	Pliva	4,320,000
54	Menarini	2,079,000

123 Fig 19 IMPORTATION OF PHARMACEUTICALS 1987 (THAILAND)

	CLASSIFICATION	QUANTITY (KG)	C.I.F VALUE (BAHT)
1)	Blood plasma medical	257	289,610
2)	Serum from normal blood	176	660,291
3)	Organs therapeutic glands or other dried extracts of glands	1,457	7,457,984
4)	Sera Antisera	604	5,070,673
5)	Vaccine Microbial	139,437	290,164,961
6)	Toxins, toxoids, crypts antitoxins	816	1,716,212
7)	Other microbial cultures	1,721	3,599,747
8)	Quinine	92	250,000
9)	Other medicaments & chemical products for malaria	8,794	11,290,314
10)	Medical & pharmaceutical preparations with alcohol	9,213	11,966,687
11)	Vitamin B complex for injection	950	324,024
12)	Vitamin B1 for injection	141	365,734
13)	Vitamin B1 tablets	456	1,129,762
14)	Vitamin C tablets	3,090	634,684
15)	Other Vitamins	180,685	46,338,622
16)	Turbutamol tablets	26	29,008
17)	Anesthetics	35,071	20,254,743
18)	Sedatives & Hypnotics	12,399	20,572,731
19)	Anticonvulsants	3,628	4,573,939

20)	Salicylate - Cuicophen Group	48,222	9,508,365
21)	Pyrazolon Derivative	1,658	879,059
22)	Para - Aminophenol Deriv.	12,247	7,044,983
23)	Psychosedative drugs	7,410	10,338,113
24)	Tranquilizers	774	1,035,387
25)	Pyridine derivatives	90	30,340
26)	Minor group of C.N.S	278	560,903
27)	Adrenergic Blocking drugs	30	574,569
28)	Skeletal muscle relaxants	2,812	4,380,897
29)	Cardiac glycosides	3,387	6,479,354
30)	Drugs depressing cardiac	776	1,962,140
31)	Antihypertensive drugs	10,195	31,735,993
32)	Intravenous fluid therapy	5,476	1,342,882
33)	Diuretics	1,616	3,912,045
34)	Antacids	32,424	5,012,632
35)	Cathartic & laxatives	238,042	21,602,359
36)	Digestants	4,718	3,752,624
37)	Drugs for gall bladder disease	1,130	234,336
38)	Antihistamines	34,520	19,489,367
39)	Antitussives	324,254	24,870,749
40)	Drugs for anemia	23,202	5,005,760
41)	Anticoagulant drugs	2,302	4,916,391
42)	Coagulant drugs	94	373,361
43)	Thyroid, antithyroid drugs	354	992,504
44)	Estrogens & progestogen	84	546,617
45)	Androgens	20	31,119
46)	Insulin	14,990	42,242,503

47)	Drugs acting on the uterus	909	1,667,787
48)	Other hormones	1,208	4,733,609
49)	Anticancer	10,001	58,558,133
50)	Contraceptives	242,291	93,929,214
51)	Anti infectives	87,532	165,013,608
52)	Antileprosy	574	2,444,984
53)	Antituberculosis	1,705	6,976,669
54)	Other antibiotics	19,864	46,185,994
55)	Antifungus	17,150	19,037,773
56)	Other medicaments	1,931,059	752,821,062

DISTRIBUTION IN MALAYSIA

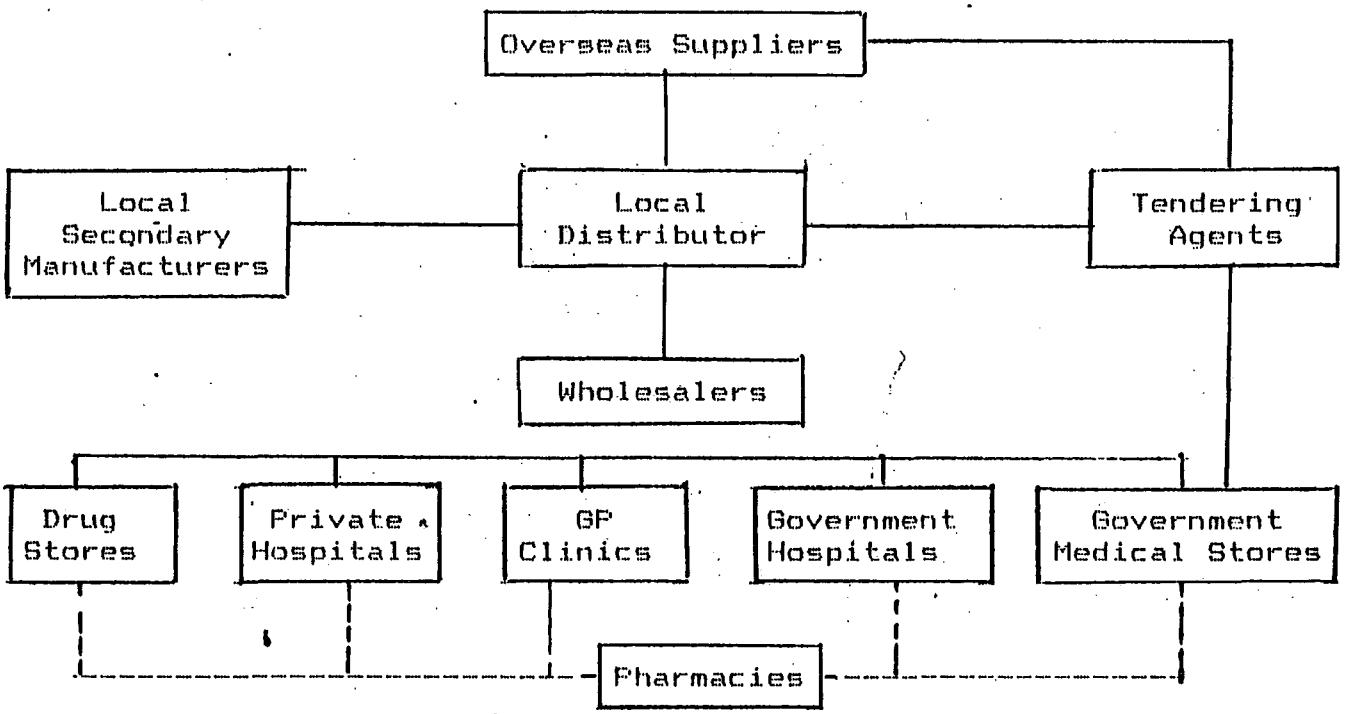
As depicted in the diagram, distribution of pharmaceuticals in Malaysia is more or less similar to that of Singapore. The source of pharmaceutical supply is the manufacturer itself. Manufacture of pharmaceuticals is still in its infant stage in Malaysia. Most of the manufacturers are based overseas and are represented in Malaysia by their affiliate companies. The remaining manufacturers have local distributors to take care of their interest.

There are a few companies that do some small scale manufacturing. They produce O.T.C items ie. paracetamol tablets, cough syrups and eye drops. They distribute the products themselves or have appointed agents.

There are agents who solely involve in tendering activities. These agents have set up companies on joint venture basis. They have the local Malays to head the company so as to have access to government officials to win government contracts which runs into millions of dollars. The multinationals which have affiliate representation and local distributors also vie for government contracts.

The government has established a small manufacturing unit which produces general items like cough mixtures, paracetamol tablets and elixirs which are distributed to all government hospitals and health centres.

Flow of the pharmaceutical business in Malaysia



Key: ———— Primary

---------- Secondary

Source: Basic Marketing Data 1985, Malaysian Pharmaceutical Trade and Manufacturers Association, and PNB Research

Drugs and medicines are distributed through two important channels ie.1) through public (government) hospitals and institutions 2) private hospitals, clinics, pharmacies and other retail outlet.

Public hospitals and the institutions obtain their supply from the government medical stores which procure through tenders. In addition these hospitals have certain budgets which they could use to buy certain drugs from the pharmaceutical companies directly.

The private hospitals and clinics obtain their supply directly from distributors and wholesalers. The volume of pharmaceutical products sold to public hospitals has declined from 40% of total sales in 1980 to 22% in 1985.

124 This decline has been attributed to the significant increase in the volume of business done through the private sector. The share of the private sector has increased from 60% in 1980 to 78% in 1985. This notable increase is recorded by pharmacies and other retail outlets which increased their share from 24% (M$48 million) in 1980 to 31.2% (M$109.2 million) in 1985. The increase is closely associated with the growing popularity of O.T.C drugs with consumers

The pharmacy industry which grew at an average rate of 10% annually in the last decade is expected to develop further. Pharmacies currently operate in major towns where the population is large enough to support their business. In addition to the

popularity of O.T.C drugs sold through these outlets, growth of this sector is also expected when the separation of the right to prescribe and to dispense medicine is finally adopted. Thus, in the future, pharmacies will have to expand their business to smaller towns to serve the rural population.

On the whole, Malaysia is a dispensing market and the bulk of the drugs are distributed through the G.P clinics and government hospitals. The government health care system has improved substantially and most of the people seek treatment on an outpatient treatment basis.

Because of the dispensing activity pharmacies seem to lose out to the dispensing doctors and government hospitals. It will definitely take some time before the pharmacies establish themselves as a force behind the pharmaceutical distribution. Most of the pharmacies are only active in business in the major towns and cities. In the rural areas the Chinese druggists replace the pharmacies in dispensing O.T.C items and herbal medicines.

DISTRIBUTION IN THAILAND

125 At present there are about 450 importers and about 189 manufacturers in Thailand. Out of these 189 manufacturers, some export and their value is about 350 million Bahts.

The 450 importers or wholesalers form a channel of distribution to the private hospitals and clinics which account for about 10% of the distribution. At times the manufacturers themselves service the private hospitals.

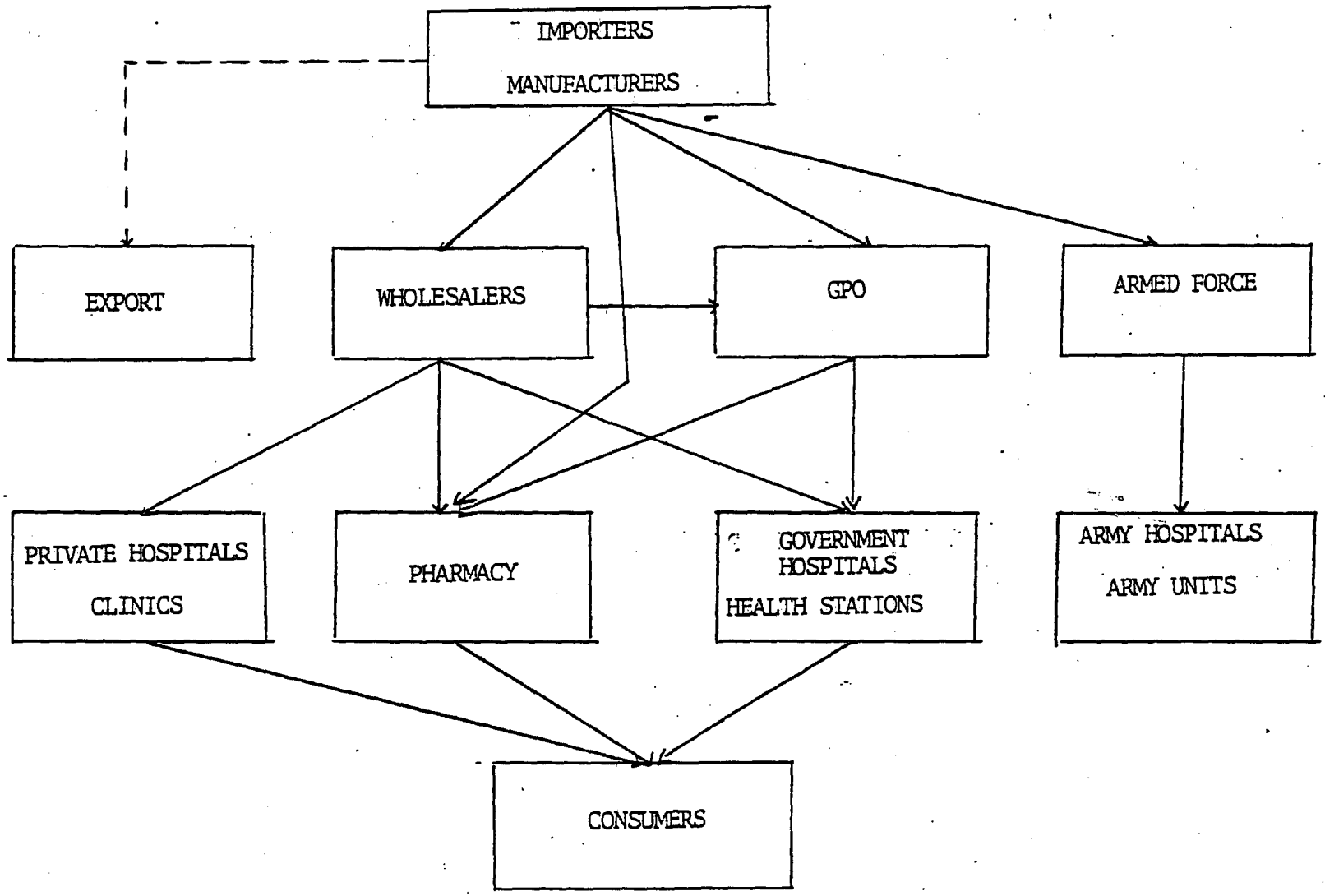
The next category are the pharmacies which account for about 60% of the distribution. The wholesalers, manufacturers and the general pharmaceutical organisation (G.P.O) which is state run supply the pharmacies.

The government hospitals and health stations get their supply from the state run G.P.O, wholesalers and the manufacturers. The state run G.P.O at times imports sophisticated drugs which they don't produce through the wholesalers/importers.

The armed forces factory imports certain essential drugs and supplies the rest from its own facility to the army hospitals and army units. The G.P.O and army hospitals account for about 30% of the distribution.

Private clinics and hospitals account for 10% of the distribution. At this junction we can see that even though it has been established that Thailand is a " dispensing market " where

CHANNELS OF DISTRIBUTION



the initial distribution of the drugs is done through doctors, the patients follow up and get their supply from the pharmacies. Thus it is evident that the 55 million population can purchase drugs and medicines from the private hospitals and clinics, pharmacies, government hospitals and health stations and finally the army hospitals and army units.

126 The local pharmaceutical factories export to countries such as Malaysia, Philippines, Laos, Burma, Kampuchea and Hong Kong. Thus with these exports, Thailand has been able to save valuable foreign exchange. Each year sales of Thai made medicines total about U.S$10 million dollars.

The pharmaceutical industry in Thailand is still dependent on imported raw materials. Each year the country imports roughly 80% of the raw materials required for production of pharmaceuticals. The value of these raw materials has increased from U.S$22 million in 1982 to the current figure of U.S$100 million in 1987.

Among these imported raw materials antibiotics and other chemotherapeutics are worth about 40% of the total raw materials while vitamins, minerals and antipyretics, and analgesics share about 10% each.

Today some of the raw materials are available locally such as refined sugar, sorbitol solution, glycerin, aluminium hydroxide, chloramphenicol, kanamycin, rifamicin etc. The possibility on local manufacture of some essential raw materials like acetaminophen powder, aspirin and ampicillin are being carried

out.

127 Production and sales of drugs in Thailand is partly monopolistic and competitive. There is competition in the marketing of medicine which are produced by a large number of plants. Because they are mass produced by many concerns, the section of the industry manufacturing and marketing them is highly competitive. Each manufacturer can only claim a small percentage of the market for these drugs.

Most of the packaging materials are available locally such as glass bottles, plastic bottles, aluminium tubes, paper boxes and cartons. Private factories still have ample capacity for all dosage forms. By average they are running at about 50 - 60% of their capacity. In 1981, it was estimated at approximately U.S$ 300 million dollars.

GOVERNMENT PHARMACEUTICAL ORGANISATION

Of particular importance in the process of selling pharmaceuticals to the government hospitals is the G.P.O. The G.P.O was established in 1941 to produce certain essential drugs and import / supply other drugs to government hospitals and clinics. The G.P.O's production capacity being only 2 - 3% of the market for pharmaceutical products but they have become the largest importer of drugs to the Kingdom.

The G.P.O also acts as an importing agent for hospital equipment and supplies. The G.P.O collects 5% commission for its services. It purchased about U.S$5 million in non pharmaceutical hospital

products in 1985. This situation was unchallenged until last year when the Prime Minister's office issued a regulation on April 14,1986. The issue has inspired a more competitive spirit on the part of the G.P.O. Now the government's procurement procedures can be summarised as follows:

128 <u>For drugs and medical supplies produced by the G.P.O</u>

Government organisation must buy from the G.P.O if the G.P.O prices do not exceed 3% of the median prices specified by The Ministry of Health. Military organisations must buy from Army Pharmaceutical Factory under the same conditions.

129 <u>For drugs and medical supplies not produced by the G.P.O</u>

Government organisations can buy from either the G.P.O or directly from a supplier. If the price from the G.P.O is equal to or cheaper than any other supplier the Government must buy from the G.P.O.

Another point to consider is that all drugs must be registered in the Essential Drug List. In a report issued by Scrip Magazine there was a decline in sales by the Thai Government's Pharmaceutical organization in 1987. This shortfall was due to the introduction of the new hospital purchasing regulations in 1986. Overall G.P.O sales fell by 16% to 1,396 million Baht, (U.S$55.4 million) of which 767 million Baht was accounted for by sales of its own products (an increase of 21.7%) and 626 million Baht by third party sales, a decline of 49.5% compared with 1986. G.P.O sales account for 15% of the total market in Thailand.

In Thailand most principal companies distribute the products themselves but at times the third party manufacturer will distribute the pharmaceutical items on the principal's behalf.

Fig 20

DISTRIBUTING AGENTS

Zuellig F.E distributes for	Diethlem distributes for	Berli Tucker distributes for
Abbot	B.D.F	B.Braun
Boehringer	Beecham	Duphar
Byk Gulden	Bencard	Eurand
Ciba Geigy	Eisai	Fissions
Dispersa	Eli Lilly	Fujisawa
Gruenthal	Janssen	Haismann
Imex	Luitpold	Kali-Chemie
Lederle	Nestle	Medinova
Mack	Parke-Davis	Nutricia
May & Baker	Roche	Robapharm
Nattermann	SK&F	Syntex
Norgine	Sandoz	Thilo.Dr.
Organon	Searle	
Oxochemie	Sterling	
Protochemie	Wander	
Rotta	Wellcome	
Sanofi		
Schering		
Servier		
Servipharm		
Zyma		

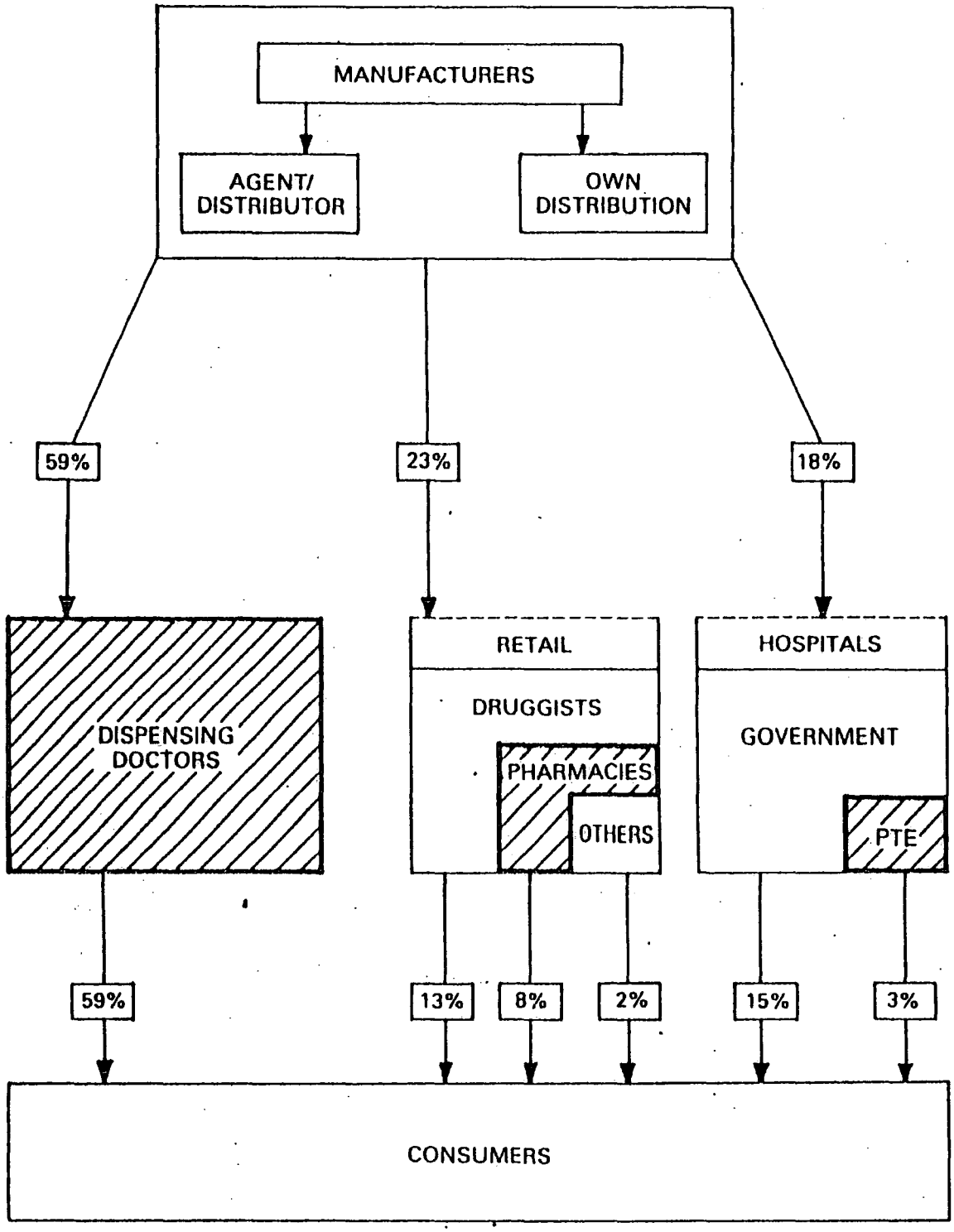
Fig 21

YEARS	DOMESTIC PRODUCTION VALUE IN MILLIONS OF U.S $	IMPORTS VALUE IN MILLIONS OF U.S $ (C.I.F)
1972	75	35
1973	85	37
1974	110	41
1975	120	43
1976	135	44
1977	170	50
1978	200	50
1979	220	54
1980	250	64
1981	290	69
1982	290	75
1983	295	80
1984	300	83
1985	310	86
1986	325	90
1987	340	95

Imports including drugs for veterinary use, dental products, plasters and sutures

Source : OLIC Thailand

MAIN CHANNELS OF PHARMACEUTICAL DISTRIBUTION IN SINGAPORE



DISTRIBUTION IN SINGAPORE

As shown in the figure, the distribution begins from the manufacturers. Comparing with its neighbours Thailand, Philippines, Malaysia and Indonesia, pharmaceutical manufacturing is very much in its infant stage but is growing. Since Singapore has a duty free status for its port, pharmaceutical products can be imported without tax. Most of the manufacturers have their own distribution but others still maintain agents or distributors.

In a survey conducted by the Singapore Pharmaceutical Authority, 59% of the drugs are channelled to dispensing doctors, 23% through retail stores, druggists, pharmacies etc. and about 18% to government and private hospitals.

The end users who are normally the consumers get 59% of their medication from dispensing doctors, 13% from retail stores and druggists, 8% from pharmacies, 2% from others. The government hospitals dispense 15% to the consumers and the remaining 3% is supplied by the private hospitals.

130 The total pharmaceutical market in Singapore amounted to U.S$44 million in 1986. This represented only 0.04% of the world market, and 3.2% of the South East Asian market in 1986, showing no change in figures for 1985. However, local production accounted for 0.017% of the world market.

131 MINISTRY OF HEALTH

Government establishments obtain their supplies through the Pharmaceutical Department of The Ministry Of Health (pharmaceuticals, chemicals and surgicals). This department manufacturers or purchases by tender all government supplies.

132 PRIVATE DISPENSING DOCTORS

At the primary care level, most of the dispensing of pharmaceuticals are carried out by doctors. Private doctors buy their pharmaceuticals from wholesalers or directly from importers.

133 PHARMACIES

The bulk of prescriptions dispensed through pharmacies come from private doctors, particulary specialists, who do not dispense and from government establishments when they do not have a prescribed product in stock. Non - prescription products account for a high proportion of pharmacy business. Most pharmacies are situated in the more affluent areas of Singapore. Pharmacies buy their supplies from wholesalers or direct from distributors / importers. There were 98 retail pharmacies and several hundred Chinese drugstores. Generic preparations account for about 50% of the prescription market.

134 CHINESE DRUGSTORES

Singapore's Chinese drug stores are located in rural and low cost housing areas. They are normally family business run on small profit margin and a fast turnover. They cater mainly for the lower income groups. Some of these shops are run by " Sinsehs ".

There are estimated to be more than 1,000 traditional Chinese Physicians practising in the country. Drugstores sell traditional Chinese herbs and are permitted to trade in non - prescriptions preparations. These include Western - type pharmaceuticals as well as Chinese patented medicines imported from China and Hong Kong. However, substantial amount of the business of these outlets consists of channelling goods to neighbouring countries and " under the counter " sales of prescriptions pharmaceuticals.

135 HOSPITAL PHARMACY

All hospitals have pharmacies, under the control of the Hospital's Director. In the case of government hospitals, this is indirectly controlled by The Director Of Pharmaceutical Services Of The Ministry Of Health. Hospital pharmacies manufacture pre - package and dispense pharmaceuticals, and provide pharmaceutical information and patient counselling services.

Government hospital supplies are obtained primarily through the Pharmaceutical Department of The Ministry Of Health. Further supplies may be obtained from wholesalers and occasionally through retailers. Private hospitals obtain their supplies from distributors / importers or wholesalers.

Ward charges in government hospitals include pharmaceuticals. However, outpatients are charged a flat fee of S$1 per item per week, to a maximum of S$3. Private hospitals charge both inpatients and outpatients list prices for pharmaceuticals.

136 WHOLESALERS

Wholesalers buy their supplies from distributors / importers at a discount of 5%. They sell to dispensing doctors, pharmacies, Chinese drugstores and private hospitals at the same price as the distributors.

137 PRESCRIBING AND DISPENSING

There are no official restrictions on which products a doctor may dispense although generic prescribing is officially encouraged. As most private doctors dispense, their choice of product is likely to be influenced by what they have in stock and by the practice of discounting and bonusing when purchasing pharmaceuticals.

If government doctors prescribe a product not supplied by the Pharmaceutical Department, the patient will have to purchase the drug from a pharmacy, paying the full price. Most dispensing (about 80%) is carried out by doctors and the remainder at pharmacies. The Ministry of Health provides full labelling (generic name and strength) for all medicines given out at government establishments. Private doctors, however, prefer not to reveal the name of products despensed in order to ensure that the patient returns for further consultation. In December 1984, The Ministry Of Health passed legislation requiring the labelling of all privately dispensed medicines with the product name, strength, dosage, patient and dispenser details and direction for use. If a pharmacist dispenses an original pack, the label must remain visible.

Substitution of prescribed pharmaceuticals is not permitted. Prescriptions may be repeated up to three times, if written permission is given

138 PHARMACEUTICAL ADMINISTRATION

The Pharmaceutical Department of The Ministry of Health's other Medical And Supportive Services Division is responsible, among other things, for enforcing all legislation related to the distribution and sale of drugs and natural chemicals.

The Department of Scientific Services of The Ministry Of Health provides scientific and analytical services for government departments, and is responsible for quality control of drugs manufactured or purchased by the Ministry of Health.

ADVERTISING

Unlike consumer products which can be readily advertised through television, cinemas, radio, magazines and videos, pharmaceutical products don't enjoy the same previlege except in certain categories which are mentioned below. Malaysia, Singapore and Thailand have their own set of regulations but implemented strongly in Singapore. Pharmaceutical products are divided into 2 sections ie. ethical and O.T.C.

Ethical drugs can only be advertised in medical journals ie. " DIMS ", which is an authoritative guide to ethical preparations available to the medical profession in Malaysia and Singapore. In Thailand it is called " TIMS ". Advertising can also take place during medical seminars and also in selected health care publications with the consent of the Ministry Of Health.

O.T.C items enjoy the same preferences as consumer items and are advertised extensively. Cough mixtures, paracetamol tablets, de - worming agents are some examples of O.T.C items. It is not necessary that a drug which has O.T.C status in Thailand should enjoy the same status in Malaysia and Singapore.

MALAYSIA

Drug advertising is controlled by the Medicines (advertisement and sale) Ordinance 1956 and Trade Descriptions Act 1972. Advertising of prescription and dangerous drugs are prohibited in all mass communication media except in professional journals. Pharmaceuticals and herbal preparations intended to cure or

alleviate certain diseases such as cancer, diabetes, veneral diseases etc. shall not be advertised in the mass media except in medical publications. All O.T.C drugs should be approved by the Government Board to make sure that they are genuine before approval can be granted. The common advertising media are newspapers, T.V, magazines, radio broadcast, pamphlets, cinemas and posters. Among the above, T.V has proven to be the best method for urban areas and radio broadcasts are best for rural areas for the promotion of O.T.C items.

139 SINGAPORE

The objective of the control on advertisements is to ensure that medicines so advertised will not jeopardise public health. After the commencement of Medicines (Medical Advertisements) Regulations 1977, no advertisement or sales promotion for medical products, medical devices, apparatus, instruments or contrivances shall be published unless a permit for such advertisement has been obtained from the Licensing officer, Ministry of Health. However, approval is not required for the publication of price lists and catalogues which make no recommendations for the use of these substances and information pamphlets intended solely for the distribution to the relevant professionals. These are described as " trade advertisements " and " reference advertisements " respectively in the regulations.

For purpose of this control, " advertisement " includes every form of advertising whether in print, light or sound; and " sales promotion" means any sales campaign (including door to door sales), exhibition, competition etc.

140 CONTENT OF ADVERTISEMENT

Advertisement should truthfully state the nature, quality and properties of medicinal products. Recommendation relating to the use of medicines should be accurately stated in moderate terms and should be relevant to their properties.

Advertisements should not exploit the ignorance and credibility of the public and should not include scientific data, the validity of which cannot be ascertained by the general public. Advertisements should not arouse fear in the minds of the public nor should they exploit their superstition.

The use of strong terms, including the following are not allowed:

1) " safe ", " safer ", or " safest ".
2) " very effective ", " most effective ", " scientifically proven to be effective ", " miraculously effective ", " lightning effect " etc.
3) " free from side effects ", " reliable ", " dependable ", etc.
4) " used in hospitals ", " recommended by doctors ", famous throughout the world ", etc.
5) " cure ", " guaranteed _ _ _ ", " money back ", " offers " etc

Advertisements should not carry testimonials or recommendations by members of the medical, dental, pharmaceutical or nursing professions and there should be no reference to any member of these professions directly or indirectly.

Visual and / or audio presentation of doctors, dentists, pharmacists or nurses in any advertisement for medical products, medical devices, apparatus, instruments or contrivances shall not

be allowed.

No advertisement should carry statements implying that where medical treatment has failed, the advertised product would be effective. No advertisement should imply or carry claims of improved performance in sports or studies. Advertisement for medicinal products recommended for slimming, figure control or weight control (ie. weight loss or weight gain) with or without other aids such as diet control, physical exercise etc. should not carry statements such as " eat as much as you like ", which by themselves may lead to harmful effects.

Advertisements should not suggest or imply that the medicinal products offered will promote sexual virility or they are effective in treating sexual weakness or sexual excess. No reference should be made to premature ejaculation or premature ageing.

No advertisement should suggest or recommend any medicinal product for use by pregnant or lactating women. Recommendation for " good health " should be specific. General terms like " good for you ", " for better health " or " for better living ", etc. should not be included in medicinal advertisements. Medicines available on prescription only should not be advertised to the general public.

141 PROHIBITED ADVERTISEMENT

Advertisement of individuals offering medical skill or service are prohibited. Advertisements directly or indirectly referring to skill, service or medicinal products relating to miscarriage

in women are prohibited.

Advertisement for medicinal products, medical device, apparatus, instruments or contrivances having any direct or indirect reference to the list of diseases and conditions in the first schedule to the Medicines Act are prohibited. For easy reference the list is reproduced below :-

1) Blindness
2) Cancer
3) Catract
4) Conception and pregnancy
5) Dangerous drug addiction
6) Deafness
7) Diabetes
8) Epilepsy or fits
9) Frigidity
10) Hypertension
11) Infertility
12) Insanity
13) Impotency
14) Kidney diseases
15) Leprosy
16) Menstrual disorders
17) Paralysis
18) Sexual function
19) Tuberclosis

SALES PROMOTION

No person shall in conducting any sales promotion, offer any gift or prize to promote the sale of any medicinal product.

APPLICATION FORMS AND FEES

Application forms are available from the Ministry of Health (ground floor), Palmer Road, Singapore 2.

The fees payable for each permit :-

1) for an advertisement in the form of printed material (including stills) S$25.
2) for an advertisement using sound S$50.

3) for an advertisement using sound and light projection S$150.

4) for a sales promotion S$50.

5) for each amendment to an advertisement S$5.

PERIOD OF VALIDITY OF PERMITS

All permits shall be valid for three years from the date of issues, unless sooner revoked by the Licensing Authority.

THAILAND

142 ADVERTISEMENT CONTROL

This is an activity undertaken by the F.D.A in accordance with the provisions of the laws. According to the Drug Act B.E 2510 (1967) no advertisement is permitted for dangerous drugs and specially controlled drugs. The revision of the law in 1979 includes additional requirement for drug advertisement to be approved by the F.D.A. This is to avoid incorrect and misleading claims of informations made by the drug manufacturers or distributors. Food advertisement is also subjected to be approved by the F.D.A prior to its execution. At the early stage of development in the field of advertisement control there are a number of obstacles ie. administrative and technical.

For the other controlled substances such as cosmectics and toxic substances the F.D.A is implementing a surveillance programme which involves regular inspection of all advertisements made in various media. Exaggeration claims, misleading or misbranded will be failed and reviewed by the agencies concerned and legal action

may be taken on serious cases but it is most likely that the firms will be warned formally by the F.D.A on the first encounter.

The following jurisdiction of Advertisement Control is stipulated in the following legislative measures :

1) Drug Act 1967 (as amended by the Drugs Act No. 3, 1979)
2) Food Act 1979
3) Cosmetic Act 1974
4) Poisonous Substance Act 1967
5) Psychotropic Substance Act 1975
6) Narcotic Drug Act 1979

The advertisement for the sale of drugs must :

1) Not boast that a drug or its ingredient is capable of miraculously or absolutely treating, relieving, curing or preventing diseases or illness or use other words having similar meaning.
2) Not exaggerate or falsely declare the properties of a drug.
3) Not create the understanding that a drug contains any medicinal substances or ingredients which in fact it does not contain or if it does, in quantity other than which it is understood to contain.
4) Not create the understanding that the drug is abortifacient or strong emmenagogue.
5) Not create the understanding that the drug is an aphrodisiac or for birth control.
6) Not state the properties of dangerous or specially controlled drugs.

7) Not include testimonials by other persons as to the drug's properties.

8) Not state as the property of a drug that it is capable of treating, relieving, curing or preventing the diseases or disease symptoms notified by the Minister under Section 77.

Drug advertising by means of radios, amplifiers, television, slides, movies or printed matter must :

1) have the texts, sound or pictures used in advertising duly approved by the licensor.

2) comply with conditions prescribed by the licensor.

3) it shall be prohibited to advertise drugs by song or by showing the suffering of a patient.

4) it shall be prohibited to advertise the sale of drugs by offering premiums or giving lottery prizes.

5) The Secretary of The Food And Drug Administration shall have the power to order in writing suspension of any advertising deemed to be violating this Act.

6) Any person who advertises drugs in violation of Sections 88, 89 and 90 is liable to a fine not exceeding hundred thousand Baht.

COMPARATIVE ANALYSIS ON PRODUCTION, MARKETING & DISTRIBUTION IN MALAYSIA, SINGAPORE AND THAILAND

ETHICAL DRUGS

The 3 countries comprising of Malaysia, Singapore and Thailand have many things in common. They belong to ASEAN and all 3 share a vibrant economy. The main differences seen are in their population distribution and geographic sizes. Singapore is an island with a million people distributed evenly. Malaysia is split into East and West Malaysia and the population is spread into an urban and rural network and in Thailand the population is spread along the various provinces but many converge into Bangkok to make a living. When we compare the total population of these 3 areas, it totals to 72 million.

If we view the population of the 3 countries on the marketing perspective it is found that Thailand with its 55 million people presents a very substantial market to concentrate on. Malaysia's 15 million population looks appealing and Singapore with its 2 million people presents marketers with a small but lucrative market.

Most pharmaceuticals companies in Thailand concentrate in Bangkok. In Malaysia the centre of business is Kuala Lumpur. Major pharmaceutical companies sometimes take care of the Singapore operations from Malaysia.

As we are aware the local or traditional medicines still command respect as far as treatment is concerned. In Chinese dominated

Singapore the Chinese herbal medicines Ginseng's are still sought as cures for various ailments. In Malaysia where 3 major communities make up the population, the Malays look towards their "Tok Bomoh" or medicine man for treatment in the form of herbs, barks, roots and leaves. The Chinese druggist serve the Chinese and the Indians look towards to the indigenous system of Ayurveda. In Thailand, traditional medicines are also in demand.

Eventhough the Thai economy is picking up, it is not as vibrant as the economies of Malaysia and Singapore. As such price has been a major determining factor in the marketing of drugs. Of the 55 million Thai population only a small proportion can afford expensive ethical drugs. Thus this has paved way for the generic drugs to mushroom. To the astonishment of multinationals the Thai Government has a relaxed attitude towards patent rights. Branded drugs like Zantac and Tagamet can be acquired easily. With the F.D.A pressurising the Thai administration, it is believed that the administrators in Bangkok will bow to U.S. pressure to implement patent rights.

Unlike Thailand, Malaysia and Singapore have implemented patented laws but generics still exist. Those branded drugs which have lost the patent rights over the years have many generics to compete with. In Thailand the Government encourages the generics, that it is the Government's intention that the common man in the streets will be able to afford Western medicines. The Government has many steps in hand to reduce or control the price of the drugs. Its view is that all single ingredient formulations should be sold under the generic or pharmacopoeia name. This is likely to result in more competition, minimum brand loyalty among customers, minimum promotional efforts by

the manufacturers. All these aspects will help drastically reduce the price of drugs and thus the government's objective that the consumers will benefit by which a wider section of the society could reach out for the drugs. Another route which Thailand may adopt is similar to what is done in India i.e. the introduction of the policy of differential pricing. Drug formulations in rural areas, may be supplied in bulk packaging and in urban areas the existing system may continue or still better and costly packaging may be introduced, and accordingly the price be differentiated for both the areas.

In Malaysia and Singapore differential pricing policies have not been implemented yet but the governments are purchasing drugs under the tender scheme. Thus with the tender policy, drugs are purchased in bulk at the lowest price and distributed to the government run hospitals, clinics and health centres. In Thailand the G.P.O. or Government Pharmaceutical Organisation takes the lead role in calling for tenders. It has been observed that the vast majority of essential drugs are well established multisource drugs. These could be purchased by world wide tendering. The mechanism used for international tendering are

1) the list of drugs to be procured with relevant information is advertised in the press.
2) tender specifications sent to foreign diplomatic missions.
3) list be sent direct to generic suppliers to ensure their participation in competitive bidding.

In Singapore the government has decided to test "trial tenders" so as to obtain supplies of medicines for use in the Government maintained hospitals or dispensaries. If the new system proves to be

economically advantageous the government's pharmaceutical manufacturing will cease to exist. This is because the government's own manufacturing facilities have been reported to be too small for the demand placed on it.

143 Many developing and third world countries look towards manufacturing of drugs within their borders. But before they can explore the potential of manufacturing these drugs they should analyse the following points. The pharmaceutical industry is based upon highly sophisticated disciplines :

1) Sciences - medicine, pharmacology, chemistry, bio- chemistry.
2) Technology - synthesis, production, fermentation, sterilisation, packaging.
3) Economics - costs, prices, marketing and advertising.
4) Legal affairs - patents, licensing, import and export regulations.
5) Fiscal affairs - import duties, taxes, royalties.
6) Education and training of professional personnel and skilled labour.

Since most developing countries lack the necessary sophistication in these disciplines, they find it very difficult to establish a pharmaceutical industry. However, quite strong reasons exist for developing countries to explore their possibilities for establishing this industry. The reasons are

1) to reduce dependence upon the external supply of needed drugs.
2) to save foreign exchange.
3) to industrialise.

A pharmaceutical industry in a developing country should be

established in accordance with its growth in the above mentioned disciplines; therefore the desired transfer of technology must be accompanied simultaneously with corresponding development of the other disciplines. U.N.I.D.O. which is part of the U.N is among other organisations and agencies assisting and advising the developing countries, and its view is that a continous exchange of experience among their countries may encourage the establishment of new projects.

In Thailand, manufacture of drugs i.e. local production in terms of Bahts is 8,500,000,000. Bulk of the manufacture is done by the G.P.O. or Government Pharmaceutical Organisation and the Armed Forces. The G.P.O. tends to serve the whole nation whilst the Armed Forces serves the network of army installations. The G.P.O. was established in 1941 to produce certain essential drugs and import/supply other drugs to government hospitals and clinics.

Given below are some of the drugs produced in Thailand.

1) anti microbial drugs.
2) analgesic - antipyretics.
3) vitamins.
4) gastrointestinal drugs.
5) sympathomimetic drugs.
6) topical drugs.
7) blood fluid and electrolytes.
8) cardiovascular drugs.
9) hormones.
10) histamines and antihistamines.
11) parasiticides.

The industry still depend on imported raw materials and much of it comes from Germany, Italy, Japan, U.S.A. and U.K. Some of the raw materials which are available locally are refined sugar, sorbitol solution, glycerin, aluminium hydroxide, chloramphenicol, kanamycin, rifampicin etc. Most of the packaging materials are available locally including glass bottles, plastic bottles, aluminium tubes paper boxes and cartons. In a study conducted by Kum Chomcin Chantrasakul it was seen that private factories still have ample capacity for all dosage forms. By average they are running at about 50% - 60% of their total capacity.

Unlike Thailand, the Malaysian pharmaceutical manufacturing sector is still in its infant stage. Raw materials are imported from Japan, U.K. and the U.S. The finished product churned out by Malaysia's small drug industry are cough and cold syrups, paracetamol tablets, eye drops, vitamins, certain injections, ointments and antacids. Given in the Appendix section are those companies that have been approved to manufacture pharmaceutical items. The National Pharmaceutical Laboratory in Petaling Jaya does manufacture certain pharmaceutical items and is too small to compare with the G.P.O. in Thailand.

Singapore has followed Thailand's footsteps to establish a major pharmaceutical operations in the Island Republic. Leading international pharmaceutical and health care product companies such as Baxter international, Becton Dickinson, Beecham, Glaxo, Kanegofuchi have been able to enhance their competitive advantage by serving their regional and international markets from Singapore. Singapore free-enterprise policy allows foreign companies the freedom for 100% ownership of its operations in Singapore, the freedom to repatriate

profits and capital and to recruit skilled personnel. The availability of skilled trained chemists, biochemists, pharmacists, engineers, laboratory and process technicians has enabled many companies in the industry to undertake manufacturing product development and testing activities in Singapore. Many pharmaceutical and health care product manufacturers in Singapore have received the seal of approval of the U.S. Food and Drug Administration (F.D.A.). This reflects the high level of quality consciousness on the part of the management as well as the workers personal discipline and commitment towards maintaining high quality standards.

145 Marketing news in its article dated 24th April 1987, has analysed that consumers can be classified into the following 9 groups:

1) Quality minded - those who look for the best health care at any cost.
2) Ready users - those eager to receive care.
3) Independently healthy - those involved in self care.
4) Clinic cynics - those skeptical about organised health care.
5) Avoiders - those who stay away from health care.
6) Naturalists - those seeking alternatives to regular health care.
7) Family oriented - those who think children are important and are interested in nutrition, wellness and family.
8) Generics - those who see no difference between health care facilities.
9) Loyalists - those who find a source or approach and stick with it.

Thus it is seen that physchographic segmentation can help health care organisations identify consumer needs and tell them about their

services and programmes. People have different buying habits, attitudes, opinions, desires and wishes and these things appeal to different market segments. Once you know the groups, you can target the services and your marketing efforts more effectively. Psychographic segmentation is very new to Malaysia, Singapore and Thailand. To start with the psychographic segmentation could be used in the O.T.C. market where it could be used effectively. One thing is for sure marketers can identify and target markets on a cost effective basis.

O.T.C. ITEMS

Multinationals in Thailand believe if they don't make a break through in the tender category, it would be safe and profitable to concentrate on the O.T.C. segment. Most of the O.T.C. products are backed by heavy advertising through all types of media, quite a good number of O.T.C. drugs are sold on the basis of specific benefits which they claim to provide. In Singapore and Malaysia, the languages used in newspaper advertising are English, Malay, Mandarin and Tamil. On T.V, O.T.C. advertisement in Singapore is in Mandarin and English, while Malay, Mandarin and English are used in Malaysia. In Thailand, Thai and English are widely used. O.T.C. status for drugs varies from country to country. Thus a drug which is classified ethical in Thailand might be considered O.T.C. in Malaysia and Thailand. Thus drug regulations change from country to country in South East Asia.

Since O.T.C. drug items are categorised with food and other consumer non edible durables the drug companies can distribute their product into any type of outlet by class which are listed below

1) grocery stores
2) mini markets

3) supermarkets

4) departmental stores

5) super stores

6) pharmacies

Retailers provide the crucial link between the producers of goods and the ultimate consumers. The retailing business is inherently widespread and its growth is virtually assured as it is positively related to the growth of the population. Retailers in Malaysia, Singapore and Thailand can be broken into grocery stores, small shops, coffee shops and small stalls on sole family proprietorship.

146 Classification of retail outlets.

Type of outlet by class	Size sq ft	Number of items	Turnover $/year	Catchment area (km)
Grocery stores	1,200	2,000	250,000	2
Mini markets	2,500	5,000	1,500,000	5
Supermarkets	15,000	15,000	8,000,000	40
Dept. stores	20,000	5,000	10,000,000	40
Superstores	40,000	20,000	20,000,000	60

There is little difference between a grocery store and a mini market since it is relatively easy for an operator to convert a grocery shop into a mini market. Unlike the grocery store, the mini market operator enchances his operation by efficiently utilising retail space or shelf space hence increasing the number of items displayed on the shelves. There is however an obvious difference between a mini market and supermarket, since the latter is bigger in size, display more items on sale and has larger catchment area. While a mini market is normally

situated in "shop lots", a supermarket is mainly situated in big shopping complexes. A departmental store by definition only sells consumer durables and non food items although some do retail food as an additional business. A superstore differs from a departmental store mainly in size of retail space. Another important distribution point for O.T.C. items are the Chinese medicinial shops which are involved in selling ginsengs, herbs, leaves, liquor etc. These shops are prominently involved in servicing the Chinese population. They are found in Malaysia, Singapore and Thailand which have sizeable Chinese population.

Thus it can be seen that O.T.C. items can be distributed through any of the retail outlets. Paracetamol tablets, cough syrups, cough drops, vitamin tablets, tonics, eye drops, ointment for muscular pains and other products can be channelled through without trouble. O.T.C. business is big and it is seen that more drug companies are attracted to this category. Drug companies can advertise without restriction on T.V. which draws maximum attention from the consumers. O.T.C. business is very much similar in Malaysia, Singapore and Thailand. Companies involved in O.T.C. business distribute themselves or make use of large distributing houses like Zuellig, Diethelem, Harpers and Boustead. For marketing system to be effective, distribution channel plays a very important role. It ensures that a range of products is available at the right time and at the right place with the minimum cost incurred to consumers of all types. Firms have to take certain specific decisions relating to market coverage, transportation cost, commissions and credit etc. Most pharmaceutical companies maintain multi level distribution system i.e. in between the manufacturer and ultimate consumer, there are 2 or 3 intermediaries in the form of

wholesalers and retailers. Multilevel distribution is costly but considering the services rendered by the middlemen in terms of stocking, transportation and dispensing, thus higher distribution cost may not be justified.

PHARMACIES

Pharmacies in Malaysia, Thailand and Singapore act as outlets for the distribution of ethical drugs and O.T.C. items. In all 3 countries the pharmacies are manned by qualified pharmacists. In Thailand there is a slight exception since pharmacies are classified as 1st class and 2nd class. The 1st class pharmacies have a pharmacist while the 2nd class pharmacies can be run by anyone. In comparing the 3 countries, Thailand still has the maximum number of pharmacies i.e. 3,450 1st class and 5,385 2nd class outlets. Malaysia currently has 237 pharmacies and Singapore has 98 to serve the island population. The doctors in the 3 countries still practise dispensing and the pharmacies still have not achieved the prominence they so do deserve. In Malaysia and Singapore the pharmacists are negotiating with the Medical Association to allow them (pharmacists) to dispense and the doctors to prescribe. The pharmacies still feature as the major distribution outlet for drug companies where ethical drugs are passed through to consumers.

MARKETING TO AND THROUGH THE MEDICAL PROFESSION

The majority of doctors in the 3 countries prescribe and dispense drugs. Thus these professionals have the final say in what drugs to prescribe. They could prescribe both ethical and generics. Pharmaceutical companies concentrate their marketing activities on doctors. In most cases doctors purchase their drugs directly from

pharmaceutical companies. At times these doctors prefer to pull stocks from pharmacies. In Malaysia and Singapore the "Guardian" and "Apex" pharmacies are a chain of outlets which serve the consumers and doctors.

Successful marketing by pharmaceutical manufacturing companies to members of the medical profession is greatly determined by a good understanding of the various factors that influence their purchasing behaviour. Acceptance of a scheduled pharmaceutical product by doctors is a " sine qua non " for its success. While patients portray the roles of both buyers (they pay for the product) and users; they have little or no influence on the actual choice of product or brand. The doctors role as deciders is the crucial one. It is therefore hardly surprising that the bulk of the marketing efforts of manufacturers of scheduled pharmaceutical products or ethicals is directed at medical practitioners. In a research study conducted on the factors influencing product prescription decisions the following results were obtained.

Fig 22

147 Factors Influencing Product Prescription Decisions

		Mean Influence Score
1)	Personal experience with the product.	4.7095
2)	Recommendations made by colleagues in informal discussions.	3.6095
3)	Sales calls made by pharmaceutical company representatives.	3.2381
3)	Seminars, conferences, lecturers organised by	2.9905

pharmaceutical companies.

4) Advertisements in journals and magazines. 2.3476

5) Sales promotional material received from pharmaceutical companies, such as samples, calenders, diaries, pens, note pads. 2.3286

6) Direct mail advertising. 1.9524

Mean influence score is the average score on a 5 point scale, where 1 = no extent, 2 = limited extent, 3 = moderate extent, 4 = considerable extent, 5 = very large extent.

It is clear that the most dominant influence on prescribing behaviour is the previous experience with the product and the mean score of 4.7095 suggests that, on average, it is perceived by respondents to influence prescribing decisions to a "very large extent". Recommendations made by colleagues in informal discussion is the 2nd most important determinant of prescribing decisions. Thus it is observed that the two points mentioned above exert the most influence on prescribing decisions and are both of an interpersonal/ organisational nature and not directly controllable by the pharmaceutical firms marketing strategy of promotional tools. Sales calls by pharmaceutical firms sales representatives are perceived to be the most influential. It is informative to note that seminars/conferences/lectures arranged by pharmaceutical firms are regarded as being more influential than advertising and sales promotional material. The other factors which influence doctors prescription decisions are :-

148 1) scholarly articles by specialists in scientific medical journals.

2) product availability.

3) credibility and reputation of the company.

4) price of the product to the patient.

5) ease in remembering the brand name of the product.

In Malaysia, Singapore and Thailand all the factors mentioned above influence the physicians. Of the marketing tools available, sales by sales representatives is the most powerful. Sales calls in Malaysia and Singapore is conducted in English. In Thailand both Thai and English are used to communicate to the doctors on the benefits of the drugs. Thus personal selling can play a key role in ensuring pharmaceutical marketing success through its direct, as well as indirect, influence on prescribing decisions. Pleas for more highly skilled and better qualified salespeople should not go unheard and perhaps it is time for pharmaceutical sales management to give greater emphasis to quality of sales calls, rather than quantity.

DISTRIBUTION

Distribution of the drugs to doctors and pharmacies is from the factories, if the pharmaceuticals are manufactured within the country, or the drug companies warehouses if the drugs are imported from overseas or from the distributor/wholesaler warehouse if the pharmaceutical companies have appointed distributors. Orders are taken by the sales force and the drugs are delivered. Credit facilities of 45-60 days are extended to the doctors in private practise, pharmacies and private hospitals. Government purchase is through tenders. Goods are usually transported by road in Malaysia, Singapore and Thailand. In remote provinces of Thailand and East Malaysia the pharmaceutical goods are air freighted. In Thailand and Malaysia due to the vast areas, the pharmaceutical representatives cover selected area and do follow up calls frequently every month. In Singapore, due to the small

size of the Island Republic the sales force is at a bare minimum.

149 PRODUCT MANAGEMENT CONCEPT

Most major pharmaceutical companies now have classically structured marketing departments which espouse the product management concept (P.M.C.) pioneered by the consumer packaged goods marketers. The pharmaceutical manufacturers are adopting marketing oriented practices, relying less on pure selling and price competition. Whilst this concept is structurally embedded in the international subsidaries of pharmaceutical marketers, the full theoretical value of the concept remains unfulfilled. A study reports on an investigation into the future of the product management concept in the South African pharmaceutical market. The pharmaceutical market in South Africa is a representative microcosm of other international markets. The findings in the study showed that product management concept will remain an integral feature of the typical pharmaceutical marketing organization in the year 1990. Top management support will be given to the system. The product manager of the 1990's will be considered an information centre for his range of products. His understanding of the financial aspects of his products will be reasonable, while it is unlikely that he will spend more time in direct contact with the market. There is reasonable optimism about the strategic ability of the product manager in the future, but this is qualified by hesitancy in respect of permitting the product manager a portfolio approach. It has been stated that the product managers are expected to stay longer in their jobs and will be better academically qualified and will probably have spent a period in the sales force. In summary, it appears that the product manager of 1990's in the pharmaceutical industry will perform information providing, co-ordinating and

boundary spanning roles will not exercise line authority over critical product decisions. Thus it is evident that the product management concept will gain more steam in Malaysia, Singapore and Thailand where pharmaceutical companies compete for market share.

SELF MEDICATION

Self medication has always existed in the medical system. If we inflict ourselves with a cut which needs minor treatment, we would rather go for a box of Band Aid and cover the cut. If there is a rising temperature "paracetamol tablets" or rather "Panadol" is the remedy. Self medication exists in both the higher and lower income group. The higher income group seems to have a larger percentage of educated people and they feel that they are capable of treating themselves. But once the situation changes and they fall very sick, they are seen rushing to the nearest clinic or hospital for treatment. In the case of the lower income group it becomes necessary at times to treat themselves or seek help from the traditional druggist because they are poor.

THAILAND

In Thailand, self medication was on the rise in the rural areas in the 70's. 51.4% of the population were seen using self medication or buying drugs for own use. This figure gradually fell to 42.3% in 1979. In 1985, a survey showed that self medication was only 22.3%. As the government improved its health care system by opening up new hospitals most of the rural poor were attracted to these government establishments. Thus the government hospitals which served only 11.4% of the population in 1970 jumped to 32% in 1985.

150 PERCENTAGE OF UTILISATION OF HEALTH CARE SERVICE

(1970, 1979, 1985)

SOURCES OF HEALTH CARE SERVICES	1970	1979	1985
Self medication or buying of own drugs.	51.4	42.3	22.3
Health care centres	4.4	16.8	13.3
Government hospitals	11.4	10.0	32.0
Private hospitals and clinics	22.0	20.4	20.8
Traditional doctors	7.7	6.2	2.4
Do not seek any treatment	2.7	4.2	6.3
Health reporters / health volunteer	-	-	2.1
Maternal and child health care centres			0.8

151 MALAYSIA

It has come to that extent in Malaysia especially in the rural areas for the people to think that doctors are "semi gods". The people dont ask questions nor do they demand for information about the drugs that are prescribed to them. As a result it is fully justified that the layman remains ignorant about health matters. Over time the ignorance is perpetuated because doctors who are seldom questioned tend to neglect their basic responsibility towards patients.

In public hospitals where the majority of patients come from lower income group, doctors are almost never queried about anything. There is always the assumption that doctors never make

mistakes.

In private clinics and public hospitals it is quite common for doctors to overprescribe or in medical lingo practise " poly pharmacy " or prescribing without full diagnostic procedures. Studies overseas show that when a doctor does not take the trouble to explain the nature of the patients illness, patients fail to comply to instructions. Mr. Liew Kee Hooi, Director Of Pharmacy Division in The Ministry of Health says that it is not unusual to hear patients who stop taking medications when they do not get better. Research has also shown that when patients are given too many drugs they tend to forget when and how much they should be taken within given period of time. Some patients stop taking the medications as soon they feel better, not realising that more resistant strains of the bacteria may develop once they do that. Another common practice is the sharing of medication. When two people appear to have the similar symptoms and only one goes to the doctor, there is always the tendency for two to share the medication prescribed for one.

According to Associate Prof. Dzulkifi Abdul Razak of the University Science Penang, that not enough has been done to educate the public on drug use and misuse. Nor are advertisements on drugs a good source of information because they naturally accentuate the positive and eliminate the negative. It has been pointed out that certain advertisements on antacids are said to carry a cooling effect when they are consumed.

Knowing how easily drugs can be misused the government has

insisted that stickers with addresses of the pharmaceutical companies be placed on all O.T.C drugs. Till date this regulation appears effective. The Drug Control Authority will begin registration of O.T.C drugs soon. Medical professionals are hoping when this happens, such items will no longer be sold like " sweets ". It is very normal for Malaysian doctors in the private practise to dispense their own drugs and because of this, community pharmacists still do not play a major role in dispensation of drugs. Pharmacists insist that they are better trained to dispense and explain the effects of prescribed drugs to patients. Pharmacists still insist that doctors should not waste time over drug dispensation and concentrate more on diagnosing ailments. In this long standing controversy over who should dispense drugs, doctors have always maintained that their dispensation are free. It has been quoted that Malaysian patients are a little spoilt. If the doctor gives them a prescription and they have to go to a pharmacy to get their medicines, they get annoyed. In hot and rainy weather it will make some of them angry.

On the other hand pharmacists can always double check with the doctor to determine why a certain dosage is very high or too low. If a doctor prescribes and dispenses medicine, there will be no other professional to check his prescription.

It is forseen that the new system for drug dispensing could only be ready in the next 5 years. This system whereby only pharmacists can dispense drugs is likely to be implemented in

stages. This system would probabaly be implemented in major towns first where there are adequate number of pharmacists. The Malaysian Pharmaceutical Society believes if the system can't be done by ethics then a legislation will be implemented. The Malaysian Medical Association has in general accepted the idea. But one thing is sure, till there are ample pharmacists around, the system could backfire and collapse.

The Malaysian Pharmaceutical Society is still confident that the scheme would go through. They have drawn up a standard for doctors when filling out prescriptions for patients and have delivered it to the Malaysian Medical Association. The M.P.S feels that the new form when filled will have many of the patients particulars. The form would check the doctors prescriptions on certain drugs and dosages. At the same time a pharmacist would be able to find out if a particular doctor's signature is forged.

152 The Malaysian Pharmaceuticals Trade And Manufacturers Association representing the pharmaceutical industry has been promoting the importance of self medication in strengthening the Malaysian Health Care system. The role of self medication and its contribution within the system can be seen from several perspectives.

1) Self medication is a need and a right of the consumer to deal with minor illness.

2) Self medication plays an inevitable, necessary and invaluable complementary role to the health care system of the developing and developed countries.

3) Self medication is one of the means to maximise an existing but scarce medical resource.

4) Self medication is a means to reduce and contain escalating medical costs and initiate more consciousness in the need for personal responsibility in the health care system.

5) Self medication will release, acute and chronic illness as well as in the disease prevention and health care planning.

According to the M.P.T.M.A a sizeable population of adults self medicate. Therefore it is imperative that regulatory agencies, health professionals, consumers and the pharmaceutical industry fulfill their obligations and shoulder their responsibilities in ensuring responsible self medication.

The M.P.T.M.A has recommended the following :

1) The industry, health care professionals and the government form an advisory committee on O.T.C products.

2) A national drug policy on self medication be drawn up.

3) An information education campaign on self medication be developed.

4) Emphasis be placed on adequate product labelling and ethical advertising.

5) A strict code of marketing practice is to be reviewed and adhered to by the industry.

SINGAPORE

In Singapore, due to excellent health care facilities, the citizens still seek treatment at the government and private

hospitals. There is not much room for self medication. Eventhough the country has a dispensing market, the number of registered pharmacies in the Republic was 98 as of March 1988. It is difficult to analyse the self medicated population in Singapore but there is strong possibility that there could be a swing towards self treatment in the upper class strata.

O.T.C. ITEMS

153 In many ways, the O.T.C sector represents the " consumer " market side of the pharmaceutical industry. The much larger prescribed sector operates in highly regulated fashion. Within the O.T.C sector, drugs operate as virtually standard consumer market, complete with manufacturers advertising in the mass media, and a few restrictions on consumer purchasing.

In calculating the market size of O.T.C pharmaceutical, it has been divided into the following groups -

1) cough and cold treatments.
2) analgesics and other pain relievers.
3) digestion remedies.
4) vitamins and dietary supplements.
5) plasters and dressings.
6) medicated skin care products.
7) a range of minor " other " market sectors including haemorrhoidals, eye and ear care treatments, rheumatic treatments, pregnancy testers and condoms.

In the United Kingdom for that matter, new legislation acts have accelerated this mood with radical changes. The government wishes to see the burden of The National Health Service eased by the consumers taking greater degree of personal responsibility for their welfare.

In terms of the developments the following has been noted :

1) The cost of chargeable prescriptions has been rising ahead

of inflation.

2) Few chargeable prescriptions are being dispensed.

3) Deregulation of certain pharmaceuticals has transferred a number of more effective drugs away from a purely prescribable status and into the O.T.C market.

4) The emphasis is upon the pharmacist as a community health advisor.

With regards to point 4, the pharmacists in Malaysia have requested the Malaysian Medical Association greater autonomy for dispensing on behalf of the doctors but the transition process is going slow. In Singapore, there are approximately 98 pharmacies and people are looking towards the local pharmacists as a source of medical advice. In Thailand, the community look towards pharmacies to avoid visits to the doctor which often leads to lengthy waits in the uninspiring surroundings.

The results from the consumer surveys in the U.K show that 69% of the sample of adults claimed to have suffered from a cold and 56.6% from a cough. This shows that cough and cold treatments are the largest category of the O.T.C market. The second most common complaint after cold is headache where analgesics are the second largest product category.

Supply of O.T.C items in Malaysia, Singapore and Thailand are led by multinationals ie. Glaxo, Sterling Drugs, Boots, Reckitt & Coleman, Warner Lambert, Bayer, Wellcome, Richardson - Vicks, Beecham and others.

In the cough and cold category, Sterling Drugs leads the rest of the pack with its paracetamol tablet called " Panadol ". In the vitamins category Sanatogen (Fissions) and Boots are trying to claim the market for themselves. In the other segments for example the adhesive plasters, the market is competitive with Elastoplast (Smith & Nephew) and Band Aid (Johnson & Johnson) dominating the sector. The sales of condoms in Malaysia has picked up with the " Aids " scare and women adopting the rubber because of the reluctance to take the " pill ".

154 Advertising of O.T.C items is on the increase eventhough no exact data is available on the dollar value invested. In the U.K through M.E.A.L'S (Media Expenditure Analysis) it is seen 65 - 70 % was spent in 1987 on O.T.C advertising.

DRUG REGISTRATION IN MALAYSIA

155 Till November 1985 there was no proper control of the flow of drugs and medicines into Malaysia. At that point of time it was believed that there was about 25,000 - 30,000 preperations available in the market. The figure was an assumption and was given by consumerist groups. In October 1985 the Deputy Minister of Health Mr. Pathmanaban made a press statement saying that the new drugs with the exception of "latest discoveries" will not be allowed into the Malaysian market. This rule came under the control of Drugs And Cosmetics Regulation of 1984.

Immediately on 1st November 1985 the newly formed 8 member body called the Drug Control Authority under the Director General of Health oversaw the implementation of the regulation which required the 6,800 pharmaceutical preperations listed under the poison ordinance 1952 to undergo registration.

As of December 31st 1987, a total of 3,908 pharmaceutical preparations had been registered in Malaysia from 36 different coutries. The overall number of applications received was 7,274. Of which 1,670 was rejected by the D.C.A, 140 were withdrawn by the companies concerned while 1,304 appeals were lodged against the D.C.A's decision. Of these 218 were approved, 115 were still pending, and the remainder were rejected. Up to the end of 1987, 23 manufacturers licences, 88 importers licence, 155 wholesalers licences and 4 clinical trial import licences had been granted.

156 Those drugs rejected were on the grounds that they were 1) toxic 2) formulations were not rationale 3) the drugs were not used in the country of origin 4) dangerous side effects. Thus the first phase saw the registration of poison or scheduled drugs.

Mr.Liew Kee Hooi, The Director of The Pharmaceutical Division

announced that the pharmaceutical services division was now ready for the second phase of the registration exercise which will cover the non scheduled items or O.T.C products.

The third phase of the programme will cover traditional medicines and the fourth stage will complete the exercise by looking into cosmetics. The registration of the first phase was not conducted instantly and the Ministry of Health gave the importers and the wholesalers a grace period to comply with the new regulation.

Most of the drugs that passed the drug control tests were examined at the National Pharmaceutical Laboratory in Petaling Jaya. The Ministry of Health did mention that if the manufacturers and wholesalers had endorsements of their products by internationally acknowledged institutions like the F.D.A of the U.S.A or similar institutions in the U.K, Sweden or Canada it would be an added advantage for processing their applications.

The pharmaceutical magazine "Scrip" in its article in May 1987 complimented the Malaysian drug system a "model scheme" for the developing countries. The drug companies in Malaysia did complain during the exercise that too much was required under the new law but registration was flexible in some respects. Malaysia is one of the few countries where the industry association has formulated two codes of pratice ie. one for ethical products and the other for O.T.C items. Malaysia is also one of the few countries in the developing world to have set up an advertising standards board and to have introduced controls.

157 Consumerist groups are quite vocal in Malaysia, especially the Consumer Association of Penang. For example the C.A.P has been pressing the Ministry of Health to ban vitamin B15 and B17. The reasons behind this anxiety is that B15 causes cancer while B17

when taken in large quantities with certain fresh fruits and uncooked vegetables, could release cyanide. Both the products have been banned by the Singapore Government. In 1986 the Pharmaceutical Service Division conducted raids to flush out
158 those processing scheduled poison for sale without licences. They raided 851 premises in 307 towns and found that 477 premises possessed scheduled poison for sale. 9,684 types of scheduled poisons including psychotropic pills, valued at $1.53 million were seized.

As the Drug Control Authority goes ahead with the 2nd and 3rd phases of registration of O.T.C items and traditional medicines, the Pharmaceutical Services Division has received mixed responses. Many feel that cosmetics should be registered sooner. This would allow Muslims to identify whether the cosmetics were free from gelatine, lard and placenta before they are used.

Coming to the traditional medicines, the exercise is going to be tough as with regards to the language problems in labelling of traditional medicines. It is believed that herbs used in traditional medicines were safe. On the other hand some Chinese druggists feel that there will be some difficulty in identifing the components of traditional medicines. As a result of the new drug registration system parallel imports have virtually disappeared from the Malaysian market.

159 CONTROL OF DRUGS AND COSMETICS REGULATIONS 1984

PRELIMINARY

1. 1) These regulations may be cited as the Control Of Drugs and Cosmetics regulations 1984.

2) These regulations shall come into force on such date

as the Ministry may appoint by notification in the Gazette and the Ministry may :

a) appoint a commencement date for drugs and a different commencement date for cosmetics, or

b) appoint different commencement dates for different groups of products, or

c) appoint different commencement dates for different provisions of these regulations, or

d) appoint different commencement dates for different parts of the Federation.

e) adopt any combination of the foregoing alternatives.

2 In these regulations unless the context otherwise requires

" Authority " means that the Drug Control Authority established under regulation 3.

" Clinical Trial" means an investigation or series of investigations on persons conducted by or under the direction and supervision with scientific training of experience for the purpose of finding out or determining the safety, effectiveness and other effects of any product.

"Contract manufacturer" means any person who manufactures any product on the order of another person to whom a manufacturer's licence has been issued under these regulations.

"Cosmetic" means any substance or preperation intended to

be used or capable or purported or claimed to be capable of being used in or for cleansing, improving, altering or beautifying the complexion, skin, hair or teeth and includes soap, toilet preparations, deodorants and perfumes.

"Dental practitioner" means a person registered in the register under the Dental Act 1971.

"Drug" has the meaning assigned to it in the ordinance but does not include a herbal remedy.

"Fully registered medical practitioner" means a person registered under section 14 of the Medical Act 1971.

"Herbal remedy" means any drug consisting of a substance or a mixture of substances produced by drying or crushing without subjecting to any other process, a natural substance or substance of plant, animal, or mineral origin or any part of such substance or substances.

" Licenced " means any of the licences issued under regulation 12.

" Licenced importer " means a person to whom an import has been issued under these regulations.

" Licenced Manufacturer " means a person to whom a manufacturer's licence has been issued under these

regulations, and includes a contract manufacturer.

" Licenced Wholesaler " means a person to whom a wholesalers licence has been issued under these regulations.

" Manufacture ", in relation to any product includes :

a) the making or assembling of the product.

b) the enclosing or packing of the product in any container in a form suitable for administration or application and labelling of the container.

c) the carrying out of any process in the course of any of the foregoing activities.

" Pharmacists " means a person registered under the Registration of Pharmacists Ordinance 1951.

" Product " means a drug in pharmaceutical dosage form, or a cosmetic, having a singular identity, composition characteristics and origin.

" Registration Certificate " means a registration certificate issued under regulation 8(8).

" Registration Product " means a product currently registered in accordance with the provisions of these regulations.

" Secretary " means the Secretary to the Authority

appointed under regulation 3 (6).

THE DRUG CONTROL AUTHORITY

3. 1) An authority to be called the Drug Control Authority is established for the purposes of these regulations.

2) The Authority shall consist of the following members ie. a) The Director General of Health b) The Dirctor of Pharmaceutical Services c) The Director of The National Pharmaceutical Control Laboratory d) Five members to be appointed by the Minister.

3) Members appointed under sub - regulation (2) (D) shall be the following persons :

a) a consultant physician in public service.

b) a pharmacist in the public service.

c) three persons from any local universities with expertise in pharmaceutical sciences.

4) Subject to sub regulation (5), a member appointed under sub regulation 2 (D) shall, unless he sooner resigns, hold office for a period of 3 years but shall be eligible for reappointment.

5) The Minister may at any time and without assigning any reason, suspend or terminate the appointment of any member appointed under sub regulation 2 (D).

6) The Minister shall after consultation with the Authority appoint a pharmacist in the public service to be secretary to the authority.

7) The secretary shall not be a member of the authority.

8) Any appointment to or suspension or termination of membership under these regulations shall be published

in the gazette.

4. 1) The Minister may appoint in respect of each member appointed under regulation 3 (2) (D) an alternate member who shall be similarly qualified as the substantive member as provided in regulation 3 (3).

2) An alternate member attending any meeting of the Authority or acting for the substantive member under sub regulation (2) shall be deemed for all purposes to be a member of the Authority.

3) An alternative member attending any meeting of the Authority or acting for the substantive member under sub regulation (2) shall be deemed for all purposes to be a member of the Authority.

5. 1) Subject to sub regulation (2), The Director General Of Health shall be the Chairman of the Authority and shall preside at all meetings of the Authority.

2) The Director of Pharmaceutical Services shall be the alternate Chairman and shall preside at meetings of the authority in the absence of the Chairman.

3) The Chairman of a meeting shall have an original vote and, in the event of an equality of votes, a second or casting.

4) Four members of the Authority including the Chairman shall form a quorum.

5) The Authority shall meet at such times and places as the Chairman may determine.

6) The Authority may invite any person appointed under the regulation (6) or any other person to attend any

meeeting of the Authority but such persons shall have no right to vote at the meeting.

7) They may be paid to the members of the Authority, to the Secretary, to persons invited under sub regulation (6), to attend any meeting of the Authority and to persons appointed under regulation (6) such allowances and other expenses as may be approved by the Government from time to time and such allowances and expenses shall be payable out of the general revenues of the government.

8) Subject to this regulation, the Authority shall regulate its own procedure .

9) No action or proceeding of the Authority shall be questioned on the ground :

a) of the existence of any vacancy in the membership or any defect in the constitution of the Authority.

b) of any omission, defect or iregularity in procedure not affecting the merits of the case.

6 The Authority may appoint a person or persons as it may think necessary as advisors for the purpose of giving it advice when discharging any of its functions.

REGISTRATION AND LICENSING

7. 1) Except as otherwise provided in these regulations, no person shall manufacture, sell, supply or import any product unless

a) the product is a registered product.

b) the person holds the appropriate licence required

and issued under these regulations.

2) The requirement of 1 (B) does not apply to the sale or supply of any product by a retailer.

3) The provisions of sub regulation (1) relating to importation do not apply to any person arriving in the Federation from a place outside the Federation who imports, as part of his personal luggage, any product meant solely for his use or for the use of his family in a quantity not exceeding that which may be reasonably required for one month use by one person, or to any officer of the Government importing any product in the course of his duty, or to any person who in accordance with the written consent of the Authority, brings any product into the federation in transit.

4) In sub regulations (3) " in transit " means taken or sent from any country and brought into the Federation by land, air or water, whether or not landed or transhipped in the Federation for the sole purpose of being carried to another country either by the same or another conveyance.

8. 1) The Authority may on application made in such a manner or form as it may require, register any product subject to such conditions as it may impose.

2) Every application for the registration of a product shall be accompanied with a processing fee for M$250 and with such documents, items, samples, particulars or information as the Authority may require.

3) The Authority may charge any applicant such costs as

it may incur for the purpose of carrying out laboratory investigation prior to the registration of any product.

4) The processing fee and such costs as may be incurred by the Authority under sub regulation (3) shall not be refundable in the event of the application being rejected under regulation (11).

5) Any change in any document, item, sample, particulars or information in sub regulation (2) shall be notified in writing by the applicant to the Authority within 14 days from the date of such a change.

6) Subject to regulation 17, the period of registration of a product shall be as specified in the registration certificate issued under sub regulation (8) and where so specified the registration shall be valid till the end of the specified period.

7) Subject to sub regulation (17) where the period of registration of a product is not specified the registration shall be valid until it is cancelled.

8) Upon registration of a product the Authority shall issue to the applicant a registration certificate in the schedule.

9) Any person who knowingly supplies any false or misleading information to the Authority in connection with his application for the registration of a product commits an offence.

9. 1) The secretary shall keep and maintain a register of the products registered and separate registers may be kept and maintained for drugs and cosmetics.

2) The register shall contain

a) the name under which the product is registered;

b) the content and quality of the active ingredients;

c) the name and address of the manufacturer;

d) The name and address of the product registration certificate holder;

e) the registration certificate number;

f) the date of issue and expiry of the registration certificate;

3) Any person may, upon written application to the secretary and upon payment of a fee of M$5 inspect the register or registers kept under sub regulation (1).

10 The Authority may require any person applying for the registration of any imported product to furnish a written declaration made by or on behalf of the manufacturer of the product that all the legal requirements governing the manufacture of such a product imposed by the laws of the country of manufacture have been complied with.

11 The Authority may, without assigning any reason, reject any application for the registration of any product.

12. 1) The Authority may, subject to the provisions of these regulations, issue any of the following licences subject to such conditions as it may impose:

a) a manufacturer's licence in Form 2 in the schedule, authorising the licensee to manufacture the registered products in the premises specified in the licence and to sell by wholesale or supply the products.

b) a wholesaler's licence in Form 3 in the schedule, authorising the licensee to sell by wholesale or supply the registered products from the address of the business premises specified in the licence.

c) a clinical trial import licence in Form 4 in schedule authorising the licensee to import any product for purpose of clinical trials, not withstanding that the product is not a registered product.

d) An import licence in Form 5 in the schedule, authorising the licensee to import and sell by wholesale or supply the registered products from the address of the premises specified in the licence.

2) Provided the drugs and cosmetics are not included together in one licence, any number of registered products may be included in the licence other than a clinical trial import licence, with shall include only one product.

3) Subject to sub regulation (2), the Authority may, on application by the licensee, add to the registered products included in the licence other than a clinical trial import licence, and make such addition or amendment to the conditions of

the licence as are rendered necessary by the addition of the other registered products.

4) Subject to regulation (17), a licence issued under these regulations, other than a clinical trial import licence, shall be valid for one year.

5) Subject to regulation (17), a clinical trial import licence shall be valid for such a period, not exceeding three years from the date of issue of the licence, as may be specified in the licence.

6) Every licence shall be personal to the licensee named in the licence and shall not be transferable to another person.

13. 1) An application for a licence under these regulations shall be made to such a manner or form as the Authority may require and shall be accompanied with a processing fee of M$250 in the case of an application for a manufacturer's licence M$100 in the case of an application for any other licence.

2) The processing fee shall not be refundable.

3) The applicant for a licence shall furnish such documents, particulars or information as the Authority may require.

4) Any person who knowingly supplies any false or misleading information to the Authority in connection with his application for a licence commits an offence.

14) The Authority may, if it finds fit and without assigning any reason, refuse any application for a licence.

15. 1) Any person who wishes to import any product for the purpose of research in a school of pharmacy or a research of training institution or in order to obtain samples for purposes of registration may on application be exempted by the Authority from the provisions of regulation 7 (1).

2) The requirement of regulation 7 (1) as regards a licence to supply or manufacture does not apply to the dispensing or the doing of any act falling within definition of " manufacture " which is necessary for the dispensing, of any drug for the purpose of its being used for medical treatment, by the following persons and in the following circumstances :

a) a pharmacist or a person working under the immediate personal supervision of a pharmacist in a retail pharmacy.

b) a person acting in the course of his duties who is employed in a hospital or dispensary maintained by the Federal or any State Government or out of public funds or by a charity approved for the purposes of section 9 (1) (b) of the Poisons Ordinance 1952 or in an estate hospital and who is authorised in writing as approved in the section.

c) a fully registered medical practitioner or a dental practitioner or a person working under the immediate personal supervision of such a practitioner if the drug in question is for the use of such practitioner of his patents.

3) Regulation 7 (1) (a) shall not apply to any drug manufactured by persons and in the circumtances described

in sub regulation (2) if the drug is manufactured for the purpose of dispensing.

4) A school of pharmacy or any research of training institutions which wishes to manufacture any product for teaching and research purposes may on application be exempted by the Authority from the provisions of regulation.

5) Any person who wishes to manufacture any product solely for the purpose of producing samples for clinical trials or for registration under these regulations may on application be exempted by the Authority from the provisions of regulation 7 (1).

16.1) The Authority may issue such certification on any matter relating to any product where such certification is required by any country importing such a product.

2) A fee of M$25 is payable on the issue of such certification.

17.1) The Authority may, at any time and without assigning any reason, suspend or cancel the registration for any product or revoke any licence issued under these regulations and may amend the conditions to which such licence or registration is subject.

2) Subject to sub regulation (3), any suspension or cancellation of the registration of any product under sub regulation (1) shall similarly and at the same time affect any licence issued under these regulations relating to that product.

3) Not withstanding sub regulation (2), where licence issued

under these regulations relates to several registered products, the suspension or cancellation of the registration of any product under sub regulation (1) shall not affect the position of other registered products listed in the licence.

18 Any person aggrieved by any decision of the Authority under these regulations may make a written appeal to the Minister within fourteen days from the date the decision is made known to him and any decision of the Minister made on an appeal shall be final.

MANUFACTURE OF REGISTERED PRODUCTS

A licenced manufacturer shall ensure that all personnel employed at all levels of manufacture :

a) possess suitable qualification required for their jobs;

b) have adequate experience and are technically competent;

c) are regularly trained during their employment for the purposes of keeping up to date with any advances or changes;

d) are medically examined regularly;

20.1) registered products shall be manufactured, processed packed, labelled and tested in premises which are in accordance with standards set by the Authority.

2) Adequate storage areas shall be provided so that all starting, rejected or returned materials or intermediates or finished registered products are adequately separated.

3) Manufacturing premises shall be maintained in good and sanitary conditions: there shall be a sanitation programme

for the maintenance of the premises in these conditions and records of the performance of the programme shall be kept.

21.1) Manufacturing and testing equipments shall be designed placed and maintained in such a way so as to :

a) be suitable for their intended use;

b) facilitate thorough cleaning whenever necessary;

c) minimise any contamination of registered products and their containers during manufacture;

d) minimise the risks of confusion and omission of any manufacturing steps

2) A licenced manufacturer shall

a) ensure all weighing, measuring and recording equipments are maintained in good working conditions and are regularly calibrated.

b) where suitable, have manufacturing steps monitored by recording devices.

c) ensure all manufacturing equipments are thoroughly and regularly cleaned in accordance with such written specifications as the Authority may determine.

d) ensure records of the matters in paragraphs (a), (b) and (c) are kept and maintained.

23 Manufacturing operations shall be carried out in accordance with such requirements as may be determined by the Authority.

1) A licenced manufacturer shall establish a quality control

department under the supervision of a suitably qualified person.

2) A quality control department shall -

a) control all materials used in the manufacturing process;

b) monitor the quality aspects of all manufacturing steps;

c) control the quality and stability of the finished registered products;

3) For all the purposes of this regulation, a licenced manufacturer shall provide such facilities as may be necessary for a quality control department to discharge its duties.

24 For the purposes of this part, a licenced manufacturer shall conduct regular inspections of his manufacturing and quality control activities.

25 A licenced manufacturer shall maintain proper records of every batch of finished registered products distributed to enable the complete and rapid recall of the registered products if necessary.

MISCELLANEOUS

26. 1) Any officer or inspector may, at all reasonable times, enter any premises used or connected with the manufacture, sale, supply or import of any product for the purposes of inspecting :

a) the product with which the premises are concerned;

b) the premises and the operations carried out in the premises;

c) any licence, registration certificate, record or document

required under these regulations and every licenced person and every agent and servant of the licenced person shall afford every assistance required by the officer or inspector and shall, on demand by the officer or inspector, produce any product or any licence, registration certificate, record or document required under these regulations.

2) Any officer or inspector may seize any product in respect of which he reasonably believes that an offence under these regulations, or any breach of the conditions subjected to or affected, has been or being committed, and any plant, equipment, book, document or other article which he reasonably believes would furnish evidence of the commission of such offence or breach.

27.1) Every licenced wholesaler and importer shall maintain proper records of each transaction involving a registered product, showing the particulars specified in the registration, for a period of not less than five years from the date of transaction.

2) In the case of a licenced wholesale, the records shall show the date of sale or supply, the name and address of the purchaser, the name and quantity of the registered product sold, the registration reference of the product and the number of the invoice or delivery order.

3) In the case of a licenced importer, the records shall show the date of importation, the name and address of the supplier, the name and quantity of the registered product imported, the number of the bill of landing, the date of

any sale or supply made and the name and address of the purchaser.

28 A licenced manufacturer, a licenced wholesaler, a licenced importer or the holder of a registration certificate in respect of any product shall inform the Authority of any adverse reactions arising from the use of the registered product immediately after he recieves notice of such adverse reactions.

29.1) The Authority may issue such instructions to any person as it thinks necessary for the better carrying out the provisions of these regulations and which may in particular relate to the recall of any registered product from the market and the disposal of any registered product.

2) Any person who contravenes any directions issued by the Authority under sub regulation (1) commits an offence.

30.1) Any person who contravenes any of the provisions of these regulations or any condition of any licence issued under these regulations or any condition subject to which a product is registered under these regulations commits an offence.

2) Any person who commits an offence under these regulations shall be liable on conviction to a fine not exceeding M$1,000.

31 The Minister may, offer consultation with the Authority, exempt any person or class of persons by notification in the

Gazette from any of the provisions of these regulations subject to such conditions or reactions as he may impose in such exemption.

GOVERNMENT PHARMACEUTICAL SERVICES

160 The Pharmaceutical division of the Ministry of Health has many objectives and strategies. A detailed report is given below.

The objectives of the programme are :

1) To strengthen the supply system to meet pharmaceutical and other health needs in the health programmes at minimal cost.
2) To provide an efficient an effective pharmaceutical service in hospitals and health centres.
3) To increase the range and volume of pharmaceutical products manufactured by the government.
4) To ensure quality, efficacy and safety in the use of drugs and other pharmaceutical products and safety in the use of traditional medicines and cosmetics.
5) To ensure proper procedures in the importation, management and sales of drugs and other pharmaceutical products.
6) To ensure rational drug utilisation.

Strategies to achieve the objectives :

The following strategies are planned to achieve the above objectives:

1) To ensure continuous and adequate supply of pharmaceutical products and other products of quality by:

- expanding and improving storage facilities in all institutions to meet the increasing demand.
- establishing a network of new regional medical stores.
- fully implementing the integrated store system in the

medical stores of General and District hospitals.

- modernising the store inventory control management system and communication through computerisation.
- purchasing products of assured quality.
- strengthening transport systems to meet increasing demand.
- to improve the hospital pharmacy services to an efficient and effective level by

a) expanding and improving existing manufacturing facilities in pharmacy units and establishing facilities for preparing extemporaneous and sterile preparations.

b) ensuring rational drug utilisation through implementing drug information services, patient counselling services, prescription screening, labelling of drugs with generic names and cautionary labels and " units of use " supply system.

- to increase the production and quality of pharmaceutical products by :

a) better maintenance of production equipment to reduce down-time.

b) increasing productivity through better organisation and utilisation of manpower.

c) improving in-process quality control techniques to ensure the quality of finished product.

d) improving end product quality assurance by establishing quality control facilities at hospitals.

e) establishing standard formulary and procedures for use in

all hospital manufacturing units.

f) ensuring efficacy and safety in the use of drugs and cosmetics regulations 1984.

- To improve the enforcement of pharmacy legislations by :

a) strengthening of enforcement units at Ministry and State levels.

b) formulating new legislations, reviewing and amending existing ones whenever necessary.

c) increasing the scope and frequency of enforcement activities through raids and inspection of licenced and unlicenced premises, private clinics and customs entry check -points.

- to ensure adequate qualified and trained personnel to manage and operate the expanding services by :

a) identifing the grades and categories of personnel required.

b) providing formal courses and on the job training.

c) conducting seminars and workshops etc. for the staff.

PROGRAMME OPERATION

1) Procurement and distribution

The procurement and distribution of supplies operate through a central procurement and purchasing system of pharmaceutical laboratories and store, Petaling Jaya and a distribution infrastructure which distributes supplies to user units. State Medical Stores and bigger institutions are allowed to make local purchase subject to certain provisions for non - standard items and during

emergencies.

The pharmaceutical laboratories and store is an unallocated store which operates through a revolving fund.The management system of this store and its branch in Penang has been computerised since 1985. This computerisation has facilitated and improved the inventory control, procurement, distribution and accounting activities.

2) Hospital Pharmacy

Hospital pharmacy includes the following activities :

- dispensing to out-patients.
- monitoring of prescriptions.
- patient counselling.
- drug information service.
- production of pharmaceutical preparations.
- drug supply for in-patients.

Recently great emphasis was placed on the utilisation of the pharmacist's professional knowledge to increase the effectiveness of patient treatment. In dispensing, emphasis is given to screening of prescriptions to detect polypharmacy, incompatibilities, interactions and contraindications,to labelling of dispensed medicines with generic names and cautionary labels and to patient counselling to increase compliance. Production activity stresses on Good Manufacturing Practice through the use of standard formulary, work sheets and procedures. In ward pharmacy, the unit of use supply system is being promoted.

PRODUCTION

Pharmaceutical preparations manufactured by the Pharmaceutical Laboratories' And Store, Petaling Jaya, include tablets injections, intravenous fluids, galenicals reagents. In hospitals, the types of preparations are limited to galenicals and drops prepared for home consumption and for health centres in the district. Some hospitals with facilities also produce intravenous fluids.

High speed production equipment and machinery together with advanced production technology are used to meet the increasing demand for various preparations. The concept of in process quality control and good manufacturing practice are used to ensure products of quality.

QUALITY CONTROL

- To control the quality of products, traditional medicines and cosmetics in the market.

The Control Of Drugs And Cosmetics Regulations 1984 was enforced in November 1985. These regulations require the registration of all medicines including traditional medicines and cosmetics. The implementation of these regulations is scheduled in phases, beginning with pharmaceutical dosage form followed by traditional medicines and lastly cosmetics.

The evaluation for registration is done by the Drug Control Authority based on the evaluation of documentations, end product testing and evaluation of manufacturing premises and manufacturers. As a result of this registration procedure,the licensing of importers, wholesalers, manufacturers and importers of drugs for clinical trials are also enforced.

ENFORCEMENT

Legislations currently enforced are :

- The Registration Of Pharmacists Ordinance 1951.
- The Poison Ordinance 1952.
- The Dangerous Drugs Act 1952.
- The Medicines (advertisement and sales) Act 1956.
- The Sale Of Food And Drugs Ordinance 1952.

The above legislations control the practice of pharmacy, the importation, exportation, sale and manufacture of drugs including traditional medicines and cosmetics. The control is through the registration of pharmacists, the licensing of premises, the issuing of import and export permits, and screening of medicines and other substances claiming therapeutic value. Inspection or raids on licenced and unlicenced premises, private clinics and customs entry check points are carried out both at Ministry and State levels.

Any dealings with dangerous and psychotropic substances requires statistical reports of sales and usage. As a signatory to the Single Convention 1961 and The Psychotropic Convention 1971 annual statistics on stocks, production, usage and importation of narcotic and psychotropic substances for the whole country are collected and reported to the respective authorities at the United Nations as required by the above conventions.

Pharmaceutical substances including traditional medicines and cosmetics are monitored to ensure that they do not contain poisonous substances and heavy metals which are dangerous to health. Testing of samples are done at the National Pharmaceutical Control Laboratory, Petaling Jaya.

Advertisements of medicines through the mass media and other

means are screened to ensure that they conform to the provisions of Medicine (Advertisment And Sales) Act 1956.

DRUG INFORMATION

To promote rational drug utilisation, The National Drug Information Centre was established at the The National Pharmaceutical Control Laboratory. The centre is responsible for collecting, keeping and distributing information on drugs to the drug information centres in government hospitals and also professionals and the public. The centre also monitors the incidence of adverse drug reactions.

TRAINING

This programme also involves the training of the pharmacy assistants and pharmacy laboratory assistants. After a year of training in the Trining School in Petaling Jaya, trainee pharmacy assistants are posted to hospitals and health centres to undergo practical training for two years before they are appointed to the public service. Pharmaceutical laboratory assistants after three years of training are posted at production or quality control laboratories.

This programme in addition to providing in service training courses for its staff also participates in teaching of University Science Malaysia students in Forensic Pharmacy. Training of pupil pharmacists are also conducted at selected institutions.

ADVISORY AND CONSULTATION SERVICE

Senior officers of this programme participate in several national and international activites in matters relating to drug

information, usage of drugs, formulation and enforcement of drug legislations, drug abuse, custom tarrif, quality control standards and list of essential drugs.

The Pharmaceutical Services Division is headed by the Director of Pharmaceutical Service and assisted by a Deputy Director. The division is responsible for :

- implementation of policies on pharmaceutical services and medical supplies services.
- implementation of the pharmacy and supplies programme.
- overall management of pharmaceutical services ie.
  1) pharmacy services in hospitals, polyclinics and rural health centres.
  2) pharmaceutical manufacturing service at central and hospital level.
  3) logistics and supplies facilities from Central Medical store, regional store and integrated stores.
  4) quality control services.
- procurement and distribution of drugs, pharmaceuticals and medical equipment to health facilities under the Ministry Of Health.
- Quality control and standards of drugs manufactured / issued by the Ministry of Health.
- quality and standards of drugs imported into the country.
- evaluation, improvement and expansion of pharmaceutical and supplies service in line with the needs of Health Services.
- development of expertise in pharmacy and related fields in The Ministry Of Health.
- acquisition of personnel for the operation supply, production and other activities under the division.

- monitoring of licit movements of narcotis in the country and enforcenment of the ordinance and related regulations.
- liason with other related Ministries / agencies eg. anti-drug task force, customs, police, Ministry of Trade And Industry, etc.

The body acts as a secretariat to :

1) The Poisons Board established under the Poisons Ordinance.
2) The Pharmacy Board established under the Registration Of Pharmacies Ordinance.
3) The Medicines Advertisement Board established under the Medicines (advertisement and sales) Act.
4) Drugs and equipment evaluation committee, pharmaceutical laboratories and store, Petaling Jaya.

DRUG REGISTRATION IN SINGAPORE

161 Drug registration is a system provided under the Medicines Act 1975 whereby all medicinal products for human use must be licensed by the Ministry of Health prior to any sale. The local manufacturers, wholesalers and importers of medicinal products must also be licensed before they can conduct their business. The objective of drug registration is to ensure that medicines are safe, efficacious and of good quality before they can be offered for sale.

Current control system only restricts dealings of potent products by listing them in the Poisons Act or Misuse Of Drugs Act. Licences for import, sale and distribution of these substances are given to individuals who possess the required qualification or expertise. The system of control originated many years ago and is being phased out in many countries. The modern concept of drug control is through drug registration, each product will be evaluated for safety, efficacy and quality before licences are issued.

The authority to licence medicinal products intended for human use rests with the Ministry of Health. Toilet preparations, food and disinfectants sold without making reference to medicinal use are exempeted.

" Medicinal product" is defined in the Medicines Act to mean any substance which is to be used for administration to human beings and animals for diagnosis, prevention or treatment of ailments

including preparations intended for the promotion of health, for anaesthesia or for contraception. (Raw materials used for the manufacture of medicines fall within this category). Excluded from this definition are : a) medical instruments, apparatus or appliances b) medicinal products not included for general sale but intended for research or testing purposes c) substances used for filling dental cavaties d) bandages and surgical dressings which are not medicated to provide any therapeutic or palliative action.

New medicinal products are those introduced into the market on or after the commencement of drug registration.

EXEMPTIONS

The medicines act exempts several groups of products from registration. These are :

- medicines dispensed in accordance with prescriptions.
- extemporaneous preparations and small scale preparations made for use within the health institution / pharmacy.
- herbal remedies of plant(s) original only. However herbal remedies with added chemical components or in injection dosage form will not be exempted.

The following groups of items will not be included for registration during the initial stages of drug registration :

- traditional medicines.
- homoeopathic medicines.
- raw materials.
- locally manufactured products solely for export.
- products imported for specfic treatment of individual persons

only. However prior approval must be obtained from the Ministry of Health before import of such products.

- products imported solely for re-export only. However a certificate must be obtained from the Ministry of Health prior to such import.
- Quasi- medicinal products such as medicated shampoo (eg. anti dandruff shampoo) and medicated soap.

TYPE OF LICENCES AND CERTIFICATES

The licences involved are :

- product licences.
- import licences.
- wholesale dealer's licence.
- manufacturer's licence.

CERTIFICATES

- Certificate for exporter of medicinal products.
- Certificate for product imported solely for re-export.

SUBMISSION OF APPLICATIONS

Applications for licences/certificates must be submitted in the prescribed forms issued by the Ministry of Health. (Application forms for the various types of licences and certificates are available free of charge from the inspectorate section, Ministry of Health). Applicants are advised to read this guide book and the explanatory notes carefully before completing the relevent applications forms.

The time schedule for the submission of applications for various licences will be announced. Applicants are advised to submit

their applications for licences as early as possible. Applications for certificates to import medicinal product soley for re- export may be made prior to each import. Certificate for export of medicinal products may be applied as and when required.

PRODUCT LICENCES

The onus of applying for a product licence shall rest with the firm responsible for the introduction of the product into the Singapore market namely :

a) in the case of an imported product the manufacturer's local representative or its sole agent.
b) in the case of locally manufactured product, the manufacturer of the product.

The following information is required for application of product licences :

a) full product formula including inert ingredients.
b) evidence of sale before date of commencement of drug registration.
c) registration certificate/certificate of free sale from the country of origin.
d) finished product specifications with certificate of analysis.
e) specimen sales pack, label and pamphlet.
f) summary of manufacturing and quality control facilities if the product is manufactured overseas.

For new products the following information is needed :

a) full formula including inert ingredients.
b) detailed manufacturing procedure.

c) finished product specifications with certificate of analysis.

d) method of analysis of active ingredients.

e) registration certificate /certificate of free sale from the country of origin.

f) free sale certificates from other countries.

g) document from health authority of the country of origin certifying that the manufacturer concerned is a licensed manufacturer.

h) specimen sales pack, label and pamphlet.

i) summary of the clinical trial papers on the product.

After the product has been licensed any subsequent change in the particulars relating to the product (eg. change of formula, composition/ingredient, recommended use) may render the licence invalid unless prior approval of such change has been obtained from the licensing authority.

Product licence holder should report to the Inspectorate Section, Ministry of Health, as soon as possible or within one week, of any adverse reaction for the product.

IMPORT LICENCES

Importers who do not hold product licences may apply for import licences to import medicinal products which have already been given product licences.

IMPORT LICENCE FOR AUTHORISED AGENT OF PRODUCT LICENCE HOLDER

This type of import licence will be issued to importers who are authorised by the product licence holders to import licensed

products on their behalf.

IMPORT LICENCE FOR NON AUTHORISED AGENT

Such import licence will be required for each item in each consignment. Importers should provide evidence, to the satisfaction of the licensing authority, that the products to be imported are identical to the products already registered in Singapore. It is the duty of such importers to ensure that provisions made under the trade marks and the patents (compulsory licensing) act have been complied with.

For importation of products under the authorisation of the Singapore product licence holder, applicant should submit a copy of such authorisation from the product licence holder. For importation of products identical to a licenced product, the importer should provide a copy of the certificate of analysis from the manufacturer for the particular batch to be imported and enclose a copy of the invoice from the manufacturer to the exporter and from the exporter to the local importer respectively.

For medicinal products imported under the authorisation of the product licence holders, the relevant product licence numbers should appear on the labels and packages accompanying the products. For products imported otherwise labelling of the import licence number should be done in place of the product licence number.

Non authorised agents holding import licences should report to the Inspectorate section, Ministry of Health, within one week in relation to any adverse drug reaction received for the products for which they hold the import licences.The validity of an import

licence in respect of each medicinal product to be imported shall be subjected to the continued validity of the corresponding product licence for that product. Any suspension, revocation or variation of the product licence shall equally apply to the import licence in respect of that medicinal product. For import licences which are on per item basis, importers should return the relevant licences to the Licensing Authority for cancellation within seven days after completion of re-export.

WHOLESALE DEALERS LICENCES

Except for the licensed manufacturer and the holder of a product licence, any person selling medicinal products to others for purposes of resale will have to apply for a wholesale dealer's licence. The requirement for the wholesale dealer's licences also apply to the supply of commercial samples of medicinal products in like manner. In application for a wholesale dealer's the applicant should supply a list of medicinal products to be dealt with by way of wholesale, completed with the names of manufacturers, countries of manufacture, Singapore product licence numbers and expiry dates of product licences. Any amendment to the above mentioned list should be reported to the licensing authority and a new updated list of all products which the wholesaler will deal with by way of wholesale should be sent to the licensing authority to replace the old list. The validity of a wholesale dealer's licence in respect of each medicinal product to be dealt with by way of wholesale shall be subjected to the continued validity of the corresponding product licence for the product; and any suspension, revocation or variation of the product licence shall equally apply to the wholesale dealer's

licence in respect of that medicinal product.

MANUFACTURER'S LICENCES

In application for a manufacturer's licence the applicant should state the pharmaceutical dosage forms to be manufactured and submit a layout of the factory and other important features. Sanitary facilities should also be indicated. A list of equipment for manufacturing, assembly and quality control should be submitted together with a summary of the manufacturing processes.

CERTIFICATES FOR PRODUCT IMPORTED SOLELY FOR RE - EXPORT

Importers should apply for such facilities for each item in each consignment prior to each import. Products imported under such authorization are prohibited for local sale.

FEES FOR LICENCES AND CERTIFICATES

Fees will be charged for the following licences and certificates

1) product licence (each product)
   provisional
   ordinary
   new product
2) import licence
3) wholesale dealer's licence
4) manufacturer's licence
5) certificate for export of medicinal products (per certificate)
6) certificate for product imported solely for re-export (per product)
7) amendment fee (per occasion)

FORMAT FOR RECORD KEEPING

All licence holders and holders of certificate for product imported solely for re-export must keep records of their transactions for a period of five years from the date of the last entry. The following information must be included in such records.

1) Name of product
2) Batch number
3) Date of manufacturing
4) Expiry date
5) Packing
6) Product licence number
7) Date of transaction
8) Delivery order /invoice number /production ticket number.
9) Name and address of purchaser /supplier
10) Quantity received
11) Quantity sold
12) Stock balance
13) Analytical results (for products manufactured locally)

PRODUCT RECALL

When such an action is necessary after deliberation by the Ministry, it is the responsibility of the product licence holder, import licence holder and wholesaler to recall all the products which are imported /distributed by them.

GENERAL SALE LIST

When the whole process of drug registration is completed, a general sale list will be printed which will include products

allowed to be sold over the counter. Products not listed in the general sale list may only be supplied from pharmacies or on prescriptions only.

SUSPENSION, REVOCATION OR VARIATION OF LICENCES AND CERTIFICATES

The licensing authority may suspend, revoke amend the details in any licence or certificate. He shall serve on the licence or certificate holder a notice giving particulars and reasons for such suspension, revocation or variation. Any person who is aggrieved by such a decision may appeal to the Minister for Health whose decision shall be final.

ENQUIRIES

Enquiries concerning drug registration should be made to the Inspectorate Section, Ministry of Health (Headquarters).

162 DRUG CONTROL AUTHORITY (Thailand)

FRAMEWORK OF THE AUTHORITY

Planning and implementation, on the legal basis, of any activities concerning pharmaceutical control by means of :

1) establishment of criteria, procedure and condition in relation to the manufacturing, sale, importation and registration.
2) licensing for manufacture, sale or importation.
3) inspection of the premises (newly applied or modification/ correcting the old premises)
4) evaluation and issuance of certificate of registration for pharmaceutical products.
5) issuance of the licenses for the manufacturing or importation of the drug sample (both traditional and modern). Such samples are intended only for utilization in registration process.
6) studying, researching and compilation of the data / results to be used as information in the process of standard and quality establishment.
7) implementation of the process of suspending, withdrawal or modifying of licenses and certificates.
8) training and advising on control procedures for the personnel concerned.
9) co-operating with the related authorities or institution of both national and international levels in order to exchange and update the existing information.
10) conducting and organizing the meeting of the drug committee.

DRUG REGISTRATION IN THAILAND

Drugs which require registration fall into the following categories :

1) Drugs which are not listed in the pharmacopeias notified by The Minister ie. drugs in various trade names such as Metaplex tablet.

   The pharmacopoeias are :

   a) Thai Pharmacopoeia, First edition (1987) volume 1 part 1.

   b) International Pharmacopoeia, 3rd edition.

   c) British Pharmocopoeia 1980, volume I and 2.

   d) British Veterinary codex 1985, and supplements.

   e) The United States Pharmocopeia, 25th revision 1985 and supplements.

   f) The National Formulary 16th edition (1985) and supplements.

2) Drugs of which their formula are not listed in the above mentioned pharmacopoeias. Most of them are new drugs or drugs in combination eg. analgesics and antipyretics combined with antihistamines.

3) Drugs which are listed in the above mentioned pharmacopeia.

4) Drugs of which their formulas are listed in the pharmacopoeia.

Drugs which do not require registrations

1) pharmaceutical chemicals or semi finished pharmaceutical chemicals which are not readily packed ie. pharmaceutical

raw material.

2) herbal remedies eg. roots, leaves, fruits and flowers.

3) drug samples which are permitted to be manufactured or imported for registration.

SOME INFORMATION ON DRUG REGISTRATION

1) Registration is categorised into :

a) registration for modern drug

1) human use.

2) animal use.

b) registration for traditional drug

1) human use.

2) animal use.

2) Certificate for drug registration are categorised into :

a) certificate for registration of manufactured drug.

b) certificate for registration of repacked drug.

c) certificate for registration of imported drug.

3) The manufacturers and importers of both modern and traditional drugs must have the certificate of registration of each drug before they can be produced or imported. Before applying for drug registration, the following steps should be followed.

a) In applying for the permission to produce samples, the manufacturers must submit two sets of documents containing the application form for sample production, labels and inserts. After receiving the permission, then the samples can be produced. In this case the manufacturers can produce only the samples that are permitted.

b) The importer must submit two sets of documents consisting of application forms for sample importation, labels and inserts in order to request for the permission to import the samples for registration.

c) For traditional drugs, the manufacturers or importers also have to follow the same procedures as those of modern drugs before thy can produce or import the samples of drugs to be registered.

d) In requesting for the permission to import the samples, if the original manufacturers have never applied for the drug registration in Thailand or have not yet received the permission to register their products, their factories must guarantee as meeting the standard. In this case the Food And Drug registration would request the Ministry of Foreign Affairs to inform the Thai Embassy in those countries to send their officials for inspection. Alternatively, the agencies may receive the forms from accredited overseas suppliers and send them to be certified by their government or authorities as well as the Thai Embassy or the Pharmaceutical Manufacturers Association of those countries.

e) The importers who need to import any new drugs which are not listed in the pharmacopoeia and dont have the certificate for drug registration must submit the certificate of free sale issued by their government together with other documents mentioned above. Combination drugs with new formulas are also included in these cases.

PROCEDURE IN DRUG REGISTRATION

1) Four sets of documents in accordance with the application form for drug registration must be submitted. The application forms for production of modern drug or traditional drugs, samples as well as as those for sample importation which have been already certified must be attached with the submitted documents in each case. The documents to be submitted should contain :

   a) Product's name.

   b) List of active and inactive ingredients as well as their contents.

   c) Packing.

   d) standard method of analysis for modern drugs. In those cases when these methods are not stated in the pharmacopoeia notified by the Minister, the method should be able to give the identification and assay of the active ingredients. It should also give details of the finished products, unofficial ingredients, percentages, limitations and references.

   e) Labels must also show products name, contents, name and quantity of active ingredients, batch and control numbers, name of manufacturer and address, manufacturing date etc.

   f) Inserts or accompanying literature. If it is presented in a foreign language, translation into Thai is needed.

   g) The insert should contain product's name, identification and direction for use, content of the package and dosage.

2) For registration of new drugs, report of the study in

animals and clinical trails must be attached. This report should be published with reliable refrences. Therapeutic efficacy, side effects and toxicological data should be presented. In addition, certificate of free sale from the manufacturer's government must be submitted.

3) Samples of drug to be registered must be submitted.

THE GATEWAY TO SOUTH EAST ASIA | SINGAPORE

163 The 1987 economic indication showed the G.D.P growth percent for Thailand, Malaysia and Singapore as 8.3%, 7.4% and 9%. The economies of the 3 countries has been striking and investors have been drawn to the region. Brunei, Indonesia and the Philippines also showed improved G.D.P % but not as spectacular as the other 3 countries. Eventhough all these six countries form ASEAN, which has been designed on the same frame work of the E.E.C, the group has had many disagreements. Indonesia and the Philippines have political instability and Brunei is too small to be taken seriously. To the marketer who will concentrate in the ASEAN basin it would be best to go regional and concentrate on the Thai, Malaysian and Singapore markets first and get a strong foothold. To attack these 3 markets it would be advisable to move from a central location. Between Istanbul and Perth (Australia) and between Johannesburg and Hong Kong, Singapore serves the logical choice to establish a regional headquarters.

After its break up with Malaysia, Singapore moved ahead under the close scrutiny of Mr. Lee Kuan Yew. Today, Singapore is one of the 4 N.I.C's of Asia. Lee has transformed the Island Republic to be the country which has the " lowest risk " as far as investments are concerned. Investment commitments in 1987 was S$1.7 billion reflecting U.S, Japanese and European corporate investors unflagging confidence in Singapore's economy and competitiveness. Foreign investors in Singapore earned an income of S$3.7 billion in 1987 from their investments an increase of 17% over 1986.

Singapore is heading towards high - tech and the Lee administration intends to make Singapore the centre of business for the Asia - Pacific region. The City State has one of the world's highest per square meter concentrations of M.N.C's (Multinational companies) from the U.S, Japan and Europe - some 3,400 subsidiaries and joint ventures including about 600 large manufacturing operations. Today, Singapore offers :-

1) Entry into local and regional markets.
2) Market test bed opportunities.
3) Economic, social and political stability.
4) Conducive pro - business environment.
5) Managers, professionals and workers with traditional and state of the art industrial and corporate service skills.
6) Advanced transport and communication infrastructure.
7) Good standard of living.

Thus it can be seen that this Global City has become integral mode in the international network of economies because of its well developed trading, marketing, transport and communication links and international financial network and services.

Due to its small size and other features such as industrialisation, high income per capita, favourable geographic location, high literacy rates and skill labours, Singapore is now classified among the newly industrialised countries. Thus Singapore can play a complementary role in the development of the pharmaceutical industry in the region, serving as a centre of finance, skilled labour, scientists as well as the centre for trade and distribution within the sub- region. In other words, ASEAN economic co-operation would depend very much on the role

Singapore will be allowed to play in Intra - ASEAN trade and external trade of the sub - region. In fact, the Intra - ASEAN trade already exists, according to available statistics. When the ASEAN package of industries come on stream the Intra ASEAN flow of these products, mostly fertilizers for the time being, trade among ASEAN partners should increase sharply.

Singapore has already shown its ability to penetrate the international market, not only within ASEAN but also in Europe, America and elsewhere. Therefore, ASEAN industries including pharmaceuticals which require a higher technology can actually be competitive worldwide, as Singapore's experience has shown.

Consultations among the ASEAN countries should lead to avoiding competition in the chemical and pharmaceutical industry. As mentioned an optimal location of study of a pharmaceutical site to economize transport and other economic variables is required.

Due to the high value of imports as well as the higher value of exports on hand and the relative low level of local consumption of pharmaceutical products, it is seen that many of these products have been merely transferred from one country to another. The movement of pharmaceutical products from one place to another may create a problem of quality assurance of drugs, since some of these drugs might be stocked for a long period of time before being exported to other countries.

From the results of the U.N.A.P.D.I study it was found that

Singapore was a very exceptional economy in the field of pharmaceuticals. Standing in a much better off position than ASEAN neighbours, it is emphasised that Singapore could play a vital role in helping to contribute to other ASEAN countries. Such possible contributions could include as different aspects of distribution of local products, assisting and co - operating in training (eg. fermentation technology), personnel, financing etc.

SINGAPORE'S CONDUCIVE OPERATING ENVIROMENT

Leading international pharmaceutical and health care product companies such as Baxter International, Becton Dickinson, Beecham, Glaxo, Kanegafuchi, Japan Medical Supply and 3M have been able to enhance their competitive advantage by serving their regional and international markets from Singapore.

They are among the more than 600 leading companies from the United States, Europe and Japan who have invested more than S$ 12 billion in Singapore to manufacture and provide related technical support services, along with some 2,800 other foreign companies and financial institutions based in Singapore.

A world leader in the production of semi - conductors, computer disk drives, refrigerator compressors, petroleum and other products, Singapore actively encourages and welcomes foreign investments, many of which have found Singapore's pro - business environment extremely favourable for continued growth, expansion and diversification.

Its free enterprise policy allows foreign companies the freedom

for 100 percent ownership of its operations in Singapore, the freedom to repatriate profits and capital and to recruit skilled personnel from any source.

Singapore's modern infrastructure, among the best in the world includes :-

1) an active seaport that works round the clock 365 days a year and provides turnaround time of eight hours for a container ship.
2) an efficient airport, served by 47 international airlines, which clears arriving passengers in 15 minutes.
3) state of the art telecommunication links with the world, includes direct dialling facilities to 164 cities.
4) wide range of international banking and financial services provided by more than 220 banks and finance companies.
5) immediate availability of fully serviced industrial buildings and facilites enable companies to start up or expand their operations quickly.

The availability of skilled trained chemists, biochemists, pharmacists, engineers, laboratory and process technicians in Singapore has enabled many companies in the industry to undertake manufacturing, product development and testing activities in Singapore. The Institute Of Molecular And Cell Biology which was opened in 1987 undertakes research in cell regulation, infectious and genetic diseases and plant genetic engineering.

Many pharmaceutical and healthcare product manufacturers in Singapore have received the seal of approval of the U.S Food and

Drug Administration (F.D.A). This reflects the high level of quality consciousness on the part of management as well as the workers personal discipline and commitment towards maintaining high quality standards.

THE PHARMACEUTICAL AND HEALTHCARE PRODUCT INDUSTRY IN SINGAPORE

Singapore has a 170 year history of mercantile trading with both its regional partners and the world. Many leading manufacturers of pharmaceuticals and medical equipment have established marketing and distribution facilities in Singapore to better serve their Asia pacific markets.

In the early seventies, the industry was given a boost when Beecham of the United Kingdom established a wholly owned subsidiary in Singapore to produce semi - synthetic penicillin for the Japanese market.

The industry has since grown significantly over the years as companies achieved full production while others expanded into other product areas. The industry's output grew from S$316 million in 1980 to S$825 million in 1986, while gross fixed asset investments by the industry increased from S$119 million to almost S$400 million during the same period.

PROFILES OF SUCCESSFUL COMPANIES

Baxter Healthcare began their operations in Singapore in 1978 with the manufacture of infusion sets. The facility, now equiped with gamma ray sterilisation capability, is one of Baxter's most advanced plants in the world and has been approved by the U.S FDA. A second plant to manufacture sophisticated hospital and laboratory equipment, such as aspheresis, intravenous flow, renal

therapy and diagnostic equipment, mainly for the American market will be operational in 1988. At the same time the company is planning to undertake product and process development in Singapore. Fixed asset investments which total S$70 million in 1987 will reach S$110 million by 1981. The existing highly efficient facility has earned the company numerous awards from its parent company. These include " Best Plant ", " Plant of the Year ", " Award of Quality ", " Most Improved Plant ".

Beecham's plant in Singapore was set up in 1970 to produce semi - synthetic penicillin products for export to Japan. Since then, various expansions have been undertaken resulting in the company's investments in Singapore reaching S$130 million in 1987. Today, the range of products manufactured in Singapore includes Amoxil, Ampiclox, Orbenin, Penbritin in oral and sterile forms and the recently introduced new antibiotics Augmentin and Timentin for various markets such as Japan, China, The Middle East and Africa.

Becton Dickinson has invested S$100 million in a Singapore plant to be operational by the second half of 1988, to manufacture a wide range of disposable syringes and hypodermic needles for world markets. The latest addition to Singapore's medical industry, this world scale plant will capitalise on Singapore's locational advantage to better service the Asia - Pacific markets.

Diagnostic Biotechnology Pte. Ltd established in 1985 with venture capital funds is engaged in bio medical research and

development, production of diagnostic kits and custom made peptides and providing reference laboratory services. The company, which has a technology transfer agreement with Biotech Reseach Laboratories of the U.S.A, is located at the Singapore Science Park. Products on the market include Enzyme Immuno Assay kits and Western Blot Assay kits for each of H1V1, H1V2 and HTLV1. At the same time the company is developing rDNA diagnostics for H1V1 and Hepatitis B and a diagnostic set to detect H1V 1 and 2 in one assay.

Glaxo established its S$120 million plant in 1982 to manufacture bulk ranitidine hydrochloride, the new anti gastric ulcer drug which has become the world's best selling ethical drug. The availability of fully serviced industrial estates enabled Glaxo to start up its first ever ranitidine hydrochloride plant in Singapore speedily.

Japan Medical Supply, encouraged by Singapore's cost competitiveness, set up its second overseas manufacturing facility in Singapore in 1980 to produce infusion and transfusion sets, blood collection bags, syringes, fistula needles and CAPD (continuous ambulatory peritoneal dialysate) for markets outside Japan. The company will be expanding its range of products manufactured in Singapore and is constructing its own S$10 million factory building extension. The Singapore operations have been of strategic importance in the Company's business expansion worldwide.

Kanegafuchi selected Singapore to set up its plant to produce

amino acids and hydroxyl - phenyl glycine (HPG) used in the manufacture of antibiotics. The Singapore facility, Kanegafuchi's only HPG manufacturing plant, uses the unique high yield fermentation process. The HPG is exported to the United States, Europe, Japan and other Asian countries. The numerous advantages of manufacturing in Singapore have assisted Kanegafuchi to achieve and maintain world leadership in the HPG business.

Pacific Biomedical's facility was set up in 1987 to design, develop and manufacture high quality but affordable heart valves and cardiac care devices and disposables. The plant in Singapore was a result of American entrepreneurship and Australian funding.

Siemen's subsidary in Singapore manufacture behind the ear and custom made within the ear hearing aids for the Asian markets, while hearing aid sub - assemblies are produced for its sister companies in other countries. Another Siemen's subsidiary operates a medical and dental equipment servicing and training centre in Singapore to service its customers in the Far East (including Japan and The Peoples Republic of China) and the Middle East. The centre has a staff of 16 engineers.

Spectramed (formerly Gould Medical) produces thermodilution catheters and pressure monitoring accessories in their FDA registered, class 10,000 clean room facility in Singapore for markets in Japan and Europe. It is also developing new products such as multi lumen catheters and blood sensors with local hospitals and academic institutions. The plant in Singapore is Spectramed's most significant facility outside the United States.

Stiefel's Singapore facility manufactures ethical topical dermatological products for the Asian Pacific and African markets, and intends to undertake research to adapt its products to these markets.

3M's intra ocular lens manufacturing plant in Singapore established in 1987, supplies lenses to the Asia Pacific market. The highly competitive manufacturing costs of its lenses in Singapore has enhanced 3M's marketing efforts to enlarge its market share in the Asia Pacific region.

Singatronics and Wearne's Technology, both locally owned companies, have successfully developed a digital blood pressure monitor and an electro therapy equipment respectively. Both products have enjoyed considerable market acceptance locally and elsewhere.

WHY SINGAPORE ?

Singapore is strategically located at the crossroads of international trade routes and has enjoyed political, economic and social stability. Her pragmatic government has always adopted a pro business approach and maintained an open door policy since her independence in 1965. These, coupled with her highly developed and sophisticated infrastructure in telecommunications, port and airport facilities, availability of ready built fully serviced factory buildings and industrial parks and modern offices, skilled and well trained work force, and the presence of well developed supporting industries, all contribute to

Singapore as an ideal location for investment.

Location

Situated in the heart of South East Asia, a resource rich region of some 300 million people and more than 3,400 foreign companies, Singapore offers to investors a strategic location well placed to serve the markets in the region including India, Japan, China, Australia and New Zealand. Her unique time zone and telecommunications network allow its financial institutions and other businesses to conduct transactions with any part of the world all within an 8 hour working day.

International travel is equally convenient. Hong Kong is a mere 3 1/2 hours away; Tokyo, just over 6 hours; Sydney less than 8 hours; London, Los Angeles and San Francisco within 15 hours from Singapore. Her highly efficient airport at Changi, voted one of the top three in the world, clears air travellers in as fast as 15 minutes.

BUSINESS DEVELOPMENT

Singapore's pragmatic government has created an attractive and conducive business climate for companies to invest here. Her open door policy allows the more than 600 international companies here, who have set up manufacturing and technical support service operations to enjoy freedom of business activity. There are no restrictions on :

- Foreign ownership. As there is no local ownership requirement, foreign companies are allowed 100% ownership of their businesses in Singapore. This enables companies to

have full control of proprietary technology.

- Movement of capital. Companies can freely repartriate their profits and capital as there are no foreign exchange controls.
- Free port. There are no import duties on industrial raw materials, equipment and machinery. Companies are therefore free to move their goods in and out of a truly free trade country.
- Employment. There is freedom to employ qualified staff from all sources.

These together with her sophisticated infrastructure, readily available skilled labour and her strategic location have led to an increasing number of companies to use Singapore as a regional marketing and distribution base, and as a centre for product design and development work. A number of companies have also established and set up their operational headquarters in Singapore, to undertake a full range of business activities including management of their subsidiaries and group financing in this region.

STABILITY

Apart from her open door policy and her strategic location, Singapore has a unique record of political, economic and social stability. The tripartite co - operation between the government, employers and unions in meeting economic objectives has enabled Singapore to achieve a stable and conducive environment for business. In the last eight years, virtually no man days were lost due to industrial actions. This co - operation was evident

in the prompt response by employers and unions to the government's call for wage restraint to ensure that Singapore retains its international competitiveness.

Political stability and consistency of Government policies provide the backdrop for the country's rapid economic development. Her G.D.P has grown from S$2 billion in 1960 to S$42 billion in 1987. Inflation averaged less than 2% in the last five years; in terms of per capita income, Singapore ranks 19th in the world and is the second highest in Asia after Japan. The Singapore dollar has remained strong and stable for a record period of time.

Expatriate executives and their families have easily adjusted to and enjoy living in Singapore. Excellent healthcare, ample educational facilities and moderately priced executive homes are readily available. A well developed infrastructure, municipal efficiency and an English speaking population all combine to provide a comfortable and secure living environment for these expatriate families.

INDUSTRIAL INFRASTRUCTURE

As a business and financial centre, Singapore continually enhances its efficient and sophisticated infrastructure to serve the changing needs of business. Both the airport and port comparable to the world's best, are highly efficient and competitive in terms of facilities and services. Telecommunication services are modern and comprehensive and offer among the lowest rates in the world.

Changi International Airport - enjoys an international reputation for its efficiency and good design was voted one of the top three airports in the world. Also voted the " best airport for air cargo ", at the 13th International Forum for Air Cargo, Changi International Airport currently handles more than 45 international airlines and 558 scheduled flights per week linking Singapore to 90 cities in 51 countries.

Singapoe Port - the first container port in South East Asia is ranked as one of the world's busiest and is a major global warehousing and distribution centre and trans shipment hub. Equipped with the latest cargo handling facilities, the port operates round the clock to provide extremely fast turn around for carriers from all over the world. More than 500 shipping lines serve Singapore and provide links to some 300 ports worldwide. About 30,000 vessels call at the port each year.

Telecommunication Services

Singapore's state of the art telecommunication services are a boon to international companies and a relief to businessmen travelling in the region. A direct dial telephone service links Singapore to 162 destinations within seconds. International teleconference services are available and businessmen can offer simultaneously with up to 9 other parties in different locations. International telex and telefax services are avilable to 205 and 55 destinations respectively. Sophisticated telecommunication services for high speed international data transfer via satellite are readily available at competitive rates. The communications infrastructure required by the information age is constantly

being enhanced to maintain Singapore's position as a significant node in the global information network.

DEVELOPED INDUSTRIAL ESTATES

Ready built modern, fully serviced factories in industrial estates are available for immediate start up operations. These factories, fully served by roads, sewers, water and power supplies, and telecommunication facilities, are conveniently located near housing estates to provide an immediate source of manpower. Similarly, fully serviced industrial lands are also available.

BANKING AND FINANCE

Singapore is also a thriving financial centre served by 192 commercial and merchant banks, 85 insurance companies, 4 discount houses, 8 international money brokers and 34 finance companies. Between them, they provide a full range of services from exchange and money market services to trading of gold, financial futures and the Asian dollar.

SUPPORTING INDUSTRIES

Singapore offers a wide range of specialised facilities and services to meet the needs of pharmaceuticals and health care companies operating in the Republic. These include terminal, storage, warehousing and transportation services.

Specialised services such as chemical, biochemical, sterility and pyrogen testing and analytical services are available from the

Singapore Institute Of Standards And Industrial Research, The Department Of Scientific Services, The National University Of Singapore, as well as from private inspection and testing bureaus.

Also many international engineering consultancy firms in Singapore offer technical services in the design and construction of chemical process plants, including automation, in the Republic and the region.

A full range of other supporting services are widely available at competitive prices. These include fabrication of pipes, tanks, heat exchangers and process equipment, mould making, clean room and precision plastic and rubber injection moulding, sterlisation and manufacturing of electronic components, PCBA (printed circuit board sub assemblies) and other components. There are also companies that provide turnkey manufacturing services.

SKILLED MANPOWER

One of the many factors influencing investments in singapore is the availability of industrious, trained manpower. It is indeed one of Singapore's most important assets, apart from her geographical location. That is why each year some 12% of Singapore's national budget is spent on education.

The Singapore worker has been rated at par with the best of the world by various international consultants. BERI (business enviroment risk information), for instance has ranked the Singapore worker best overall in the world for attitude,

productivity and technical skills for the seventh consecutive year.

Worker training and skills upgrading are constantly undertaken by companies and the specialised training institutions to enhance worker productivity and to ensure that existing skills are relevant to the needs of the industry.

There is a growing pool of skilled and experienced professionals, a readily available source of top and middle management personnel, production supervisors and section managers. An increasing number of local and foreign trained graduates constantly replenish this pool, stimulating competition that sharpens business acumen and keeps marketing know how up to date.

To maintain a steady flow of highly trained professionals into the labour force, The National University Of Singapore (NUS), the Nanyang Technological Institute (NTI) and the two Polytechnics have doubled their student intake at the same time maintaining their high standards. At the same time Singapore's open door policy allows qualified and experienced foreign individuals, who can make a positive contribution, to be employed.

RESEARCH AND DEVELOPMENT

R & D has been chosen as a vehicle for Singapore to move towards high technology. Product design and development capabilities will be improved and competence in technologies relevant to the economic activities will be further developed.

The government has set up a 115 hectare Science Park to serve as a focal point for industrial R & D and " brain services ". To date, some 34 companies with a total staff of 1,061 including 352 R & D staff, have established R & D facilities in the park. The Park's proximity to the National University of Singapore and The National University Hospital fosters close interaction and exchange of knowledge and ideas between university staff and industrial researchers.

Furthermore the University has recently set on a course to establish itself as a centre of excellence in both education and research. High quality staff and excellent research facilities have enhanced the research environment in the NUS.

The Institute Of Molecular And Cell Biology (IMCB) was set up within the National University Of Singapore (NUS) in order to strengthen the infrastructure for basic biomedical and biotechnological research. When fully operational, the Institute will have 21 research teams comprising some 200 scientists led by a pool of top researchers from the U.K, the U.S.A and Canada.

In additional to these, the National University Hospital together with some 21 other hospitals undertake ongoing research activities while at the same time functioning as hospitals. In 1986, the National University Hospital's Pathology Department alone worked on more than 20 areas of research.

These institutions together with the Nanyang Technological Institute and the two polytechnics will be making an even more important and positive contribution towards industrial R & D, especially in an environment where emerging technologies are

driven by R & D.

Last year alone, the companies in Singapore spent S$400 million on R & D. This expenditure is expected to increase as the momentum on R & D is accelerated.

TAX INCENTIVES

Singapore's attractive tax incentives allow qualified companies in Singapore to maximise their return on investment. According to the U.S Department Of Commerce Survey On Current Business (August 1987), Singapore offers one of the best returns on investment. Between 1982 and 1985 the return on U.S direct investments in Singapore averaged 27%, which puts it ahead of Ireland, Japan, Hong Kong, South Korea and Taiwan.

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JAPAN AND ITS ROLE IN ASEAN

While Western multinationals move towards a more concrete approach into marketing pharmaceuticals, ASEAN's leading trading partner moves closer to fill the role of " big brother ". Japan has topped the world in the production of new pharmaceutical products in 1981 when the industry reached its maturity. By 1990, Japan would have reached the same level of high technology as in Europe and the U.S. The Japanese will be ever willing to dominate their presence in Asia since the economies of most Asian countries in particular ASEAN is in the take off period. The pharmaceutical industry in ASEAN is still backward but there is room for expansion. Japan's role in ASEAN in the context of the pharmaceutical industry are :-

1) sharing the Japanese modernisation experience.
2) transfer of Japanese pharmaceutical industry's high development, technology and manufacturing.
3) extending a co - operative frame work.

Japan's pharmaceutical industry has gone through several phases to attain modernisation. Japan has a good system of G.M.P, G.L.P and has reached a phase where Japan could produce new pharmaceutical products on its own. The Japanese experience can therefore provide the guidebook for ASEAN.

Japan's pharmaceutical industry's capacity to develop new products has improved tremendously and will join the rank of leaders in the pharmaceutical field. Thus with the high technological development of the Japanese pharmaceutical

industry, the trend is to transfer them to the countries and areas where the cost is cheaper and it is probably that this will be the direction of policy changes in the industry.
Modernisation of the pharmaceutical industry begins with the modernisation of the manufacturing process and the manufacturing process begins with the implementation of G.M.P. Japan's achievements could be a good lesson. Another area where the ASEAN countries could learn is the distribution system adopted by Japan.

The life of pharmaceutical manufacturers is sustained by the continuous introduction of new products. Development research know how is learnt through the process of new product development. The best way for the ASEAN countries to learn could be through joint development for mutual benefit.

The pharmaceutical and electronics industries are some of the areas of growth in the ASEAN region. To modernise, the industry requires effort and innovation. The pharmaceutical industry is not only modernising but is also facing a lot of challenges and problems that needs analysis and solutions.

CONCLUSION

A comparative analysis has already been conducted detailing the production, marketing and distribution of pharmaceuticals in Malaysia, Singapore and Thailand. As it appears the Thai market looks vulnerable to foreign pharmaceutical comapnies. The relaxation of patent regulations and the aggresive policies regarding generics which have won the Government approval have sounded a note of caution for the foreign based manufacturers. The only way to survive in the Thai market is to introduce high technology based drugs where generics are left stranded or to compete in the lucrative O.T.C market. The same rule applies to Malaysia and Singapore as well but the generics are not that widespread as it is seen in Thailand. Generic prescription has some disadvantages and these are :

165 1) Brand names are often simpler, spelt and remembered than generic names.

2) Quality of generics has claimed to be inferior.

3) Differing appearences may be a problem for some patients and they prefer to be prescribed by the same brand name.

4) The source of a generic cannot be identified once it has been dispensed and it is noted that the implementation of the product liability legislation will underline the need for dispensing doctors and pharmacists to keep appropriate records.

Thus we have seen some of the problems faced by multinationals in this region. Multinationals certainly can overcome generic obstacles if they approach the markets through regional

operations. Many international companies have traditionally handled their worldwide operations as a loose confederation of highly autonomous country units, thus their operations lay closer to the differentiated and decentralisation ends of the continuums.

In a study conducted on marketing strategies through regional operations, it indicated an example of a manufacturer who is dependent on local manufacturing in a European location as a means of tapping the market in Europe as a whole. Thus to attack on regional basis there are many solutions available to a company.

166 POOLING OF RESOURCES

The first solution to go on a regional basis is to pool the resources available. Resources from a group of company operations if the operations are small may be combined to increase efficency or to provide services which might otherwise not be available to those country level operations. A good example of pooling resources is forecasting.

167 FORECASTING

An area with considerable response in terms of consolidation is in monitioring of regional wide economic conditions. Thus it is seen with a regional office, multinationals can prepare and disseminate information and projections in order to prevent costly duplication among the subsidiaries within the various countries. Another area is in monitoring region wide regulatory developments, particulary those affecting product standards and

advertising restrictions. The pooling of resources for improvement of sales has a greater advantage for the European Economic Community but it does not mean the system cannot be adopted in ASEAN where Thailand, Singapore and Malaysia are prominent members.

168 PRODUCT DEVELOPMENT COSTS

When subsidaries have a history of product development autonomy, it is found advantageous to use a regional operation to pool product development activities. The high cost of product development can be cut down to a minimum with such an activity.

169 PRODUCT VARIETY

It is seen when country units made product decisions based only on what they could sell within their own country markets, many product opportunities which required large scale process technology were rejected. The regional group assesses regional demands so that, if large enough it will push for co - operative arrangements among national units.

170 GOVERNMENT SALES

Government sales are important when government purchases are a high potential portion of sales. This is because government purchasers may consider a firm's economic impact on the country when deciding whether or not to purchase from it. Since companies may operate various subsidiaries within the region, governmental authorities may not be aware of the important total impact the company is making in the area. A unified external relations approach can result in a more complete message than if each

subsidiary, each product group or each country group were to take on the duties separately.

171 INTERNATIONAL CUSTOMERS

Frequently a supplier sells to subsidiaries of the same multinational firm in more than one country. By combining efforts, the supplier may be able to deal with regional decision makers and determine what type of concessions will be needed to gain region-wide sales. Such regional control also helps assure that one group does not make concessions such as price decreases or product modifications, which are inconsistent with other corporate entities within the area.

172 PRODUCT GROUP SYNERGY

Another approach to regionalisation is to gain leverage among customers when two or more products are operating in the area, particularly if the product groups have strong bases in different countries.

173 INTERNATIONAL COMPETITORS

Another aspect where regionalisation has been successful is attacking a competitor's strong market. Subsidiaries have been seen concentrating to strengthen their positions in relation to local competitors, leading them occasionally into new but related products. The resources to attack local competitors could have been better spent by concentrating on a regional attack strategy.

174 PREVENTING INTERNAL COMPETITION

At one extreme, a firm may be able to centralise production in

order to reduce costs. At the other extreme, a firm may have products where transportation costs are too high to justify taking advantage of the scale of economy in production. In between these 2 extremes are products for which multiple production locations are necessary, but for which there is product arbitrage potential when costs move differently among the countries due to such factors as inflation rates or an exchange rate re-alignment. There is also the potential for price competition among these subsidiaries when there is excess capacity. This is the reason where firms have instituted regional control in order to prevent sales shifts which could be disruptive to their production facilities.

STANDARDISATION

175 TRANSFERENCE OF INFORMATION

Because of the growing market homogenity within the region, most respondents report a growing ability to predict success or failure for a group of countries on the basis of their experience in one of them. Regional management can quickly monitor the results from all the countries in the area and communicate ideas or directives elsewhere. For example, O.T.C advertisement which is successful in Singapore will usually work in Malaysia or vice versa.

The above mentioned points on the regionalisation plan if followed by multinational marketers will be useful. Another point to consider, other than the regionalisation idea is to conduct acquisitions. There are small pharmaceutical enterprises available in Thailand and Malaysia and the giant companies could buy them up while retaining the local management. This is one of

the best methods to have a strong foothold in a country. If the acquisitions are not possible then joint ventures should be considered for implementation. For example in Malaysia the government decided to come out with a national car called Proton with a joint understanding with Mithsubishi. The local car market has been completely dominated by Proton that the other foreign car manufacturers have been left struggling behind. Thus the same applies to the pharmaceutical industry.

176 RESEARCH & DEVELOPMENT

Research and development plays a major role in the business of a company. If more new products are available to a company it could mean a competitive edge it would have on its rivals. In its research paper, C.C.L (Cambridge Consultants Limited) explains the need for new product launches through R & D activities. For pharmaceutical companies it is necessary to ensure a regular stream of competitive timely new products which is the surest way to increase the market share and profits. The report has put Malaysia and Thailand as followers or starters in R & D activities and Singapore has been singled out as independent and yearing towards as a centre for R & D activity. A researched product is purchased for the benefits it delivers. A researched product :

- meets customers needs better than its rivals.
- is of a higher quality than its rivals.
- reduces customers costs.
- offers unique features to the customers.

But unfortunately, C.C.L says that the majority of new products

are not superior products and fail due to :

1) inadequate market analysis.

2) defects in product-design-quality.

3) poor product marketing and launch.

4) higher development and/or manufacturing costs than expected.

5) competitors strengths greater than expected.

6) poor timing of introduction.

7) production problems.

Many examples can be mentioned on basis of the points mentioned above and a good example is Opren an anti - rheumatic drug which was marketed by Eli Lily. The product was introduced with much publicity throughout the world. It was later seen that some patients put on Opren medication died in the U.K and this prompted the company to immediately withdraw the product from the market. Thus it is seen that limited clinical trials had indirectly jeopardised the marketing of the product.

AX INCENTIVES ADMINISTERED BY THE ECONOMIC DEVELOPMENT BOARD (SINGAPORE)

Tax Incentives	Qualifying Activities	Minimum Requirements	Tax Concession
o Pioneer Status	Approved manufacturing and service activities	New activity or one which has been granted pioneer status in the past	1) Exemption of 33% tax on profits arising from pioneer activity 2) Tax relief period is 5 - 10 years
o Expansion Incentive	Approved manufacturing and service activities	Minimum investment of S$10 million in new productive equipment and machinery (for manufacturing activities only)	1) Exemption of 33% tax on profits in excess of pre-expansion level 2) Tax relief period of up to 5 years
o Investment Allowance Incentive	1) Approved manufacturing and service activities 2) Approved research and development activities 3) Approved construction operations 4) Approved projects for reducing consumption of potable water	Qualifying period of up to 5 years within which specified investments must be made	Exemption of taxable income of an amount equal to a specified proportion (up to 50%) of new fixed investment

Source : Economic Development Board Singapore

TAX INCENTIVES ADMINISTERED BY THE ECONOMIC DEVELOPMENT BOARD (SINGAPORE)

Source : Economic Development Board Singapore

Tax Incentives	Qualifying Activities	Minimum Requirements	Tax Concession
o Operational Headquarters (OHQ)	Approved headquarters operations	Operational Headquarters 1) should manage related companies outside of Singapore and 2) must provide approved headquarters services to related overseas companies from Singapore	1) Income arising from the provision in Singapore of approved services will be taxed at 10% 2) Other income from overseas subsidiaries and associated companies may also be eligible for effective tax relief
o Post-pioneer Incentive	Approved companies enjoying pioneer status or export incentive where the export incentive is a follow-up to the pioneer status previously awarded	Companies must be enjoying pioneer status or export incentive on or after 1 April 1986 and should incur additional investment	Corporate tax rate of 15% for up to 5 years on expiry of pioneer or export incentive
o Approved Foreign Loan Scheme	Approved manufacturing and service activities	1) Minimum loan of S$200,000 from a foreign lender for purchase of productive equipment 2) Tax relief should not result in an increase in tax liability in the foreign country	Exemption of withholding tax on interest
o Approved Royalties	Approved manufacturing and service activities	Tax relief should not result in an increase in tax liability in the foreign country	50% or 100% exemption of withholding tax on royalties

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
1	0439	Advanced Medi Mart Block 201E, Tampines Street 23 #01-64, Singapore 1852	Yip Yoke Moi (Ms)	1st January 1988
2	0006	Alcare Pharmaceuticals Pte Ltd 400 Balestier Road #01-22 Balestier Plaza, Singapore 1232	Chua Chwee Hong (Ms)	1st January 1988
3	0492	Allied Medic Pte Ltd 150 Orchard Road #04-06 Orchard Plaza, Singapore 0923	Liam Lay Kheng (Ms)	1st January 1988
4	0491	American Hospital of Singapore 321 Joo Chiat Place Singapore 1542	Lim York Hwa nee Sim (Mrs)	1st January 1988
5	0470	Apex Pharmacy International Pte Ltd 301 Upper Thomson Road #02-01 Thomson Plaza, Singapore 2057	Monica C K Chan (Mrs)	1st January 1988
6	0471	Apex Pharmacy International Pte Ltd 50 Market Street #01-12 Golden Shoe Car Park Singapore 0104	Iris Lee Yen Linn (Ms)	1st January 1988
7	0472	Apex Pharmacy Int'l Pte Ltd Block 34A, Margaret Drive #01-342 NTUC Fair Price, Singapore 0314	Chao Ye Peng	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
8	0473	Apex Pharmacy Int'l Pte Ltd Block 205, Hougang Street 21 #01-133, Singapore 1953	Yew Sok Har (Ms)	1st January 1988
9	0474	Apex Pharmacy Int'l Pte Ltd Lion City Hotel Commercial Building, Geylang Road Oriental Geylang, Singapore 1440	Chang Yok Ying (Ms)	1st January 1988
10	0475	Apex Pharmacy Int'l Pte Ltd #03-15/19 Raffles City Tower Singapore 0617	Doncella Abigail Inglis (Ms)	1st January 1988
11	0496	Apothecary Private Limited 19 Tanglin Road #03-26 Tanglin Shopping Centre Singapore 1024	Tan Siew Tin nee Chew (Mrs)	1st January 1988
12	0016	Arcade Medical Hall 11 Collyer Quay #02-35 The Arcade, Singapore 0104	Chong Lian Hua (Ms)	1st January 1988
13	0014	Asia Pharmacy Private Limited 257 Selegie Road #02-281 Selegie Complex, Singapore 0718	Catherine Lim Swee Gek nee Wee (Mrs)	1st January 1988
14	0032	Atrium Pharmacy 6 Raffles Boulevard #02-116 Marina Square, Singapore 0103	Felicia Ling nee Tham Yin Har (Mrs)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
15	0431	Atrium Pharmacy 11 Orchard Road #B1-18 Dhoby Ghaut MRT Station Singapore 0923	Chua Lee Cheng (Ms)	12th January 1988
16	0010	Choo Dispensary Block 2, Rochor Centre #02-596 Singapore 0718	Choo Tian Hock	1st January 1988
17	0459	Community Pharmacy 1 Jalan Anak Bukit #01-08 Bukit Timah Plaza, Singapore 2158	William Woo Tat Meng	1st January 1988
18	0019	Coronation Pharmacy Pte Ltd 587 Bukit Timah Road #02-11 Singapore 1026	Rosaline Ong Giam Hock Neo (Mrs)	1st January 1988
19	0022	Dragon Door Medical Hall Block 23, Outram Park #01-403 Singapore 0316	Delia Ong Chiaw Inn nee Wee (Mrs)	1st January 1988
20	0430	Federal Pharmacy 865 Mountbatten Road #01-64 Singapore 1543	Chong Tong Thok	1st January 1988
21	0009	Freshe Pharmacy Pte Ltd 80 Anson Road #02-10 IBM Towers, Singapore 0207	Albert Tok Gek Song	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
22	0023	Gleneagles Hospital Limited 4 Napier Road, Singapore 1025	Priscilla Toh Pui Chun (Mrs)	1st January 1988
23	0026	Guardian Pharmacy 176 Orchard Road #B1-05 Centrepoint, Singapore 0923	Chow Wai Lin (Ms)	1st January 1988
24	0479	Guardian Pharmacy 223 Holland Avenue #01-05 Singapore 1027	Low Hui San (Ms)	1st January 1988
25	0024	Guardian Pharmacy 293 Holland Road #02-12 Cold Storage Jelita, Singapore 1027	Rufina Lim Chin Hing (Ms)	1st January 1988
26	0483	Guardian Pharmacy 24 Amber Close,. Level 1 Cold Storage Katong, Singapore 1543	Ruth Lee Choo Ai (Ms)	1st January 1988
27	0494	Guardian Pharmacy 3 Mount Elizabeth Road #02-10/12 Singapore 0922	Tan Chew Eng (Ms)	1st January 1988
28	0478	Guardian Pharmacy 300 Orchard Road #B-02 The Promenade, Singapore 0923	Chin Mee Fong (Ms)	1st January 1988
29	0456	Guardian Pharmacy 24 Raffles Place #02-22 Clifford Centre, Singapore 0104	Corrie Koo nee Liew Mei Ling (Mrs)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
30	0028	Guardian Pharmacy 66 Serangoon Garden Way Singapore 1955	Ong Seok Peng (Ms)	1st January 1988
31	0477	Guardian Pharmacy 80 Marine Parade Road, #B1-31/33 Parkway Parade, Singapore 1544	Mega Tianadi (Ms)	1st January 1988
32	0476	Guardian Pharmacy Changi Airport #B11-43A Car Park Link Tunnel, Singapore 1781	Saw Pik Kee (Ms)	1st January 1988
33	0481	Guardian Pharmacy Departure Transit Lounge #021-22 Changi Airport, Singapore 1781	Lim Meng Lee	1st January 1988
34	0482	Guardian Pharmacy Block 192, Lorong 4 Toa Payoh #01-674, Singapore 1231	Heng Siew Ngin (Ms)	1st January 1988
35	0025	Guardian Pharmacy 111 North Bridge Road #03-09 Peninsula Plaza, Singapore 0617	Bharati Ramakrishnan (Ms)	1st January 1988
36	0489	Guardian Pharmacy 304 Orchard Road #B1-05 Lucky Plaza, Singapore 0923	Sit Bee Teen (Ms)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
37	0488	Guardian Pharmacy 252 North Bridge Road #03-09 Raffles City Shopping Centre Singapore 0617	Dorothy Sim nee Chew Seok Ghee (Mrs)	1st January 1988
38	0486	Guardian Pharmacy 1 Maritime Square #01-43/44 Singapore 0409	K'ng Lay Hoon (Ms)	1st January 1988
39	0500	Guardian Pharmacy 68 Orchard Road #02-35 Plaza Singapore, Singapore 0923	Lee Chay Nghee (Ms)	1st January 1988
40	0487	Guardian Pharmacy 176 Orchard Road #03-11 Centrepoint, Singapore 0923	Kwah Peng Muay (Ms)	1st January 1988
41	0485	Guardian Pharmacy 1 Claymore Drive #01-08/09 Orchard Towers, Singapore 0922	Ho Swee Geok (Ms)	1st January 1988
42	0484	Guardian Pharmacy 190 Middle Road #01-02 Fortune Centre, Singapore 0718	Chang Siaw Bing (Ms)	1st January 1988
43	0020	Guardian Pharmacy 19 Tanglin Road #01-14 Tanglin Shopping Centre, Singapore 1024	Yong Kam Seng	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
44	0018	Guardian Pharmacy 2450 Ang Mo Kio Avenue 8 #01-01 Ang Mo Kio MRT Station Singapore 2056	Tina Choo Kuei Ting (Mrs)	27th January 1988
45	0031	Guardian Pharmacy 1 Park Road #01-60 People's Park Complex Singapore 0105	Tan Seng Cheong	4th March 1988
46	0034	Guardian Pharmacy 301 Upper Thomson Road #01-24 Thomson Plaza, Singapore 2057	Ngoi Ming Li (Ms)	10th March 1988
47	0011	International Dispensary Pte Ltd 4-6 Hill Street, Singapore 0617	David Boen	1st January 1988
48	0004	Japanese Association Clinic, S'pore 120 Adam Road, Singapore 1128	Chow Hsun Cheng (Ms)	1st January 1988
49	0429	John Little Pte Ltd 277 Orchard Road #01-00 Specialists' Centre, Singapore 0923	Low Giat Ling (Ms)	1st January 1987
50	0005	Jurong Hospital Pte Ltd 235 Corporation Drive Singapore 2261	Chan Ah Lui nee Tee (Mrs)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
51	0449	Kimisawa Pharmacy 435 Orchard Road #B1-01 Wisma Atria, Singapore 0923	Moey Siew Peng (Ms)	1st January 1988
52	0021	Liang Court Pharmcy Pte Ltd 177 River Valley Road #03-35/36 Liang Court Complex, Singapore 0617	Quah Sin Phay	1st January 1988
53	0003	Majesty Pharmacy Block 86, Marine Parade Central #01-670, Singapore 1544	Liew Lee Ching (Ms)	1st January 1988
54	0002	Medical Hall 9 Battery Road #01-15/16 Straits Trading Building Singapore 0104	Low Kam Fon (Ms)	1st January 1988
55	0030	Medical Hall #B1-14, Dhoby Ghaut MRT Station Singapore 0923	Wong Kwai Fong (Ms)	1st March 1988
56	0013	Medichem Pharmacy 1 Raffles Place #B1-12 OUB Centre, Singapore 0104	Yoon Lay Hwee nee Chua (Mrs)	1st January 1988
57	0012	Mount Alvernia Hospital 820 Thomson Road, Singapore 2057	Looi Cheng Kui (Ms)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

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Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
58	0007	Mount Elizabeth Hospital Limited 3 Mount Elizabeth, Singapore 0922	Chen Lai Fun nee Lee (Mrs)	1st January 1988
59	0008	Mount Elizabeth Hospital Ltd 3 Mount Elizabeth #02-09 Singapore 0922	Wu Siew See (Ms)	1st January 1988
60	0001	Mun Dispensary Private Limited 442-444 North Bridge Road Singapore 0718	Au Kwok Chun	1st January 1988
61	0499	National University Hospital Pte Ltd 3 Lower Kent Ridge Road Service Block, Singapore 0511	Liak Teng Lit	1st January 1988
62	0495	National University Hospital Pte Ltd 5 Lower Kent Ridge Road Main Block, Singapore 0511	Lim Mun Moon	1st January 1988
63	0442	Orchard Pharmacy Private Limited 400 Orchard Road #03-24 Orchard Towers, Singapore 0923	Agnes Tan Poh Chon (Ms)	1st January 1988
64	0436	P Govindasamy Pillai (S) Pte Ltd 50 Serangoon Road, Singapore 0821	Mercy Rodrigues (Ms)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

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Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
65	0440	Pan-Malayan Pharmacy Private Ltd 50 Jalan Sultan #02-11/12 & 28/29 Singapore 0719	Tay Teng Pin	1st January 1988
66	0015	Pharmed Import & Export Pte Ltd 149 Rochor Road #B1-17 Fu Lu Shou Complex, Singapore 0718	Lai Hwei Ching (Ms)	1st January 1988
67	0444	Prime Pharmacy Pte Ltd 80 Marine Parade Road #B1-74 Parkway Parade, Singapore 1544	Lim Siew Chin (Ms)	1st January 1988
68	0441	Prince Pharmacy 1 Park Road, #01-77 People's Park Complex Singapore 0105	Tan Kee Guan (Ms)	1st January 1988
69	0497	Princeton Pharmacy (S) Pte Ltd 20 Bideford Road #01-02 Wellington Building, Singapore 0922	Tan Ah Bee	1st January 1988
70	0017	Regent Pharmacy Pte Ltd 304 Orchard Road #06-51 Lucky Plaza, Singapore 0923	Philip Poon Kin Chye	1st January 1988
71	0445	Robinson & Co Pte Ltd 176 Orchard Road #01-14/17 Centrepoint, Singapore 0922	Koh Kay Seng	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
72	0469	Satim Pharmacare 63 Robinson Road #01-02 Afro Asia Building, Singapore 0106	Rohana Hussain (Ms)	1st January 1988
73	0443	Shenton Pharmacy 3 Shenton Way #02-15 Shenton House, Singapore 0106	Chang-Tan Nai Keow (Mrs)	1st January 1988
74	0434	Simedsu Pharmacy 190 Middle Road #01-09 Fortune Centre, Singapore 0718	Ho Teck Swee	1st January 1988
75	0435	Sincere Dispensary Pte Ltd 10-12 Hill Street, Singapore 0617	Yeo Koon Kim	1st January 1988
76	0433	Singapore Pharmaceutical Pte Ltd Block 433, Clementi Avenue 3 #01-248, Singapore 0512	Wee Keng Boon	1st January 1988
77	0438	Somedico Pte Ltd Block 163, Bukit Merah Central #03-3583/5, Singapore 0315	Ng Yew Mun	1st January 1988
78	0437	Somedico Pharmacy Pte Ltd Singapore General Hospital Block 4, Level 1, Unit 41-02 Singapore 0316	Chang Sok Keng (Ms)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
79	0462	Somedico Pharmacy Pte Ltd 68 Orchard Road #B1-02 Yaohan Supermarket, Plaza Singapore Singapore 0923	Tian Ai Kian (Ms)	1st January 1988
80	0467	Somedico Pharmacy Pte Ltd 301, Upper Thomson road #01-01 Thomson Plaza, Singapore 2057	Leng Yew Fei	1st January 1988
81	0468	Somedico Pharmacy Pte Ltd 5 Lower Kent Ridge Road #01-15 National University Hospital Singapore 0511	Lim Shiu Chin (Ms)	1st January 1988
82	0498	Somedico Pharmacy Pte Ltd 1 Yuan Ching Road Yaohan Supermarket (Jurong) Singapore 2261	Lim Sen Too	1st January 1988
83	0029	Somedico Pharmacy Pte Ltd Outram Road #B1-01 Outram MRT Station, Singapore 0316	Chan Woon Seong	1st February 1988
84	0461	Supreme Chemist Pte Ltd 9 Penang Road #01-07/08/09 Supreme House, Singapore 0923	Tan Mui Chai (Ms)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
85	0460	Supreme Chemist Pte Ltd 1 Sophia Road #01-35 Peace Centre, Singapore 0922	Koh Poh Heo nee Wee (Mrs)	1st January 1988
86	0464	Supreme Chemist Pte Ltd 14 Scotts Road #05-89 Far East Plaza, Singapore 0922	Wong Moei Far (Ms)	1st January 1988
87	0463	Tanglin Pharmacy Pte Ltd 19 Tanglin Road #03-33 Tanglin Shopping Centre Singapore 1024	Foong Weng Hon	1st January 1988
88	0465	The Pharmacy Private Limited 1 Scotts Road #03-25 Shaw Centre, Singapore 0922	George Tung Kooi Yoon	1st January 1988
89	0466	The Pharmacy Private Limited 30 Robinson Road #07-03 Tuan Sing Towers, Singapore 0104	Ng Ser Hock	1st January 1988
90	0452	Thomson Medical Centre Pte Ltd 339 Thomson Road, Singapore 1130	Lim Kok Wah alias Lim Kok Hwa	1st January 1988
91	0453	Tong Hin Pharmacy 295 South Bridge Road, Singapore 0105	Lau Kieng Poh	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
92	0454	Tong Keng Hong Drug Store 11 Collyer Quay #01-21 The Arcade, Singapore 0104	Tan Tek Seng	1st January 1988
93	0432	Waltons Pharmacy Pte Ltd 435, orchard Road #B1-23 Wisma Atria, Singapore 0923	Siau Tew Phang	12th January 1988
94	0457	Waltons Pharmacy Pte Ltd 510 Lorong 6 #B1-01 Toa Payoh MRT Station Singapore 1231	Yeo Soo Lam (Ms)	1st January 1988
95	0493	Waltons Pharmacy Pte Ltd 5 Raffles Place #B1-37 Raffles Place MRT Station Singapore 0104	Png Yong Koh	1st January 1988
96	0033	Waltons Pharmacy Pte Ltd 146 Market Street #01-11 Singapore 0104	Wong Yiam Moi (Ms)	1st January 1988
97	0451	Woi Fun Sheong Tim 150 South Bridge Road #B1-12/14 Fook Hai Building, Singapore 0105	Lam Poh Yin nee Ng (Mrs)	1st January 1988

Source : Singapore Government Gazette 15th April 1988

THE MEDICINES ACT, 1975.
(ACT 52 OF 1975)

In pursuance of Regulation 6 (2) of the Medicines (Pharmacy Registration) Regulations, 1981, the following list of Pharmacies in Singapore registered under the said Regulations for the year 1988, is published for general information:-

Serial No	Certificate No	Name & Address of Pharmacy	Pharmacist-In-Charge	Date of Registration
98	0455	Youngberg Memorial Adventist Hospital 309 Upper Serangoon Road Singapore 1334	Teo Boon Lie	1st January 1988

Singapore. 14th March 1988 (MH.(HQ>) 36:04/6)

Dr. Kwa Soon Bee
Permanent Secretary (Health)/
Director of Medical Services,
Ministry of Health
Singapore

Source : Singapore Government Gazette 15th April 1988

UTILIZATION OF GOVERNMENT HEALTH SERVICES
1980, 1984-1986

	Rate per 1000 Population			
	1980	1984	1985	1986
Hospital Admission	97.1	91.0	89.9	85.4
Hospital Specialist Clinic Attendance	528.3	483.5	478.0	449.8
Accident & Emergency Attendance	156.2	185.6	171.3	141.5
Primary Health Care Attendance	1660.5	1294.2	1234.4	1231.0
Dental Clinic Attendance	454.9	448.1	455.1	450.7

Source : Ministry of Health Singapore, Annual Report 1986

SINGAPORE POPULATION AND VITAL STATAISTICS

Appendix 19

YEAR	POPULATION	NATURAL INCREASE	LIVE-BIRTHS	DEATHS	STILL-BIRTHS	INFANT MORTALITY	NEONATAL MORTALITY	PERINATAL MORTALITY	MATERNAL MORTALITY
				NUMBERS					
1950	1,022,100	34,059	46,371	12,312	807	3,813	1,383	1,668	86
1960	1,646,400	51,565	61,775	10,210	886	2,158	1,093	1,747	28
1970	2,074,507	35,217	45,934	10,717	451	942	671	998	15
1980	2,413,945	28,712	41,217	12,505	264	483	366	556	2
1984	2,529,100	28,394	41,556	13,162	243	365	256	435	5
1985	2,558,000	29,136	42,484	13,348	227	394	297	461	2
1986*	2,586,200	26,579	39,400	12,821	201	359	248	394	2
	RATE OF GROWTH (%)				Rate per 1000				
1950	4.4	33.4	45.4	12.0	17.1	82.2	29.8	35.4	1.8
1960	3.5	31.3	37.5	6.2	14.1	34.9	17.7	27.9	0.4
1970	1.7	17.0	22.1	5.2	9.7	20.5	14.6	21.5	0.3
1980	1.2	11.9	17.1	5.2	6.4	11.7	8.9	13.4	0
1984	1.1	11.2	16.4	5.2	5.8	8.8	6.2	10.4	0.1
1985	1.1	11.4	16.6	5.2	5.3	9.3	7.0	10.8	0
1986*	1.1	10.3	15.2	5.0	5.1	9.1	6.3	9.9	0.1

*Preliminary figure

* Source : Ministry of Health Singapore, Annual Report 1986

GOVERNMENT HOSPITAL ADMISSIONS, 1980, 1984-1986

Hospital	1980	1984	1985	1986
Singapore General Hospital	58,637	62,310	64,982	65,473
Tan Tock Seng Hospital	37,680	38,459	42,987	45,475
Alexandra Hospital	34,841	33,898	33,255	30,930
Toa Payoh Hospital	31,937	29,925	29,477	28,070
Changi Hospital	4,113	3,466	3,755	4,157
Sembawang Hospital +	1,076	-	-	-
Kandang Kerbau Hospital	53,437	48,436	48,442	39,620
Middle Road Hospital	682	887	738	767
Middleton Hospital*	6,066	6,587	-	-
Trafalgar Hospital ++	162	-	-	-
St. Andrew's Hospital	192	174	124	158
Woodbridge Hospital	5,576	5,828	6,056	5,959
View Road Hospital	103	168	179	130
Total	234,502	230,138	229,995	220,739

\+ Closed wef 31.3.83
* Renamed Communicable Disease Centre and came under the administration of Tan Tock Seng Hospital wef 1.1.85
++ Came under the administration of Woodbridge Hospital wef 1.1.83

* Source : Ministry of Health Singapore, Annual Report 1986

PATIENTS DISCHARGED FROM GOVERNMENT HOSPITALS
BY SPECIALITY, 1980, 1984-1986

Speciality	1980	1984	1985	1986
General Medicine	53,802	50,467	52,031	51,629
General Surgery	43,472	39,808	40,457	40,589
Obstetrics	39,267	37,289	36,435	29,058
Gynaecology	23,126	16,623	15,637	15,053
Paediatrics	18,218	17,691	17,064	16,800
Neonatology	15,441	15,399	15,558	12,685
Paediatric Surgery	-	2,476	2,512	2,657
Orthopaedic Surgery	12,919	16,184	16,289	16,887
Infectious Diseases	7,171	7,315	3,854	2,958
Psychological Medicine	-	-	-	96
Psychiatric Medicine	5,563	5,914	6,019	5,781
Renal Medicine	-	865	933	1,052
Neuro-Surgery	3,391	2,732	3,315	3,675
Neurology	737	702	730	699
Ophthalmology	3,427	3,749	4,501	5,859
Otorhinolaryngology	1,498	3,787	4,331	4,349
Plastic & Reconstructive Surgery/Burns	1,636	1,968	1,729	1,649

* Source : Ministry of Health Singapore, Annual Report 1986

GOVERNMENT HOSPITAL, ADMISSION RATE BY AGE AND SEX, 1985*

Rate per 1000 population

Age	Male	Female	Total
0 - 4	165.5	135.3	151.0
5 - 9	42.0	27.3	35.0
10 - 14	34.3	21.1	27.9
15 - 19	54.6	44.8	49.8
20 - 24	62.4	121.5	91.1
25 - 29	57.4	163.0	108.6
30 - 34	54.5	119.6	86.4
35 - 39	56.7	79.6	68.0
40 - 44	63.5	66.7	65.1
45 - 49	76.7	75.2	76.0
50 - 54	106.3	85.0	95.8
55 - 59	129.8	92.7	111.7
60 - 64	159.9	114.1	137.3
65 - 69	203.4	143.8	172.5
70 +	364.4	230.7	287.5
Total	82.4	97.7	89.9

* 1986 figures not available at the time of printing

Source : Ministry of Health Singapore, Annual report 1986.

LIST OF PHARMACIES IN MALAYSIA

Jan Pharmacy 123 Jalan Sultan Iskandar Ipoh, Perak	Jecki Medical Supplies Sdn Bhd 2 lot 9 Block A Ground Floor Komplek Sentosa, Jalan Sutera Taman Sentosa 80150 Johor Baru, Johor	Alpha Pharmacy Sdn Bhd Lot 8 Block C Kompleks Sentosa No 2 Jalan Sutera Dua, Taman Sentosa 80150 Johor Baru, Johor
Ang Pharmacy 78 Jalan Gelangang Melaka Pharmacist : Mr Ang Luan Tak	Apex Pharmacy 83-A Jalan Munshi Abdullah 75100 Melaka Pharmacist : Mr Lau Chow Ling	People's Pharmacy 5961 Jalan Bendahara P O Box 123 Malacca Pharmacist : Mr Chong Ngiap Lye
Sentosa Pharmacy Sdn Bhd 122 Jalan Serampang Taman Pelangi, 80050 Johor Baru Pharmacist : Mrs Koh Kian Tee	Interpharm (M) Sdn Bhd Lot 47 TAR Kompleks Jalan Ah Fook, 80000 Johor Baru	Negri Pharmacy 42 Jalan Dato Sheikh Ahmad 70000 Seremban, Negeri Sembilan Pharmacist : Ms Angeline Lee
Apex Pharmacy Sdn Bhd Lot 18-19 TAR Kompleks Jalan Ah Fook, 80000 Johor Baru Pharmacist : Ms Hon Hong Wah	Farmasi Kluang 23 Jalan Datuk Teoh Siew Khor Kluang, Johor Pharmacist : Mr Bernard Lee	Peninsular Pharmacy Plaza Peninsular Shopping Complex 160 Jalan Templer, Seremban Pharmacist : Mr Cheah Eng Shin
Apex Pharmacy Sdn Bhd 7 Jalan Mohd Akil Batu Pahat, Johor Pharmacist : Mr Tan Chin Yau	Public Pharmacy Lot 2.56 Tingkat 2 Wisma Punca Emas, Jalan Dato Sheikh Ahmad 70000 Seremban Pharmacist : Mr Chee Swee Leong	Life Pharmacy 427 Jalan Dato Abd Rahman 70000 Seremban, Negeri Sembilan Pharmacist : Mr Allan Chong

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

Hew Pharmacy No 48/49 Birch Road Seremban, Negeri Sembilan Pharmacist : Mr Hew Kiang Hean	Victory Pharmacy 491 Jalan Hilir Market 15000 Kota Bharu, Kelantan Pharmacist : Ms Susan Tan	Apex Pharmacy (Kelantan) Sdn Bhd 789-J, Jalan Gajah Mati Kota Bharu, Kelantan Pharmacist : Mr Wee Tiang Kiang
Lim Medical Supplies 95 Jalan Banggol, Jalan Terengganu 20100 Kuala Trengganu, Trengganu Pharmacist : Mr Chuah	Dewma Farmasi Lot 120 Wisma Suara Muda Jalan Suara Muda, Kota Bahru Pharmacist : En Zuekamaini Ismail	Pahang Pharmacy Sdn Bhd 51 Jalan Teluk Sesek 25000 Kuantan, Pahang Pharmacist : Mr Lim Chee Beng
Naina Mohd & Sons No 1 Medan Pasar 56050 Kuala Lumpur Pharmacist : Mr Selvamani	Salim (M) Sdn Bhd No 14 Jalan Hang Kasturi 50050 Kuala Lumpur Pharmacist : Ms Khor Siew Huey	Hew Pharmacy (M) Sdn Bhd No 20 Medan Pasar 50050 Kuala Lumpur Pharmacist : Mr Hew Kiang Hoe
S M Sathar Pharmacy Shoplot 12A Ground Floor Straits Trading Building 4 Leboh Pasar Besar 50050 Kuala Lumpur Pharmacist : Mrs Kamalia bte Saman	Ideal Pharmacy 36 Jalan Masjid India Kuala Lumpur Pharmacist : Ms K Wong	Sri Suyan Sdn Bhd 59 Jalan 2/90 Taman Pertama 3 1/2 Miles, Jalan Cheras Kuala Lumpur Pharmacist : Ms Beh Siew Joo
Pantai Medical Centre Jalan Bukit Pantai Kuala Lumpur Pharmacist : Ms Lee Seng Dee	M S Ally Sdn Bhd 89 Jalan Bandar 50000 Kuala Lumpur Pharmacist : En ABdul Jadi	Subang Farmasi Sdn Bhd 58 Jalan 15/4B Subang Jaya, Selangor Pharmacist : Mr S Kanesin

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

Wan Medical Supplies 62 Leech Street 30000 Ipoh, Perak Pharmacist : Mr Govindan Joseph	Eastern Pharmacy (M) Sdn Bhd 72 Theatre Street Ipoh, Perak	Himalaya Medical Hall 83 Jalan Sultan Idris Shah 30000 Ipoh, Perak Pharmacist : Mr Tan Ah Kee
Georgetown Holdings Bhd Jalan Stesen Ipoh, Perak Pharmacist : Mr Keh Ghee Sing	Poh Teik Medical Hall 78 Jalan Besar Taiping, Perak Pharmacist : Mr Beh Thian Teik	Apex Pharmacy Lot 11,12 & 13 Komp Yik Foong Jalan Laksamana, Ipoh, Perak Pharmacist : Mr Lim Chui Peng
Ting Pharmacy Lot 319 Wisma Ganda Sitiawan, Perak Pharmacist : Mr Ting Kong Hing	Hovid Pharmacy 1 Treacher Street Ipoh, Perak Pharmacist : Mr Tan Teik Pin	Public Medical Supplies 495 Jalan Pasir Puteh 31650 Ipoh, Perak Pharmacist : Mr Liew Nyuk Choong
United Pharmacy 24 & 24A Tingkat Enam, Ipoh 11 Taman Ipoh Selatan, Ipoh, Perak Pharmacist : Mr Wong Yew Choon	Kinta Pharmacy 6 Theatre Street Ipoh, Perak Pharmacist : Mr Au Yoke Fong	Fatimah Hospital Jalan Dato Lau Pak Khuan Ipoh Garden, Ipoh, Perak Pharmacist : Mr Ang Swee Siew
Guardian Pharmacy Ipoh Garden Plaza, Jalan Tasek Ipoh, Perak Pharmacist : Ms Angeli Lau Sou Fun	Quinpharm (M) Sdn Bhd 35 Jalan Theatre 30300 Ipoh, Perak Pharmacist : Mr Yeong Lai Yeng	Apex Pharmacy Sdn Bhd 377-A Taman Peringgit Jaya Melaka Pharmacist : Mr Lim Hang Char

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

Apex Pharmacy (EM) Sdn Bhd No 2 Electra House P O Box 1055 93722 Kuching, Sarawak Pharmacist : Ms Annie Law	Herk Chung Pharmacy No 10 Ban Hock Lane P O Box 2688 93752 Kuching, Sarawak Pharmacist : Mr Andrew Liew	Apotik Bina Pharmacy 157F Jalan Satok 93400 Kuching, Sarawak Pharmacist : Mr Shahari Alias
Bath Pharmacy Sdn Bhd 49 Carpenter Street Kuching, Sarawak Pharmacist : Mr Wong Sie Sing	A & C Pharmacy & Lab Sdn Bhd 25 Padungan Road P O Box 2181 Kuching, Sarawak Pharmacist : Ms Kok Hiaw Jin	United Medical Hall (1979) Sdn Bhd 54 Jalan Kampong Nyabar 96000 Sibu, Sarawak Pharmacist : Mr Wong Siong Chiik Ms Chai Joon Hiong
Central Pharmacy Sdn Bhd No 024 Sarawak House 96000 Sibu, Sarawak Pharmacist : Mr Chua Toh Jan	B Y Chan Pharmacy 29 Jalan Maju P O Box 774 96000 Sibu, Sarawak Pharmacist : Mr B Y Chan	The New Asiatic Co No 1 Channel Road P O Box 122 Sibu, Sarawak Pharmacist : Mr Steven Kung
Min Kang Pharmacy Sdn Bhd No 18 Main Bazaar 97000 Bintulu, Sarawak Pharmacist : Mr Vincent Ng	Miri Pharmacy Sdn Bhd 16 China Street P O Box 449 98007 Miri, Sarawak Pharmacist : Ms Annapurna Sengupta	Moh Heng Pharmacy Sdn Bhd 14-A River Road P O Box 53 98007 Miri, Sarawak Pharmacist : Ms Sim Ling LIng
Ho Dispensary Sdn Bhd 255A Penang Road 10000 Penang Pharmacist : Mr Ng Ark Yeow	Naina Mohd & Sons 12 Beach Road Penang Pharmacist : Ms Kok Sup Mooi	Georgetown Dispensary 39 Beach Street Penang Pharmacist : Mr Lee Song Hin

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

Fleming Farmasi Lot 1.36 Kompleks Wilayah Jalan Campbell, Kuala Lumpur Pharmacist : Ms Thian Peng	Apex Pharmacy Sdn Bhd 17 Ground Floor, Bangunan Abas Hoh Jalan Barat, Petaling Jaya Pharmacist : Ms Wong Li Choo	Babycare Pharmacy Sdn Bhd 34 Jalan SS 22/25, Damansara Jaya, 47400 Petaling Jaya Pharmacist : Ms Lim Siang Looi
Guardian Pharmacy (M) Sdn Bhd Ground Floor Yow Chuan Plaza Jalan Pekeliling, Kuala Lumpur Pharmacist : Ms Aileen Chong	Georgetown Dispensary Bhd 31 Jalan SS 2/75 47300 Petaling Jaya Pharmacist : Mr Kuan	Lee Farmasi & Baby Centre Sdn Bhd 5 Lorong Raja Hassan Kelang Pharmacist : Ms Chong Chu Li
City Chemist Sdn Bhd 144 Ground Floor, Ampang Park Shopping Centre, Jalan Ampang Kuala Lumpur Pharmacist : Ms Chow Sow Kuen	Butterworth Pharmacy Sdn Bhd 4709 Bagan Luar Road 12000 Butterworth Province Wellesley	Farmasi Wangsa 12 Persiaran Ampang 55000 Kuala Lumpur

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

Guardian Pharmacy Guardian Central Purchasing 187 Jalan Sungai Besi 57100 Kuala Lumpur	Apex Pharmacy (J) Sdn Bhd Lot 18-19 Ground Floor, Tun Abdul Razak Complex, 80000 Johor Baru Johor	Bukit Mertajam Pharmacy 251 Jalan Kulim 14000 Bukit Mertajam Province Wellesley
Jaya Jusco Stores Sdn Bhd Dayabumi Komplek Jalan Sultan Hishamuddin 50050 Kuala Lumpur	Interfarm Malaysia Sdn Bhd 47, 2nd Floor, Jalan Ah Fook Tun Abdul Razak Kompleks 80000 Johor Baru, Johor	Allin Pharmacy 43 Jalan SS 22/23 Damansara Jaya 47400 Petaling Jaya
Naina Mohd & Sons (M) Sdn Bhd 1, 3 & 9 Medan Pasar 50050 Kuala Lumpur	Jecki Medical Supplies Sdn Bhd No 2 Lot 9 Block A Ground Floor Kompleks Sentosa Jalan Sutera, 80150 Johor Baru	Farmasi Utama 113 Jalan SS 21/37 Damansara Utama 47400 Petaling Jaya
Salim (M) Sdn Bhd 14 Jalan Hang Kasturi 50050 Kuala Lumpur	Lim Pharmacy 237 Lorong Tun Ismail Kuantan, Pahang	Howe Cheang Medical Supply Sdn Bhd 454 Penang Road 10000 Penang
Apex Pharmacy (Sel) Sdn Bhd 105 SS 21/1A Damansara Utama 47400 Petaling Jaya	Boon Pharmacy Sdn Bhd 82-188 Penang Road 10000 Penang	Poly Pharmacy Sdn Bhd 915 Jalan Sultan Badlishah 05000 Alor Star, Kedah

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

K H Farmasutika Sdn Bhd 10.7 Persiaran Raja Muda Musa Port Klang	City Chemist Sdn Bhd Lot 6 Ground Floor, Asiajaya Complex, Lorong Utara C, P.Jaya Pharmacist : Ms Yap Kuen Kin	Guardian Pharmacy (M) Sdn Bhd Bukit Bintang Plaza, Jalan Bukit Bintang, Kuala Lumpur Pharmacist : Ms Chow Kam Fong
Allin Pharmacy 43 Jalan SS 22/23 Damansara Jaya, Petaling Jaya Pharmacist : Ms Chan Lin Heong	Apex Pharmacy Sdn Bhd Lot 201 Kotaraya Complex Jalan Cheng Lock, Kuala Lumpur Pharmacist : Mr Toh Weng Tuck	Guardian Pharmacy (M) Sdn Bhd Ground Floor, Complex PKNS Shah Alam, Selangor Pharmacist : Cik Nor Hayati
Fleming Farmasi Lot 1.36 Kompleks Wilayah Jalan Campbell, Kuala Lumpur Pharmacist : Ms Thian Peng Sim	Syarikat Asia Pharmacy Lot F-059 1st Floor Sungei Wang Plaza, Kuala Lumpur	City Chemist Smkt Sdn Bhd Bangunan Perkim, Jalan Ipoh Kuala Lumpur Pharmacist : Mr Jimmy GB Chua Ms Fong Oi Leng
Guardian Pharmacy (M) Sdn Bhd 1st Floor, Jaya Supermarket Jalan Semangat, Petaling Jaya Pharmacist : Mrs Ong-Oh Hup Ho	Allied Pharmacy Sdn Bhd 137 Jalan Imbi Kuala Lumpur Pharmacist : Ms Ho Suet San	Apex Pharmacy Sdn Bhd Lot 17 24-25 OUG Plaza Jalan Old Klang, Kuala Lumpur Pharmacist : Ms S H Cheong
Guardian Pharmacy (M) Sdn Bhd Ground Floor, Ampang Shopping Complex, Jalan Ampang, K.Lumpur Pharmacist : Mrs Tan Kwai Nyok	K H Hoe Farmasutika Sdn Bhd 107 Persiaran Raja Muda Musa 41100 Port Kelang	Allin Pharmacy 43 Jalan SS 22/23, Damansara Jaya 47400 Petaling Jaya Pharmacist : Ms Chan Lin Heong

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

Cosmopolitan Marketing Services (M) Sdn Bhd (Pharmaceutical Div) 16 Jalan 15/4B, Subang Jaya Pharmacist : Ms Tan Lee Lee	Malaysia Pharmacy Sdn Bhd 20-6 Jalan Pahang 53000 Kuala Lumpur Pharmacist : Mrs Jegathesan	Georgetown Dispensary Bhd 31 Jalan SS2/75 Petaling Jaya Pharmacist : Mr Kuan
Farmasi Utama Jalan SS 21/37, Damansara Utama 47400 Petaling Jaya Pharmacist : Ms Hui Lee Lin	Tri-Op Pharmacy 312 Jalan Pahang, Setapak 53000 Kuala Lumpur Pharmacist : Mr Bernard Woo	Babycare Pharmacy Sdn Bhd 34 Jalan SS 22/25 Damansara Jaya, Petaling Jaya Pharmacist : Ms Lin Siang Looi
Ling Chemist 124 Jalan Pahang 53000 Kuala Lumpur Pharmacist : Mr Ling Dang Ming	Apex Pharmacy (Sel) Sdn Bhd 105 SS 21/1A, Damansara Utama 47400 Petaling Jaya Pharmacist : Mr Loh Swee Eng	Lee Pharmacy & Baby Centre S/Bhd 55 Lorong Raja Hassan 41400 Klang, Selangor Pharmacist : Ms Chong Chu Li
Guardian Pharmacy (M) Sdn Bhd 12th Floor Kompleks Kewangan Jalan Raja Chulan, Kuala Lumpur Pharmacist : Mrs Helen Aw	Kuala Lumpur Pharm Sdn Bhd 78 Jalan Bukit Bintang 55100 Kuala Lumpur Pharmacist : Mr Tan Yap	Syarikat Asia Pharmacy Lot F-059 1st Floor, Sungei Wang Plaza, 50250 Kuala Lumpur
Binjai Sdn Bhd 8th Floor, China Insurance Bldg 174 Jalan TAR, 50100 Kuala Lumpur Pharmacist : Mr S Swaminathan	City Chemist Sdn Bhd City Chemist Emp Sdn Bhd, Sungei Wang Plaza, 55100 Kuala Lumpur Pharmacist : Miss Loh	Allied Pharmacy Sn Bhd 137 Jalan Imbi Kuala Lumpur Pharmacist : Ms Ho Suet San

Source : Johnson & Johnson Malaysia

LIST OF PHARMACIES IN MALAYSIA

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Guardian Pharmacy Ground Floor, Penang Plaza Burmah Road, Penang Pharmacist : Ms Wong Kong Seong	Boon Pharmacy Sdn Bhd 182 Penang Road 10000 Penang Pharmacist : Mr Law Teik Hong	Howe Cheang Medical Supply Sdn Bhd 454 Penang Road Penang Pharmacist : Ms Lim Siew Lee
Well Pharmacy Sdn Bhd KOMTAR Penang Road Penang Pharmacist : Ms Lim Soo Eng	Central Pharmacy 18 Argyll Road Penang Pharmacist : Mr Yong Kong Wah	Penang Pharmacy Sdn Bhd 306H Burmah Road Penang Pharmacist : Mr Chee Say Hean
Butterworth Pharmacy Sdn Bhd 4709 Bagan Luar Road Butterworth, Province Wellesley Pharmacist : Ms Yong Yin Wah	Bukit Mertajam Pharmacy Sdn Bhd 251 Jalan Kulim 14000 Bukit Mertajam, P.Wellesley Pharmacist : Mr Lim Hoon Ngak	S F Farmasi Sdn Bhd 312-P Jalan Bakar Arang Sungai Petani, Kedah Pharmacist : Mr Tan Cheng Chin
Mico Medical Hall Sdn Bhd 1537 Jalan Sultan Badlishah 05000 Alor Star, Kedah Pharmacist : Mr Sio Lye On	Poly Pharmacy Sdn Bhd 915 Jalan Sultan Badlishah Alor Star, Kedah Pharmacist : Mr Khoo Chong Chye	Tri-Op Pharmacy Sdn Bhd 170-B Jalan Tunku Putra Kulim, Kedah
Tri-Op Pharmacy Sdn Bhd 150 Jalan Kota Taiping, Perak Pharmacist : Mr Wu Tuck Seng	Yin Woh Tong Medical Hall 136 Jalan Sultan Iskandar 30000 Ipoh, Perak Pharmacist : Mr Yoong Seng Huat	K H Hoe Farmasutika (Pk) Sdn Bhd 59-A Jalan Raja 36000 Teluk Intan, Perak Pharmacist : Mr Wong Toon Lee

Source : Johnson & Johnson Malaysia

OMPANIES THAT HAVE BEEN APPROVED TO MANUFACTURE PHARMACEUTICAL PRODUCTS IN MALAYSIA

	COMPANY	ADDRESS	OUTPUT
1	The East Asiatic Co (M) Sdn Bhd (Dumex)	1 Road 205 Petaling Jaya Ex-TP	Antibiotic, vitamins, asprin preparations, hormones, anti-tuberculosis, iron preparation, sulphonamides, tranquilisers, antacids
2	Malayan Pharmaceutical Factory	3 Jalan Semangat Petaling Jaya Ex-TP	Antibiotics of all types, bulk medicines, ointments
3	Glaxo (M) Sdn Bhd	2 Jalan 51A/221 P B Box 11 Petaling Jaaya Ex-TP	Antibiotics, vitamins, ointment, other liquids, tablets, capsules, and specialised food
4	Warner Lambert (mfg) Sdn Bhd	Jalan 13/4A Petaling Jaya TGC	Vitamins, iron preparation, antacids
5	Sterling Drugs (M) Sdn Bhd	Ulu Klang Kuala Lumpur TGC	Pharmaceutical, toiletry, cosmetics, household & industrial cleaning products, fly baits
6	Asia Pharmaceutical Products Sdn Bhd	Mak Mandin Indsutrial Estate TGC	Pharmaceutical products, cosmetic preparation, veterinary medicaments
7	Xepa Soul-Pattison Sdn Bhd	68 Ayer Keroh Indsutrial Estate TGC	Antidiarrhoeal mixture, cough mixture, vitamin syrups, anti-asthmatic syrups, antihistamine syrups, sulphonamides syrups, anti-biotic cream or ointments

Source : Malaysian Industrial Development Authority

COMPANIES THAT HAVE BEEN APPROVED TO MANUFACTURE PHARMACEUTICAL PRODUCTS IN MALAYSIA

	COMPANY	ADDRESS	OUTPUT
8	Pharm Malaysia Sdn Bhd	Lot 24 Bakar Arang Indsutrial Estate P O Box 54 Sungei Petani Kedah 70% KCP	Tablets, capsules, liquids
9	Hoechst Pharmaceutical (M) Sdn Bhd	Pandamaran KCP 25%	Tablets, encapsulated preparations, liquids for oral and external use, cream, ointments, suppositories injectables (approved on 19/11/86)
10	Raza Manufacturing Sdn Bhd	16 Jalan 51A/227 Petaling Jaya 25% CP	Tablets, capsules, ointments, cream and liquid preparations
11	Ranbaxy (M) Sdn Bhd	Bakar Arang 60% KCP	Pharmaceutical products including ampicillin trihydrate, etc (approved on 29/4/82)
12	Optisol Sdn Bhd	32A & B Jalan Overseas Union, OUG Kuala Lumpur 50% KCP	Chlorhexidine salts, contact lens solution
13	Depco United Sdn Bhd	4 Lebuh Kurau Tiga, Chai Leng Park, Prai, Province Wellesley Penang	Veterinary medicaments, supplements for animal feeds and body food supplement (vegetable extracts)

Source : Malaysian Industrial Development Authority

OMPANIES THAT HAVE BEEN APPROVED TO MANUFACTURE PHARMACEUTICAL PRODUCTS

	COMPANY	ADDRESS	OUTPUT
14	Beecham Products (Far East) Sdn Bhd	Petaling Jaya Ex-TP	(i) Toiletries - hair dressings shampoos/bath products, skin cream and lotions, talcum powder, perfumes/deodorant (ii) Medicines - proprietory medicines (iii) Malted tablets
15	Chemical International Sdn Bhd	Ulu Tiram, Johor Baru 50% KCP	Medicaments, cosmetics & Pharmaceuticals (approved on 31/12/73)
16	Modern Chemicals Sdn Bhd	Jalan Kelang, Selangor 25% KCP	'4-Acetaminophenol' (Paracetamol) (approved on 4/11/76)
17	Ho Yan Hor (Kausing Brand) Medical Hall Sdn Bhd	Ipoh, Perak TGC	Pharmaceutical products
18	Malaysian Pharmaceutical Industries Sdn Bhd	Bayan Lepas, Penang TGC	Pharmaceutical products (approved on 26/6/84)

Source : Malaysian Industrial Development Authority

MPANIES THAT HAVE BEEN APPROVED TO MANUFACTURE PHARMACEUTICAL PRODUCTS IN MALAYSIA

	COMPANY	ADDRESS	OUTPUT
9	Medic 2000 Sdn Bhd	KP Seri Petaling KCP 50%	Pharmaceutical products in capsules, tablets and granules (approved on 12/11/85)
0	Camden Industries Sdn Bhd	KP Prai, Pulau Pinang TGC	Pharmaceutical products (approved on 10/12/85)
1	NV Medicopharma	Subang Jaya, Selangor	Pharmaceutical products (approved on 4/11/86)

Ex-TP = Ex Pioneer Status
T.G.C. = Without Tax Incentive
K.C.P. = Investment Tax Credit or Allowance

Source : Malaysian Industrial Development Authority

DISTRIBUTORS' DIRECTORY MALAYSIA/SINGAPORE

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Source : DIMS, Volume 16 Number 3 October 1987

DISTRIBUTORS' DIRECTORY MALAYSIA/SINGAPORE Source : DIMS, Volume 16 Number 3 October 1987

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DRUG HOUSES OF AUSTRALIA (ASIA) PTE LTD 2 Chia Ping Road #09-01 Haw Par Tiger Balm Building No 2 Chia Ping Road S2261 Tel : 2652777 Telefax : 2654703 Distributor for : Cederroth Chugai Dr Grossman AG, Pharmaca Drug Houses of Australia (Asia) Pte Ltd F.Ahlgrens Tekn. Fabrik A.B.-Lakerol Laboratories Landarian S.A. Medicopharma	FAR EAST DRUG CO (PTE) LTD 1 Sophia Road #08-01 Peace Centre S0922 Tel : 3378641, 3378349, 3389095 Distributor for : Biomedis Imperial Pharm Medichem Pediatrica Therapharma United American Pharm Westmont	HOECHST SINGAPORE PTE LTD 200 Cantonment Road #16-02 Southpoint S0208 Tanjong Pagar P O Box 102 S9108 Tel : 2257227 Telex : HOESIN RS 21662 Fax : 2257228 Distributor for : Behringwerke AG Behring Diagnostics, U.S.A. Diamant Lab, France Hoechst Akllengesollshaft Hoechst Veterinaer GmbH Roussel Laboratories Ltd, U.K. Roussel Uciaf, France

Source : DIMS, Volume 16 Number 3 October 1987

DISTRIBUTORS' DIRECTORY MALAYSIA/SINGAPORE

B BRAUN SINGAPORE PTE LTD 460 Alexandra Road #34-03 PSA Building S0511 TEL : 2743176 Telex : 56734 BBRAUN Fax : 2737091 Distributor for : B Braun Melsungen A G B Braun Medical Industries Sdn Bhd	BRISTOL-MYERS (S) PTE LTD 50 Genting Lane, $04-01 Cideco Indsutrial Complex S1334 TEL : 7470246 (5 lines) Cable : MYTOL SINGAPORE Telex : RS 35359 MYTOL SINGAPORE Distributor for : Bristol Laboratories Mead Johnson Westwood	DIETHELM SINGAPORE PTE LTD 34 Boon Leat Terrace S0511 TEL : 4711466 Telex : RS 36121 DIETCO Fax : 4799104 Distributor for : Beecham Carter Wallace Cilag Geistlich Lipha Pharm
UPHA CORPORATION (M) SDN BHD No 9 Lorong SS13/3D Subang Jaya Industrial Estate 47500 Petaling Jaya Selangor TEL : 7334545 (4 lines) Telex : MA 36177 Distributor for : Beacons Chem Upha Pharmaceutical	WARNER-LAMBERT (MFG) SDN BHD Jalan 13/4A 46200 Petaling Jaya P O Box 87, P.J. 46710 Petaling Jaya TEL : 03-7565011 Cable : WARNLAM Telex : HALLS MA 37618 Distributor for : Parke Davis Warner-Lambert	SYARIKAT WELLCHEM SDN BHD 928 Jalan 17/38 46400 Petaling Jaya TEL : 7572449, 7570218 Fax : 03-7568228 Distributor for : Doms Lab Nippon Shinyaku Richard Daniel & Son Ltd UCB Wellchem

Source : DIMS, Volume 16 Number 3 October 1987

Enforcement

Statistics of national enforcement coverage, 1984 - 1986

	1984	1985	1986	Cumulative Total 1.1.78 - 31.12.86
Prosecution				
No of cases prosecuted	274	149	229	1,163
No of cases found guilty	266	140	203	1,122
Total fine imposed ($)	293,230.00	175,300.00	213,260.00	1,107,670.00
Control of Medicine				
Advertisements				
No of applications for approval	564	2,715	4,157	-
No of advertisements approved	368	386	1,247	-
Fees collected ($)	28,200.00	135,750.00	207,850.00	-

Source : Pharmaceutical Services Division, Ministry of Health Malaysia

Enforcement

Statistics of national enforcement coverage, 1984 - 1986

	1984	1985	1986	Cumulative Total 1.1.78 - 31.12.86
Enforcement				
Number of premises raided	447	500	894	-
Number of premises where poisons were found	252	325	474	1,972
Number of drug items seized	3,634	5,393	9,674	-
Value of drug items seized ($)	404,349.00	724,894.00	1,534,224.00	-
Number of licences issued				
- Type A	425	624	714	-
- Type B	389	462	501	-
- Type D	372	434	457	-
- Type E	19	17	17	-
Fees collected ($)	48,240.00	56,580.00	60,940.00	-

Source : Pharmaceutical Services Division, Ministry of Health Malaysia

STATISTICS SHOWING THE PERFORMANCE OF PROGRAMME OPERATIONS

Procurement and Distribution

Statistics on stocks handled by the Pharmaceutical Laboratories and Store, Petaling Jaya, 1984 - 1986

Stocks	1984	1985	1986
Value of stocks received ($)	47,887,427.00	51,713,310.00	75,375,385.00
Value of stocks issued ($)	57,638,510.00	60,734,749.00	68,217,726.00
Annual stock turnover ($)	105,525,936.00	112,448,059.00	143,593,111.00
Stock turnover rate	1.77	2.08	2.20
Value of stock balance 31st Dec ($)	31,547,750.00	26,801,236.00	35,276,592.00

Source : Pharmaceutical Services Division, Ministry of Health Malaysia

STATISTICS SHOWING THE PERFORMANCE OF PROGRAMME OPERATIONS

Production

Production statistics at the Pharmaceutical Laboratories and Store, Petaling Jaya, 1984 - 1986

Type of Product	1984	1985	1986
Small volume parenterals (units)	3,594,125	3,378,131	2,717,803
Multidose parenterals (units)	232,245	232,390	222,387
Intravenous fluids (units)	678,119	611,443	614,467
Tablets (unit)	470,194,700	524,387,430	702,224,790
Galenicals (kg)	366,770	374,343	391,257

Source : Pharmaceutical Services Division, Ministry of Health Malaysia

Registration of drugs by The Drug Control Authority, 1985 - 1986

	1985	1986
Number of applications received	9	6,471
Number of applications approved	-	1,842
Number of applications rejected	-	852
Number of applications cancelled	-	8
Total Fees collected ($)	2,250.00	1,602,000.00

Source : Pharmaceutical Services Division, Ministry of Health Malaysia

QUALITY CONTROL

Quality control tests done at the Quality Control Laboratory, Pharmaceutical Laboratories and Store, Petaling Jaya 1984 - 1986.

	1984	1985	1986
Number of samples tested	6,972	6,874	7318

Quality control tests done at the National Pharmaceutical Control Laboratory, Petaling Jaya, 1984 - 1986

	1984	1985	1986
Analytical Laboratory			
- samples tested	1,460	1,559	1,570
- tests done	8,630	9,261	9,061
Pharmaceutical Laboratory			
- samples tested	1,897	2,308	2,805
- tests done	4,682	6,211	6,655
Pharmacology Laboratory			
- samples tested	861	1,135	1,184
- tests done	1,070	1,579	1,611
Microbiology Laboratory			
- samples tested	1,255	1,678	2,081
- tests done	1,396	2,062	2,449
Total samples tested	5,473	6,680	7,640
Total tests done	15,778	19,113	19,376

Source : Pharmaceutical Services Division, Ministry of Health Malaysia

TRAINING

Statistics on Training Activity, 1984 - 1986

	1984	1985	1986
Number of pharmacy assistants graduated	91	96	44
Number of pharmaceutical laboratory assistants graduated	12	1	3
Number of pupil pharmacists who completed training	50	65	68

PHARMACEUTICAL SERVICES DIVISION
MINISTRY OF HEALTH

Source : Pharmaceutical Services Division, Ministry of Health Malaysia

ROSS-COUNTRY COMPARISON OF SELECTED HEALTH INDICATORS

COUNTRY	ESTIMATED MID 1976 POPULATION	PER CAPITA INCOME IN BUS (1975)	CRUDE BIRTH RATE	CRUDE DEATH RATE	INFANT MORTALITY RATES	LIFE EXPECTANCY (MALE & FEMALE)
weden	8.2 m	8150	1976 11.9	11.0	8.7	1975 (72.07 & 77.65)
.S.A.	215.1 m	7120	1976 14.7	8.9	5.8	1975 (68.7 & 96.5)
ustralia	13.9 m	5700	1976 16.7	6.3	14.3	1976 (72.8 & 77.35)
apan	112.8 m	4450	1976 16.4	6.3	9.3	1976 (72.8 & 77.35)
.K.	55.9 m	3780	1976 12.1	12.2	14.3	1970 (67.8 & 73.8)
taly	56.2 m	2810	1976 14.0	9.7	19.1	1972 (68.97 & 74.88)
.S.S.R.	256.7 m	2550	1976 18.5	9.5	27.7	1972 (64.0 & 74.0)
ingapore	2.3 m	2450	1976 18.8	5.1	13.7	1970 (65.1 & 70)
ugoslavia	21.6 m	1550	1976 18.1	8.4	36.4	1972 (65.42 & 70.72)
rgentina	25.7 m	1550	1970 22.9	9.4	59.0	1975 (65.16 & 71.38)
razil	109.1 m	1030	1975 37.1	8.8	-	1970 (57.61 & 61.00)
osta Rica	2 m	960	1976 29.3	4.8	38.2	-
lgeria	17.3 m	870	1975 48.7	15.4	86.3	1975 (51.7 & 54.8)
uba	9.4 m	800	1975 20.7	5.4	27.3	1970 (68.5 & 71.8)
eru	16.1 m	760	1975 41.0	11.9	58.2	1965 (52.59 & 55.48)
alaysia	12.3 m	760	(1976 31.7	6.2	30.7)*	1976 (66.2 & 71.4)
unisia	5.7 m	730	1975 40.0	13.8	125.0	1975 (52.5 & 55.7)

xtracted From : The Future of Health Services in Malaysia, Malaysian Medical Association, 1980

CROSS-COUNTRY COMPARISON OF SELECTED HEALTH INDICATORS

COUNTRY	ESTIMATED MID 1976 POPULATION	PER CAPITA INCOME IN BUS (1975)	CRUDE BIRTH RATE	CRUDE DEATH RATE	INFANT MORTALITY RATES	LIFE EXPECTANCY (MALE & FEMALE)
Syria	7.6 m	720	1975 45.4	4.8	21.7	1970 (54.49 & 58.73)
S. Korea	35.9 m	560	1975 28.8	8.8	-	1970 (63 & 67)
Philippines	43.8 m	380	1975 43.8	10.5	58.9	1975 (56.9 & 60)
Thailand	43 m	350	1975 43.4	10.8	25.5	1960 (53.6 & 58.7)
Indonesia	139.6 m	220	1975 42.9	16.9	125.0	1960 (47.5 & 47.5)

*Peninsular Malaysia only

Source : WHO Reports and IBRD Report on Income

Extracted From : The Future of Health Services in Malaysia, Malaysian Medical Association, 1980

Number of Admissions by Selected Common Causes in Government Hospitals from 1947 - 1976 in Peninsular Malaysia

CAUSES	1947		1955		1976		Difference in number of admissions in Government hospitals between 1947 & 1976
	No of Admissions	% of total Admissions	No of Admissions	% of total Admissions	No of Admissions	% of total Admissions	
Cardiovascular & heart diseases	4,162	1.90	8,539	3.47	28,917	4.63	+ 6.95 times
Tuberculosis	9,056	4.14	7,515	3.05	9,139	1046.00	+ 1.01 times
Malaria	26,189	11.98	911	3.70	7,615	1.21	- 3.44 times
Neoplasms	1,901	0.87	3,275	1.33	11,535	1.84	+ 6.07 times
Motor vehicle accidents	1,393	0.64	2,407	0.98	15,513	2.47	+11.14 times
Other accidents	35,395	16.19	23,907	9.71	75,329	12.00	+ 2.13 times
Mental Illness	2,385	1.09	4,762	1.93	21,635	3.45	+ 9.07 times
Diseases of skin	22,514	10.30	12,384	5.03	14,364	2.29	- 1.57 times
Gastro-enteritis	5,954	2.72	8,139	3.31	19,685	2.98	+ 3.14 times
Complications of pregnancy	5,479	2.51	833	3.38	26,592	4.24	+ 4.85 times
Bronchitis	7,496	3.43	7,192	2.92	8,369	1.33	+ 1.12 times
Diseases of early infancy	1,820	0.83	3,072	1.25	13,011	2.07	+ 7.15 times
Deficiency diseases	926	0.40	4,387	1.78	10,270	1.64	+11.09 times
Abortion & complications resulting from abortion	1,283	0.59	5,198	2.11	15,970	2.54	+12.45 times
Other diseases	92,631	43.39	138,016	56.05	350,607	55.85	+ 3.78 times
Total admissions	218,584	100.00	246,237	100.00	627,551	100.00	

Source : Medical Department - Reports & Hospital Returns

Extracted from : The Future of Health Services in Malaysia, Malaysian Medical Association, 1980

No. of medically certified and inspected deaths by selected common causes as registered with Registrar of Births & Deaths in Peninsular Malaysia (1955 & 1976)

Causes	1955		1976	
	No of Deaths*	% of Total Deaths*	No of Deaths*	% of Total Deaths*
Tuberculosis	1,673	7.72	750	3.21
Malaria	807	4.20	59	0.25
Neoplasms	665	3.46	2,168	9.28
Bronchitis	388	2.02	249	1.07
Pneumonia	1,593	8.30	1,250	5.35
Gastro-enteritis	2.429	12.65	526	2.25
Complications of pregnancy	1,090	5.68	2,964	12.68
Diseases of early infancy	4,462	23.25	n.a.	n.a.
Cardiovascular & Heart Diseases	1,765	9.20	4,686	20.05
Motor Vehicle Accidents	217	1.13	355	1.52
Other Accidents	2,484	12.94	1,869	8.00
Deficiency diseases	672	3.5	315	1.35
Other diseases	949	4.95	8176	34.99
Total No. of Medically Certified & Inspected Deaths	19,194	100.00	23,267	100.00

* medically certified & inspected deaths

Source : Annual Report of Registrar of Births & Deaths

Extracted From : The Future of Health Services in Malaysia, Malaysian Medical Association 1980.

MALAYSIA : PUBLIC DEVELOPMENT EXPENDITURE FOR HEALTH SERVICES, 1981-90
($ million)

Programme	Fourth Plan allocation 1981-85	Estimated expenditure 1981-85	Fifth Plan allocation 1986-90
Patient care services	471.00	470.64	377.57
New hospitals	471.00	470.64	377.57
Public health services	194.21	194.20	234.90
Rural health services	190.92	190.91	228.14
Other public health services	3.29	3.29	6.76
Dental health services	4.04	4.02	13.09
Training	18.97	18.96	3.25
Applied food and nutrition	14.34	14.33	30.00
Other health activities	26.86	26.85	26.54
Population and family health	46.75	46.75	12.53
Total	776.17	775.75	697.88

Source : Fifth Malaysia Plan 1986-1990

Extracted From : Basic Marketing Data, 1987 - MPTMA

PRINCIPAL CAUSES OF DEATHS IN GOVERNMENT HOSPITALS PENINSULAR MALAYSIA, 1980 - 1984

	1980		1981		1982		1983		1984	
art Disease	2,885	(16.56%)	2,892	(16.95%)	2,912	(16.50%)	2,787	(15.97%)	3,316	(18.73%)
seases of Early Infancy	2,596	(14.90%)	2,371	(13.90%)	2,129	(12.07%)	2,365	(13.55%)	2,314	(13.07%)
cidents	2,290	(13.14%)	2,073	(12.15%)	2,373	(13.45%)	2,302	(13.19%)	2,345	(13.25%)
rdio-vascular Diseases	1,381	(7.93%)	1,379	(8.08%)	1,432	(8.12%)	1,406	(8.06%)	1,571	(8.87%)
oplasms	1,356	(7.78%)	1,328	(7.78%)	1,402	(7.95%)	1,349	(7.73%)	1,326	(7.49%)
eumonia	706	(4.05%)	650	(3.81%)	612	(3.47%)	612	(3.51%)	518	(2.93%)
berculosis	543	(3.12%)	576	(3.38%)	503	(2.85%)	430	(2.46%)	471	(2.66%)
stro-enteritis	326	(1.87%)	250	(1.47%)	177	(1.00%)	104	(0.60%)	135	(0.76%)
seases of Liver	290	(1.66%)	333	(1.95%)	297	(1.68%)	301	(1.72%)	279	(1.58%)
ficiency Diseases	169	(0.97%)	120	(0.70%)	148	(0.84%)	140	(0.80%)	-	
mplications of Pregnancy	-		-		-		-		113	(0.64%)
l Causes	17,423		17,063		17,641				17,707	

urce : Information and Documentation System Unit, Planning and Development Division, Ministry of Health

tracted From : Basic Marketing Data, 1987 - MPTMA

MALAYSIA : DOCTORS AND DOCTOR-POPULATION RATIO BY STATE, 1980 AND 1985

State	1980 Number of doctors			1985 Number of doctors		
	Government	Private	Total	Government	Private	Total
Johor	183	168	351	193	273	466
Kedah	91	67	158	110	116	226
Kelantan	60	28	88	76	59	135
Melaka	62	56	118	84	74	168
Negeri Sembilan	128	56	184	110	108	218
Pahang	100	58	158	115	96	211
Perak	87	311	398	225	356	581
Perlis	21	8	29	21	10	31
Pulau Pinang	121	207	328	205	282	487
Sabah	61	67	128	70	110	180
Sarawak	111	68	179	140	105	245
Selangor	104	228	332	360	380	740
Terengganu	47	18	65	62	32	94
Federal Territory	621	377	998	509	511	1,020
MALAYSIA	1,797	1,717	3,514	2,290	2,512	4,802

Source : Estimates based on Ministry of Health, 1986

Extracted From : Basic Marketing Data, 1987 - MPTMA

MALAYSIA : INDICATORS OF HEALTH SERVICES AND CONDITIONS, 1980 AND 1985

Indicator	1980	1985
Doctors per 10,000 population	2.6	3.2
Dentists per 10,000 population	0.5	0.7
Acute care hospital beds* per 1,000 population	1.7	1.7
Rural population per health centre ('000)	25.8	20.4
Rural population per midwife/rural clinic ('000)	4.3	4.2
Life expectancy+		
- Male	66.7	67.6 #
- Female	71.6	72.7 #
Infant mortality rate (per 1,000)	19.7	17.5 #
Toddler mortality rate (per 1,000)	1.8	1.5 #
Maternal mortality rate (per 1,000)	0.6	0.4 #
Crude birth rate+ (per 1,000)	30.9	30.7 #

Sources : Ministry of Health and Department of Statistics

Notes :

* Excluding private health sector beds
\+ For Peninsular Malaysia only
\# Figure for the year 1984

Extracted From : Basic Marketing Data, 1987 - MPTMA

NUMBER OF RETAIL PHARMACIES AND CHINESE DRUGGISTS
IN MALAYSIA - 1986*

State	Pharmacies	Chinese Druggist
Johore	15	350
Melaka	8	125
Negeri Sembilan	7	140
F.Territory	66	470
Selangor	37	340
Perak	25	380
Penang	3	275
Kedah	6	190
Perlis	-	40
Pahang	5	120
Trengganu	4	55
Kelantan	5	70
Sabah	30	135
Sarawak	26	170
TOTAL MALAYSIA	237	2,860

Estimate, Dec 16, 1986

Extracted From : Basic Marketing Data, 1987 - MPTMA

10 PRINCIPAL CAUSES OF ADMISSION INTO GOVERNMENT HOSPITALS
PENINSULAR MALAYSIA, 1980 - 1984

	1980	1981	1982	1983	1984
Accidents	110,053 (14.92%)	103,544 (13.73%)	106,870 (13.33%)	108,174 (14.11%)	103,022 (12.93%
Complications of Pregnancy	57,001 (7.73%)	94,440 (12.52%)	84,205 (10.50%)	87,322 (11.39%)	79,420 (9.97%
Gastroenteritis	31,488 (4.27%)	26,461 (3.51%)	26,444 (3.30%)	26,969 (3.52%)	20,281 (2.55%
Heart Diseases	23,266 (3.16%)	23,659 (3.14%)	24,905 (3.11%)	23,806 (3.11%)	28,679 (3.60%
Mental Illness	21,493 (2.92%)	23,131 (3.07%)	23,441 (2.92%)	22,381 (2.92%)	23,745 (2.98%
Diseases of Early Infancy	19,287 (2.62%)	21,991 (2.92%)	23,385 (2.29%)	33,914 (4.42%)	32,039 (4.02%
Diseases of Skin	17,395 (2.36%)	18,080 (2.40%)	21,088 (2.63%)	19,593 (2.56%)	18,014 (2.26%
Cardio-vascular Diseases	16,503 (2.24%)	18,717 (2.48%)	19,932 (2.49%)	16,954 (2.21%)	19,143 (2.40%
Neoplasms	15,711 (2.13%)	17,264 (2.29%)	18,521 (2.31%)	18,160 (2.37%)	18,610 (2.34%
Pyrexia of Unknow Origin	12,735 (1.73%)	- -	13,958 (1.74%)	- -	- -
Pneumonia	- -	10,295 (1.36%)	- -	10,604 (1.38%)	- -
Ophthalmic Condition	- -	- -	- -	- -	11,741 (1.47%
All Causes	737,465	754,394	801,670	766,698	796,691

Source : Information and Documentation System Unit, Planning and Development Division, Ministry of Health

Extracted From : Basic Marketing Data, 1987 - MPTMA

MEDICAL SPECIALISTS IN GOVERNMENT SERVICE IN MALAYSIA AS ON 31ST, DECEMBER, 1984

Type of Specialist	Superscale Posts		Timesacle Post Filled			Total No of Specialists Employed
	Post	Filled	Malaysia	Non-Malaysia	Total	
General Physician	42	38	20	1	21	59
General Surgeon	40	37	8	4	12	49
Obstetrician/Gynaecologist	31	23	10	0	10	33
Anaesthesiologist	31	17	1	4	5	22
Ophthalmologist	27	14	2	2	4	18
Orthopaedic Surgeon	14	8	3	1	4	12
Radiologist	22	12	5	1	6	18
Paediatrician	21	14	9	0	9	23
Pathologist	18	9	3	0	3	12
Psychiatrist	12	9	1	1	2	11
TB/Chest Physician	12	8	2	0	2	10
Radiotherapist/Oncologist	6	4	2	0	2	6
Otorhinolaryngologist	8	3	1	0	1	4
Dermatologist	8	6	4	1	5	11
Urologic Surgeon	4	1	2	1	3	4
Nerosurgeon	4	2	1	0	1	3
Neurologist	3	0	0	0	0	0
Nephrologist	3	2	1	0	1	3
Haemotologist	4	2	1	0	1	3
Cardio-Thoracic Surgeon	4	2	2	0	2	4
Plastic Surgeon	2	1	3	0	3	4
Forensic Pathologist	3	1	0	0	0	1
Paediatric Surgeon	2	0	0	0	0	0
Venereologist	4	1	2	0	2	3
Cardiologist	1	0	0	0	0	0
	326	214	83	16	99	313

Source : Medical Services Division, Ministry of Health

Extracted from : Basic Marketing Data, 1987 -MPTMA

1—PERDAGANGAN ANTARA NEGARA-NEGARA ASEAN
AS$ juta

1.4—INTRA-ASEAN TRADE
US$ million

		Perdagangan Antara Negara-Negara ASEAN *Intra-ASEAN Trade*											
		Brunei *Brunei*		Indonesia *Indonesia*		Malaysia *Malaysia*		Filipina *Philippines*		Singapura *Singapore*		Negeri Thai *Thailand*	
		Import *Import*	Eksport *Export*	Import *Import*	Eksport *Export*	Import *Import*	Eksport *Export*	Import *Import*	Eksport *Export*	Import *Import*	Eksport *Export*	Import *Import*	Eksport *Export*
Brunei *Brunei*	1975 ..			N.A.	N.A.	13.3	60.9	N.A.	N.A.	61.9	4.0	6.6	*
	1984 ..			3.8	21.7	31.0	0.5	1.2	54.8	150.4	228.9	15.8	208.8
	1985 ..			0.4	9.7	29.6	18.9	0.6	16.5	147.6	255.5	18.8	311.2
	1986 ..			4.3	0.6	38.5	24.9	1.3	13.2	168.2	120.1	20.3	145.9
	1987 ..			4.9	0.5	102.5	1.2	0.5	47.8	370.2	119.2	17.1	221.6
Indonesia *Indonesia*	1970 ..	N.A.	N.A.			6.0	36.0	2.0	26.0	57.0	172.0	11.0	*
	1984 ..	N.A.	N.A.			86.0	98.0	16.0	166.0	1,791.0	2,126.0	56.0	98.0
	1985 ..	1.0	N.A.			54.0	77.0	23.0	199.0	762.0	1,626.0	58.0	81.0
	1986 ..	1.0	1.0			50.0	58.0	28.0	81.0	969.0	943.0	72.0	64.0
	1987 ..	1.0	8.0			155.0	110.0	69.0	74.0	416.0	1,011.0	64.0	93.0
Malaysia *Malaysia*	1970 ..	N.A.	N.A.	68.0	11.0			2.0	29.0	105.0	364.0	60.0	16.0
	1984 ..	1.0	97.0	172.0	101.0			242.0	363.0	1,639.0	3,380.0	481.0	466.0
	1985 ..	1.0	31.0	139.0	66.0			230.0	368.0	1,948.0	2,991.0	435.0	527.0
	1986 ..	1.0	35.0	144.0	54.0			125.0	247.0	1,630.0	2,366.0	429.0	361.0
	1987 ..	1.0	93.0	176.0	147.0			148.0	323.0	1,873.7	3,263.0	443.0	511.0
Filipina *Philippines*	1970 ..	N.A.	N.A.	30.0	2.0	26.0	*			6.0	7.0	*	3.0
	1984 ..	65.7	0.5	199.0	8.3	354.8	176.0			119.4	321.3	50.8	9.0
	1985 ..	14.9	0.5	109.8	18.3	390.2	173.7			126.8	249.8	55.6	83.1
	1986 ..	13.3	0.6	137.4	27.9	215.1	97.0			126.8	153.6	29.9	66.7
	1987 ..	52.6	0.5	92.1	64.6	233.5	119.0			237.4	196.4	44.2	124.7
Singapura *Singapore*	1970 ..	*	33.9	N.A.	N.A.	459.0	340.0	9.0	4.0			49.0	61.0
	1984 ..	195.0	294.0	N.A.	N.A.	4,306.0	3,902.0	185.0	207.0			633.0	1,154.0
	1985 ..	245.0	291.0	N.A.	N.A.	3,736.0	3,539.0	198.0	218.0			544.0	949.0
	1986 ..	136.0	314.0	1,239.3	984.4	3,400.0	3,327.0	184.0	246.0			737.0	821.0
	1987 ..	131.0	337.0	1,460.0	1,080.0	4,500.0	4,073.0	176.0	418.0			1,017.0	1,218.0
Negeri Thai *Thailand*	1970 ..	N.A.	N.A.	19.0	16.0	7.0	40.0	3.0	*	13.0	49.0		
	1984 ..	216.6	9.9	79.1	46.9	504.7	350.8	20.2	23.0	622.2	623.3		
	1985 ..	330.7	14.3	60.8	43.3	547.0	354.8	59.6	53.1	688.9	585.6		
	1986 ..	178.0	14.8	61.9	57.7	384.8	391.3	70.7	29.0	600.8	786.9		
	1987 ..	243.7	15.6	111.1	58.5	521.3	369.2	140.6	73.0	1,012.2	1,023.9		

* Kurang daripada AS$1 juta.

Sumber: Perangkaan Haluan Perdagangan (Penerbitan IMF).

* *Less than US$1 million.*

Source: *Direction of Trade Statistics (IMF Publication).*

1.2—ASEAN: KEY ECONOMIC DATA

Rizab Kasar Antarabangsa[3] (AS$ juta)	Nisbah Bayar Balik Hutang[4]	Jumlah Hutang Luar Negeri *Total External Debt*		Bekalan Wang[5] (% kadar pertumbuhan)	Kadar Pengangguran (% daripada tenaga buruh)	Pengeluaran Perkilangan[6] (% kadar tumbuhan)	Kadar Pertukaran Wang (matawang negeri bagi AS$1 pada akhir tempoh)
Gross International Reserves[3] (US$ million)	*Debt Servicing Ratio[4]*	AS$ ribu juta *US$ billion*	Sebagai % daripada KNK *As % of GNP*	*Money Supply[5] (% growth rate)*	*Unemployment Rate (% of labour force)*	*Manufacturing Production[6] (% growth rate)*	*Exchange Rate (national currency per US$1 at end of period)*
							(Brunei Dollar)
N.A.	NIL	NIL	NIL	N.A.	N.A.	N.A.	N.A.
N.A.	NIL	NIL	NIL	N.A.	N.A.	N.A.	2.17
N.A.	NIL	NIL	NIL	− 6.8	N.A.	N.A.	2.09
N.A.	NIL	NIL	NIL	−11.3	N.A.	N.A.	2.16
N.A.	NIL	NIL	NIL	—	N.A.	N.A.	1.99
N.A.	**NIL**	**NIL**	**NIL**	—	**N.A.**	**N.A.**	—
							(Rupiah)
160	N.A.	N.A.	N.A.	36.4	N.A.	N.A.	378.0
4,773	16.0	30.3	149.7	6.5	N.A.	6.2	1,074.0
4,974	19.6	31.0	145.1	5.9	N.A.	6.2	1,125.0
4,051	24.3	37.3	195.2	7.6	N.A.	4.9	1,641.0
5,592	37.1	44.1	302.6	2.9	N.A.	13.5	1,650.0
5,304	**34.3**	**48.6**	**259.4**	—	**N.A.**	—	—
							(Ringgit)
660	N.A.	N.A.	N.A.	6.0	7.5	12.3	3.08
3,723	11.8	15.3	50.2	− 0.6	5.8	11.4	2.43
4,912	15.8	17.6	58.7	1.7	6.9	− 6.2	2.41
6,027	18.6	19.4	76.1	2.8	6.3	7.2	2.60
7,435	14.8	20.4	67.5	13.0	6.2	12.5	2.49
6,220	—	—	—	—	**6.1**	—	—
							(Peso)
251	N.A.	N.A.	N.A.	4.6	4.3	1.6	6.44
602	23.7	25.4	80.7	33.6	10.6	− 7.2	19.78
615	32.7	26.3	81.7	35.7	11.1	− 7.7	19.03
1,728	34.0	28.3	92.9	42.7	11.1	0.8	20.53
968	35.8	27.8	81.0	52.4	9.5	7.1	20.80
617	—	—	—	—	—	—	—
							(Singapore Dollar)
1,012	0.6	0.1	7.9	15.6	6.0	12.1	3.08
10,416	0.4	0.5	2.8	3.0	2.7	7.5	2.18
12,847	2.4	0.5	2.5	− 0.9	4.1	− 7.3	2.10
12,939	2.4	0.3	1.9	11.8	6.5	6.6	2.18
15,227	1.3	0.2	1.1	12.0	2.8	17.0	1.99
—	**0.2**	**0.2**	**0.8**	—	**2.5**	—	—
							(Baht)
906	N.A.	N.A.	N.A.	7.9	1.0	N.A.	20.93
1,921	23.6	15.6	37.0	11.5	2.2	6.2	27.15
2,190	26.8	17.4	45.3	− 3.5	2.6	0.8	26.65
2,804	24.3	18.2	43.2	18.6	3.0	9.0	26.13
4,007	19.5	17.9	38.0	—	2.6	9.1	25.07
4,909	**18.6**	**18.2**	**35.5**	—	—	—	—

[1] *Malaysia—1978 prices; Indonesia and Singapore—1975 prices; Philippines and Thailand—1980 prices.*
[2] *Exports f.o.b. less imports c.i.f.*
[3] *Gross reserves of monetary authorities comprising SDRs, IMF Reserve Position, foreign exchange minus gold. Data for 1988 refers to June only.*
[4] *Defined as service payments on external debt as a percentage of exports of goods and services.*
[5] *Comprising currency in circulation and demand deposits.*
[6] *Data for Malaysia refers to Peninsular Malaysia only.*
[7] *Estimate.*

Source: *IFS, national reports, World Development Indicators and Key Indicators of Developing Member Countries of ADB.*

1.2—ASEAN: PERANGKAAN EKONOMI PENTING

	Luas Kawasan (kilometer persegi) *Area (square kilometres)*	Bilangan Penduduk (juta) *Population (million)*	Pertumbuhan KDNK Sebenar[1] (%) *Real GDP Growth[1] (%)*	KNK Per Kapita Pada Harga Pasaran Semasa (AS $) *GNP Per Capita at Current Market Prices (US $)*	Pertumbuhan Harga Pengguna (%) *Growth in Consumer Prices (%)*	Imbangan Akaun Semasa Imbangan Pembayaran (AS $ juta) *Current Account Balance of the Balance of Payments (US $ million)*	Imbangan Perdagangan[2] (AS $ juta) *Balance of Trade[2] (US $ million)*
BRUNEI *BRUNEI*	5,765						
1975		0.156	N.A.	N.A.	N.A.	N.A.	862.0
1984		0.216	4.0	N.A.	3.0	2,646	2,561.3
1985		0.222	1.0	N.A.	1.9	2,300	2,326.7
1986		0.226	4.0	15,400	0.7	1,500	1,144.2
1987		—	2.0	—	1.7	1,500	498.3
1988[7]		—	1.0	—	2.0	1,400	—
INDONESIA *INDONESIA*	1,904,345						
1970		119.47	7.5	74	12.3	− 253	106.0
1984		160.00	6.0	520	9.1	−1,858	6,001.0
1985		163.40	2.4	475	4.4	−1,923	6,366.0
1986		166.70	3.2	490	9.2	−4,004	347.0
1987		—	3.6	—	9.3	−1,820	6,314.0
1988[7]		—	5.0	—	5.0	−1,600	—
MALAYSIA *MALAYSIA*	329,293						
1970		10.40	6.3	380	1.9	6	346.0
1984		15.27	7.8	1,999	3.9	−1,612	2,354.0
1985		15.68	−1.0	1,906	0.4	− 632	3,145.0
1986		16.10	1.2	1,583	0.6	− 80	3,000.0
1987		16.50	5.2	1,830	0.8	2,452	5,303.0
1988[7]		16.92	7.4	1,803	2.5	1,171	4,323.0
FILIPINA *PHILIPPINES*	300,000						
1970		36.85	4.3	190	14.0	− 30	− 163.0
1984		53.17	−6.0	615	50.8	−1,268	− 919.5
1985		54.38	−4.3	572	5.7	− 18	− 737.4
1986		55.00	1.5	560	− 0.3	996	− 404.3
1987		57.40	5.1	597	7.5	− 539	−1,240.8
1988[7]		—	6.5	—	8.0	−1,500	—
SINGAPURA *SINGAPORE*	621.7						
1970		2.07	13.7	916	0.3	− 566	− 907.0
1984		2.53	8.3	6,916	2.6	− 366	−4,597.0
1985		2.56	− 1.6	6,690	0.5	− 15	−3,425.0
1986		2.60	1.8	7,410	−1.4	479	−3,016.0
1987		2.61	8.8	7,900	0.5	533	−3,902.0
1988[7]		—	9.0	—	1.6	1,000	—
NEGERI THAI *THAILAND*	514,000						
1970		36.37	6.9	180	0.9	− 248	− 589.0
1984		50.40	5.5	769	0.9	−2,109	−3,001.1
1985		51.30	3.2	732	2.4	−1,537	−2,137.5
1986		52.60	3.5	810	1.9	247	− 301.6
1987		53.60	7.1	—	2.5	− 591	−1,701.1
1988[7]		—	8.3	—	5.0	− 655	—

[1] Malaysia—harga 1978; Indonesia dan Singapura—harga 1975; Filipina dan Negeri Thai—harga 1980.

[2] Eksport f.o.b. tolak import c.i.f.

[3] Nilai kasar lembaga-lembaga kewangan yang terdiri daripada SDRs, kedudukan rizab IMF, pertukaran wang asing tolak emas. Data bagi tahun 1988 sehingga bulan Jun sahaja.

[4] Ditakrifkan sebagai bayaran perkhidmatan ke atas hutang luar negeri sebagai peratus eksport barangan dan perkhidmatan.

[5] Terdiri daripada matawang dalam edaran dan simpanan semasa.

[6] Data untuk Malaysia merujuk kepada Semenanjung Malaysia sahaja.

[7] Anggaran.

Sumber: IFS, laporan-laporan negara, Petunjuk-petunjuk Pembangunan Dunia dan Petunjuk-petunjuk Penting Negara-negara Keanggotaan ADB.

1.3—ASEAN: KEWANGAN SEKTOR AWAM
AS$ juta

1.3—ASEAN: PUBLIC SECTOR FINANCE
US$ million

	Hasil[1] *Revenue[1]*	Perbelanjaan[2] *Expenditure[2]*	Lebihan/ Kurangan Keseluruhan *Overall Surplus/Deficit*	Punca Pembiayaan *Sources of Finance*		
				Pinjaman Bersih Luar Negeri *Net Foreign Borrowing*	Pinjaman Bersih Dalam Negeri[3] *Net Domestic Borrowing[3]*	Penggunaan Baki Tunai[4] *Use of Cash Balance[4]*
BRUNEI *BRUNEI*						
1970	N.A.	N.A.	N.A.	NIL	N.A.	N.A.
1984	3,380.1	2,186.9	1,193.2	NIL	N.A.	N.A.
1985	3,604.3	1,907.3	1,697.0	NIL	N.A.	N.A.
1986	1,542.4	1,003.9	456.5	NIL	N.A.	N.A.
1987[5]	—	—	—	NIL	N.A.	N.A.
INDONESIA *INDONESIA*						
1970	951.3	1,219.0	– 267.7	—	14.30	20.1
1984	16,248.9	16,711.5	– 462.6	614.9	–36.6	– 15.6
1985	18,613.4	18,863.9	– 250.5	305.7	—	– 55.2
1986	12,620.5	14,231.3	–1,610.8	1,596.0	—	14.8
1987[5]	12,169.1	13,733.9	–1,564.8	1,504.2	60.6	—
MALAYSIA *MALAYSIA*						
1970	765.5	934.3	– 168.8	–0.6	99.4	50.0
1984	11,970.8	16,000.0	–4,029.2	2,150.6	1,458.6	419.8
1985	13,217.6	14,756.4	–1,538.6	691.7	1,501.7	–654.8
1986	10,621.9	13,127.3	–2,505.4	373.9	1,762.6	368.8
1987[5]	10,880.0	12,828.6	–1,948.6	– 770.3	3,636.5	–917.8
FILIPINA *PHILIPPINES*						
1970	753.0	743.8	9.2	—	—	–69.6
1984	2,875.6	3,379.7	– 503.9	92.6	411.1	—
1985	3,623.6	4,210.1	– 586.3	– 7.9	594.2	—
1986	3,660.0	5,382.2	–1,522.2	174.3	1,347.9	—
1987[5]	4,933.9	5,893.1	– 959.2	272.6	686.4	—
SINGAPURA *SINGAPORE*						
1970	443.0	378.5	64.5	– 104.6	45.1	– 4.5
1984	5,365.6	4,611.9	753.7	– 17.4	1,569.7	–2,306.0
1985	7,030.5	6,641.9	388.6	– 21.0	1,555.3	–1,922.9
1986	6,834.9	6,330.3	504.6	–2,064.2	1,559.6	—
1987[5]	6,432.2	7,185.9	–753.7	– 402.1	1,155.8	—
NEGERI THAI *THAILAND*						
1970	902.2	1,160.5	– 258.3	—	(200.9)	57.2
1984	5,764.2	7,037.2	–1,253.0	174.6	1,122.4	–44.2
1985	6,243.7	8,337.0	–2,093.3	661.9	1,362.8	28.6
1986	6,582.5	8,545.7	–1,963.2	436.2	1,527.0	—
1987[5]	7,462.7	8,817.5	–1,354.8	202.9	1,151.9	—

[1] Mengandungi hasil dan pemberian yang diterima.

[2] Mengandungi perbelanjaan dan pinjaman tolak bayaran balik.

[3] Angka-angka dalam kurungan adalah pinjaman bersih termasuk pinjaman luar negeri dan dalam negeri.

[4] Untuk Malaysia, terdiri daripada terimaan khas dan perubahan harta.

[5] Anggaran.

Nota: Kadar pertukaran yang digunakan adalah sama seperti di Jadual 1.2.

Sumber: IFS, laporan-laporan negara dan Petunjuk-petunjuk Penting Negara-negara Keanggotaan ADB.

[1] *Comprises revenue and grants received.*

[2] *Comprises expenditure and lending less repayments.*

[3] *Figures in brackets are net borrowing including foreign and domestic borrowing.*

[4] *For Malaysia, comprises of special receipts and change in assets.*

[5] *Estimate.*

Note: *Exchange rate used is similar to that in Table 1.2.*

Source: *IFS, national reports and Key Indicators of Developing Countries of ADB.*

PHARMACEUTICAL INDUSTRY PROFILE

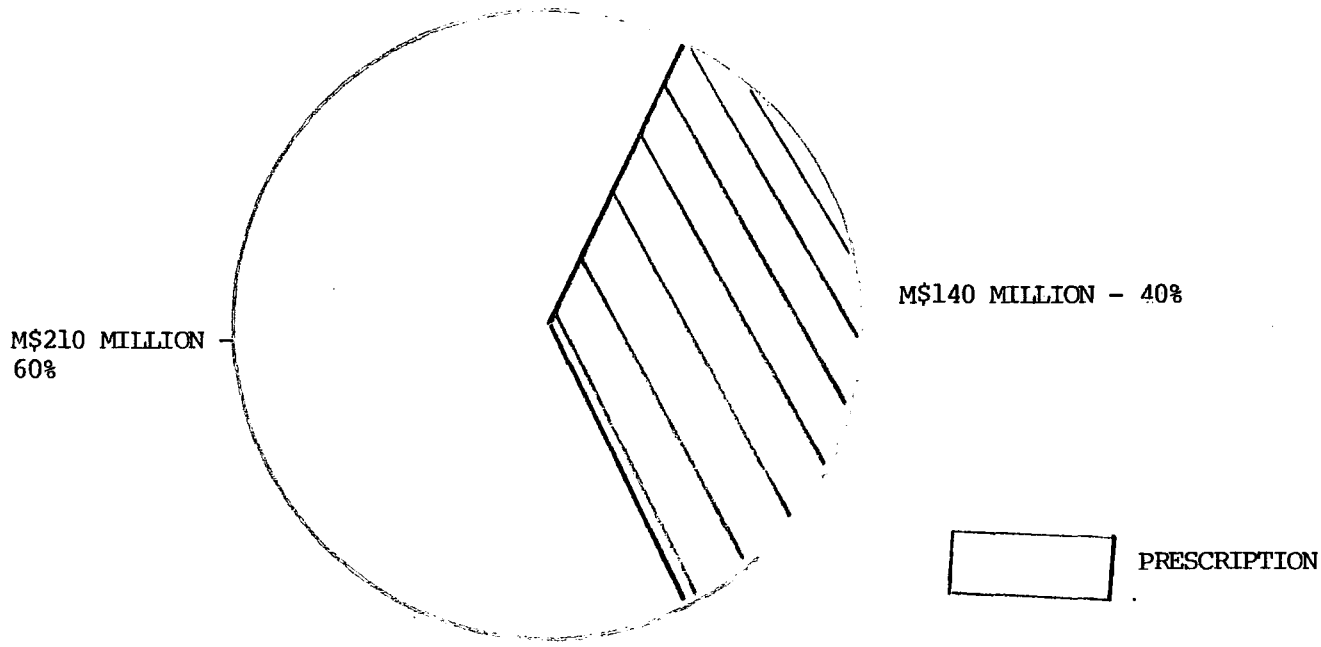
	MALAYSIA	SINGAPORE	THAILAND
Drugs per capita consumption	U.S.$7	U.S.$23	U.S.$4.40
Drugs imports	U.S.$82 Million	U.S.$58 Million	U.S.$165 Million
No. of formulation plants :			
Private	MNC's (3) Local (15)	MNC's (3) Local (15)	189
Govt	1	1 (Stopped June 1988)	- 1 (G.P.O.) - 1 (A.R.M.Y.)
Mark up to W/saler	CIF + 30%-70%	CIF + 38%	CIF + 20%
Mark up to the Public	W/sale + 20%-30%	W/sale + 33%	W/sale + 25%
PHARMACIES	237	98	1st class 3450 2nd class 5385
Chinese Drug Stores	2860	>1000	6614 Traditional
Govt Hospitals	78 District Hospt 16 General Hospt 2 Univ. Hospt	12	15 Central/Regn 72 General Hosp. >482 district Hp
Private Hospitals	133	12	N.A.
Health Centres	139 (PM) Main H.S 234 (PM) S.H.S.	26	7666
Drug registration required	Yes	Yes	Yes
No. doctors (Govt)	2228 (1985)	1492 (1986)	13612 (1986)
No. of doctors private	2711 (1985)	1355 (1986)	
No. of dentists	555 (Public) 575 (Private)	97 (Govt)	2778 (Govt)

*N.A. : Not available

Source : MPTMA, I.M.S., MOPH Singapore, Singapore Medical Council Annual Report, D.C.A. Thailand, MOPH Thailand

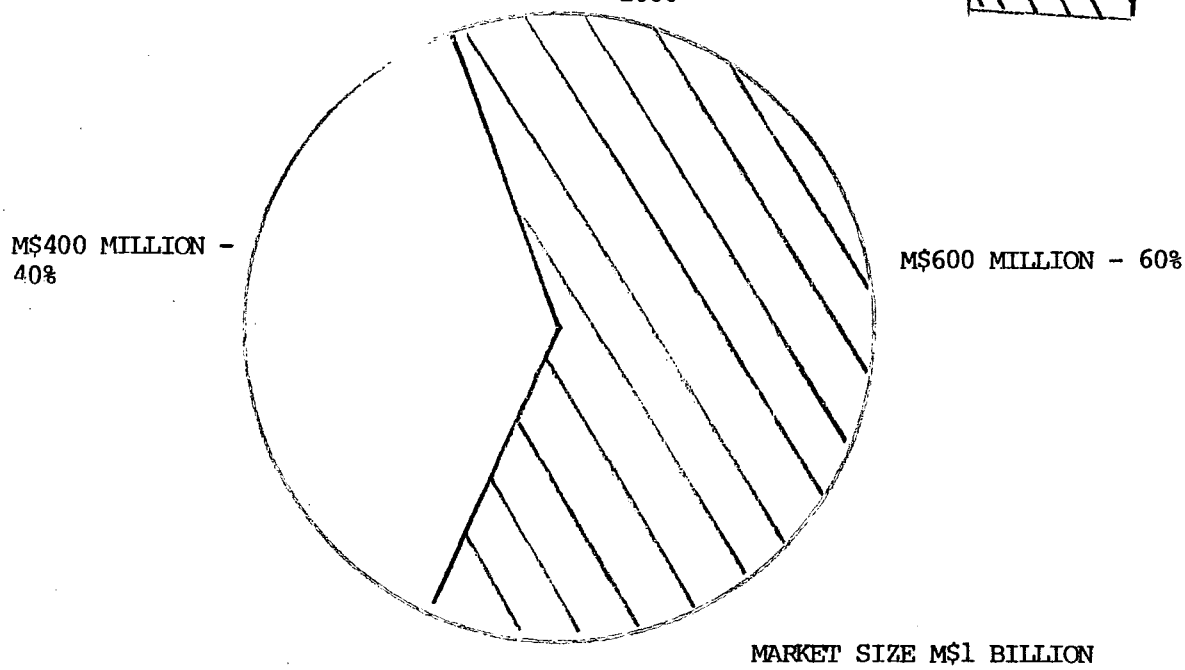
M A L A Y S I A

1985



MARKET SIZE M$350 MILLION

2000



MARKET SIZE M$1 BILLION

SOURCE: Pharmaceutical Industry, P.N.B. - Quarterly Economic And Investment Review, January - March, 1986.

Pharmaceutical Industry : Capacity & Utilisation (on basis of 1 shift)

Dosage forms		Private	Survey 1 G P O	Total	Estimated Installed Capacity	Survey 11
1 Tablets (X millions)	Utilized	3,799	761	4,590		7,030
	Installed	8,812	952	9,764	10,740	13,214
	Loaded	43%	80%	47%		53%
2 Capsules (X millions)	Utilized	612		612		2,102
	Installed	2,086		2,086	2,295	3,086
	Loaded	29%		29%		68%
3 Injectable Liquid ('000 Lts)	Utilized	4,241	389	4,630		10,162
	Installed	8,964	486	9,450	9,450	17,540
	Loaded	47%	80%	50%		58%
4 Injectable Powders (kg)	Utilized	37,004	344	37,348		19,606
	Installed	88,004	430	88,430	90,000	32,430
	Loaded	42%	80%	42%		60%
5 Oral Liquid (Million Lt)	Utilized	11.03	1.30	12.33		15.62
	Installed	27.36	1.63	29.00	32	18.62
	Loaded	40%	80%	43%		30%
6 Topical Powder (kg)	Utilized	1,085,176		1,085,176		1,714,000
	Installed	1,824,421		1,824,420	2,000,000	3,223,979
	Loaded	59%		59%		53%
7 Ointment-Cream ('000 kg)	Utilized	401	24	425		2,023
	Installed	1,265	30	1,295	1,500	4,953
	Loaded	32%	80%	33%		41%

Source : Proceedings : 9th Asian Congress of Pharmaceutical Sciences Seoul, 1982

Number of Health Facilities and Pharmacies/Manufacturers/Importers (Private Sector) December 1987 - Thailand (Source : MOPH)

Category	Bangkok	Up-Country	Total
1. Health Facilities			
1.1 Modern Health Facilities			
Medical Facilities - with beds	109	199	305
- without beds	3,170	4,144	7,314
Dental Facilities (without bed)	921	938	1,859
Midwife Facilities - with bed	17	110	127
- without bed	30	922	952
1.2 Health Facilities (2nd Class) - without bed			
- Medical	21	58	79
- Dental	250	308	558
- Midwife	10	894	904
1.3 Traditional Health Facilities			
Medical - with bed	6	9	15
- without bed	587	299	886
Midwife - with bed	2	22	24
- without bed	2	3	5

Number of Health Facilities and Pharmacies/Manufacturers/Importers
(Private Sector) December 1987 - Thailand (Source : MOPH)

Category	Bangkok	Up-Country	Total
2. Pharmacies			
2.1 Modern	1,901	1,581	3,482
2.2 Modern (Finished Products)	713	28	441
2.3 Modern (for Animals)	23	141	164
2.4 Traditional	1,210	4,865	6,073
3. Manufacturers			
- Modern	150	38	188
- Traditional	282	418	700
4. Importers			
- Modern	382	27	409
- Traditional	89	-	89

Export of Pharmaceutical Products

Year	Exports of Pharmaceutical Products (million Baht)	Total Exports (million Baht)
1985	213.2	193,365
1986	230.4	231,224
1987	290.5	254,500*
		Ave.

* estimated by NESDB

Source : Thai Trade Monitor 1987 - 88

1986 MAJOR PHARMACEUTICAL EXPORTS - THAILAND

	(Million Bahts)	
- Blood fluids and electrolytes	58.563	25.00%
- Antibiotics	41.758	18.15%
- Other drugs	109.172	47.46%

Source : Technical Division, F.D.A

THAILAND EXPORTS : COUNTRY OF DESTINATION 1986

1.	Hong Kong	6.	Laos
2.	Singapore	7.	Taiwan
3.	Malaysia	8.	Burma
4.	Japan	9.	Iraq
5.	Australia	10.	Iran

Source : Thai Trade Monitor 1987 - 88

Number of health professionals 1988

Physicians	15,074
Dentists - First Class	3,307
Pharmacists - First Class	6,965
Physical therapists	527
Medical technologist	1,962
Nurse - First Class	17,922
Midwifery - First Class	13,863
Nurse and Midwifery - First Class	30,863

Source : Ministry of Public Health

Consumer Price Index for Whole Kingdom by Groups

(1976 = 1000)

Line	Weights	1983	1984	1985	1986	1987
1. All Items	100.00	187.9	189.5	194.1	197.7	202.6
2. Food	40.30	185.5	183.4	178.9		184.1
3. Non-Food	59.70	186.7	191.2	202.3	207.5	213.0
4. Clothing	6.74	180.5	184.3		196.0	201.0
5. Housing	24.13	184.7	191.9	205.1	216.0	223.5
6. Personal and medical care	5.48	179.6	185.6	192.4	194.2	197.4
7. Transportation	9.47	232.5	232.9	249.5	242.7	244.2
8. Recreation, Reading and Education	10.27	175.8	178.1	182.1	183.5	185.8
9. Tobacco and Alcoholic Beverages	3.62	159.8	159.6	178.5	186.0	197.2

Source : Department of Business Economics, Ministry of Commerce

** CPI for medicine = 2.6

Export of Pharmaceutical Products

(1985 - 1987)

	1985	1986	1987
Value Million Baht	213.3	230.5	267.1
Growth %		8.06	15.9

Market in 1987

Hong Kong

Singapore

Laos

Australia

Source : Department of Business Economics, Ministry of Commerce

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