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**HIGH-LEVEL ADVICE ON THE ESTABLISHMENT OF A RESEARCH, DEVELOPMENT  
AND TRAINING CENTRE FOR THE IMPROVEMENT OF PROCESS TECHNOLOGIES  
OF HERBAL MEDICINES**

SI/INS/94/802/11-54

INDONESIA

**Technical report: Findings, work performed and recommendations\***

Prepared for the Government of Indonesia  
by the United Nations Industrial Development Organization,  
acting as executing agency for the United Nations Development Programme

*Based on the work of G. A. Hone, market analyst*

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\* This document has not been edited.

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## ABSTRACT

**Project No:** SI/INS/94/802

**Project title:** High Level Advice on the Establishment of a Research, Development and Training Centre for the Improvement of Process Technologies of Herbal Medicines

The consultant was briefed at UNIDO Headquarters in Vienna on 19th September and was on mission in Indonesia from 25th September to 19th October and again from 24th - 30th October. The consultant carried out the duties as given in the job description (Annex 1).

The consultant has worked to consolidate the work of the consultant Mr. K.T. Parikh, Chemical Technologist, who worked with the same counterpart team in July and August 1995. Mr. Parikh's report (DP/ID/SER.A/1742 November 1995) and the present report must be read in conjunction.

The structure of the jamu industry indicates sales of USD 170 million per annum with the dominant role 75-80 percent of sales being covered by the largest 20 firms. Employment generated in cultivation, processing and transporting is not less than 60-80,000, at least a further 20,000-25,000 are employed in the manufacture of jamu medicines. Between 70-100,000 jobs in distribution are wholly dependent on sale of jamu medicines. Overall employment is not less than 160,000 and might be as high as 180-200,000. Domestic marketing of the largest firms is well organised through their networks of distributors, agents, retail shops and jamu gendong (jamu peddlers), but smaller firms (outside the top 20) need marketing assistance. Exports of jamu medicines are very limited apparently less than USD 5 million p.a., but there is substantial export of spices (particularly ginger, cubeb and long pepper, cardamomum and kumis kucing), spice oils, oleoresins, gums and even some medicinal plants, but detailed market research is needed, if export of medicinal plants extractives and intermediates are to be expanded. Prospect for export of most of the leading 20 plants used locally (Annex 2) do not seem bright although the local demand continues to expand rapidly 1990-1996.

The Research, Development and Training Centre is needed to serve the whole industry, especially the medium and small scale sector firms defined as Traditional Drugs Small Industry (Industri Kecil Obat Tradisional-I.K.O.T.) by the Ministry of Health. It was not possible in the time at the consultant's disposal to estimate accurately whether the proposed Centre's running costs can be recovered against training fees, testing charges for samples and technical services fees, but proposals on possible choices for charging are included taking into account that the biggest 20 firms will be those most likely to pay, full charges, although many do already have research and development departments.

The concept of the Centre with its pilot plant capacity with a strong commercial and marketing department can assist the medium and small jamu industries to upgrade Good Manufacturing Practices for Traditional Drugs (GMPOT). A capital budget of USD 7.0 million and running costs of \$ 611,000 per annum would make a valuable contribution to the development of an industry employing 140,000 and with retail sales of over \$ 250 million and factory output in excess of \$ 170 million.

### **Project Manager's Comments**

The consultant presented a draft report which had to be substantially modified after further clarifications from him. This was due to the fact that he had presented details about training which was carefully and technically assessed by the two previous consultants, Mr. Parikh and Mr. De Silva (UNIDO, Headquarters). The requirement of additional national consultants to conduct training was eliminated as it was envisaged that the staff of the centre would be trained to be trainers. This substantially changed the income/expenditure analysis to be in line with that assessed by the previous consultant, Mr. Parikh. The recurrent staff costs calculated by the consultant were taken to be current as he has done it in consultation with the President Director of Kimia Farma. As a result, the possibility of making the centre viable from the start depends on the rates and the choice of charging method decided by the management.

The consultant has done a thorough analysis of the market structure and requirements even with the limitations of the data available. It is hoped that his recommendation on keeping data complete and updated will be implemented soon. This amended report as agreed with the consultant, contains details of the findings of the consultant and his recommendations but it has to be considered in conjunction with the findings of the previous consultant on technology (Report of Mr. Parikh, DP/ID/SER.A/1742 of November 1995).

The work of the consultant has consolidated the findings of the previous consultant that the establishment of a Research, Development and Training centre would be beneficial to upgrading the quality of Jamu medicines to be in keeping with good manufacturing practices and consistent in dosage and stable. This would not only contribute to making available better quality and safer medicines to the people but also to be competitive in the international scene.

It is hoped that BAPENAS, Ministry of Health and Kimia Farma would consider the recommendations of the consultants on a priority basis and secure the necessary funds for the establishment of the centre. UNIDO's long and successful experience in implementing projects on the establishment of R & D and Training centres in developing countries and the competent technical backstopping would be forthcoming in the implementation of this proposal.

## I. INTRODUCTION

Jamu medicine plays an important and growing role in the health care of the Indonesian people. This report examines in greater detail the industry structure, marketing and efficiency of the traditional jamu herbal medicine industry. It is a supplement to K.M.Parikh's report "High Level Advice on the Establishment of an R&D Facility for Improvement of Process Technologies of Herbal Medicines including a Training Centre (Report DP/ID/SER.A/1742).

It also provides more detailed capital cost and running cost budgets for the proposed Research, Development and Training Centre with some preliminary estimates on possible running cost recovery prepared in conjunction with the counterpart team.

Discussions were held with government officials, representatives of Exporters Associations, research institutions and Jamu companies to gather the required data (**Annex 3**), It was not possible for the consultant to carry out in detail the terms of reference which focussed on market information as the domestic and export market databases were extremely poor.

First of all, Indonesian market information sources are extremely weak. The internal market for indigenous medicinal herbs is at least 25,000 metric tonnes (fully dried basis). Some products such as garlic are not competitive in world markets and the cultivars for ginger and turmeric are of limited quality. Exports of these three specified and a group of unspecified plants amount to USD 2 million p.a. but total export exceeds USD 40 million if ginger is included. The domestic market is probably as large as USD 35 million (excluding plants with overlapping food and spice uses and exports).

There does not appear to be any pronounced long-term shortages of medicinal plants and herbs or any signs of strong price rises (above the consumer price). The supply to the registered industry estimated at 20,000 tonnes in 1993 must be increased by 3000-4000 tonnes for production of the Jamu businesses, jamu gendong (peddlers) and additional 150-200 firms registering between 1993 and 1996. Total offtake is some 22,000-25,000 tonnes and the bulk of the industry's raw material requirement is satisfied, although liquorice, ginseng and some other plants are imported (**Annex 4**). The extent to which plants are collected from the wild or forests is not exactly known.

The small size of demand from the medicinal plants industry in contrast to food or spice demand can be observed from the following estimates of some of Indonesia's principal crops on an annual basis. The crops below have outputs exceeding 100,000 metric tonnes on a wet basis :

- Chillies
- Ginger
- Turmeric
- Galanga
- Pepper (Black & White)
- Cloves
- Papaya

The ginger, turmeric and galanga families of plants make up many of the leading 20 bulk ingredients in Jamu medicines only requiring 4000-10,000 tonnes per annum on a wet basis or below 3000 tonnes p.a. on a dry basis. There are only a few exceptions such as Piper cubeba (Cubeb pepper), Centella asiatica (Button grass) and Orthosiphon aristatus (java tea/kumis kucing) where Indonesia is recognised as a major supplier. Clove leaf oil and kaju put essential oils are also internationally competitive. At present with the exception of garlic and the poor cultivars of ginger and turmeric there are no signs that supply/demand conditions are failing to provide the industry with competitive raw materials (with the exception of years of drought), although expanded exports can lead to a sharp upward price fluctuation.

It is recommended that any attempts to expand the supply of selected Jamu raw materials should be extremely cautious as overexpansion in the face of limited demand would lead to a glut, sharply falling prices and loss of farmers' confidence. At present rising prices encourage cultivation and lead to an increased supply and collectors of forest plants and seeds do respond to higher prices.

The main sources of information in Indonesia are the jamu companies, who buy their ingredients, and the collectors, farmers, merchants and traders who sell to these manufacturers. There are few if any written price lists and statistics on outputs, value, coverage etc. These are not collected by the Department of Agriculture. The interchange of information in this competitive market (concentrated in Central Java) is extremely detailed within the trade.

The sources and practical recommendations for selling to the global market are discussed in (Annex 5) , but the bulk of sales of both medicinal plant raw materials, extractives and jamu medicines are likely to be to the Peoples Republic of China, Taiwan and South East Asia. It is also important to note that Chinese herbal medicine producers in this region need to import raw materials as do Indian, Korean and other producers, but the world market for Chinese and other herbal medicines has never been surveyed by the International Trade Centre (UNCTAD/GATT).

Chinese, Indian and Korean traditional herbal medicines are now sold in Indonesia, but only limited volumes of jamu are exported. Western European and North American markets may be difficult to penetrate (Indonesia apparently sells less than USD 2 million of jamu medicines to the obvious Netherlands market). Only by concentrating on Chinese herbal medicine ingredients (with the exception of the limited number of plants which are competitive) and on South-East Asian markets can exports be expanded rapidly, although in 1995 the former U.S.S.R. has entered as a significant buyer through counter trade and these purchases have continued in 1996.

The Indonesian domestic markets for jamu raw materials and jamu medicines are efficient and extremely competitive. Large firms dominate the total industry turnover, with 70-75 percent of ex-factory sales, but medium and small firms, household jamu businesses and jamu pedlars all work to compete locally and provide a nationwide distribution (48 percent of Indonesian families use jamu more than three times a month).

The export marketing networks for traditional jamu herbal medicines and raw materials are largely regional. It must be noted that the bulk of world demand for herbal medicine is from the domestic markets in China, India, Korea, Pakistan and Indonesia (these medicines are not internationally traded in large amounts but are formulated produced and sold in these very large domestic markets). In terms of export of medicinal plants and their derivatives it will be difficult for Indonesia to compete with present suppliers, although a significant volume gains will be achieved with better quality control, standardization of cultivars and carefully planned marketing activities.

## II. ACTIVITIES

The consultant did not attempt to retrace the pattern of activities of the previous consultant (K.M.Parikh). With the exception of a three day visit to a number of large and medium manufacturers in Central Java and a visit to the Balitro in Bogor to discuss their crop priorities for research in Spices and Medicinal Plants(see Annex 6), the bulk of the time was spent working with the Kimia Farma counterpart team to establish with many difficulties the structure of the industry and the value of its sales.

Our research covered:

- \* Structure of the industry.
- \* Total ex-factory sales and retail sales.



- \* Estimates of the number of firms of varying sizes.
- \* Employment in:
  - Production and collecting of Medicinal Plants.
  - Manufacture and Processing.
  - Distribution and retailing, including small Jamu businesses and numbers of Jamu peddlers.
- \* Estimated value of exports and opportunities for increased exports

Discussions were held with individual firms as well as with:

- \* The Jamu Industry Association, Jakarta.
- \* The Jamu Exporters Association, Semarang.

But the bulk of the information was necessarily obtained from the statistics and computer printouts produced from their Registration List by the Directorate of Traditional Drugs, Directorate General of Drug and Food Control in the Ministry of Health (A detailed discussion of the problems of these printouts can be found in Section IV). The databases data for 1994, 1995 and 1996 are extremely poor in quality as seen by:

- \* 250-300 registered firms are entirely missing from the printouts.
- \* A further 30-50 firms have not reported or have only partially reported.
- \* Up to 5 of the largest firms have either not reported their turnover or are missing from the lists.
- \* Exports were calculated only from estimates prepared by the Ministry of Health and do not represent actual export sales of the firms involved.

All our figures are, therefore, Ministry of Health data corrected by industry estimates and cross checked where possible by the counterpart team. Export figures were taken directly from the 1993, 1994 and 1995 Export Statistics of Indonesia prepared from Customs returns by the Bureau of Statistics, but they seriously understate actual exports.

The consultant takes the view that the Jamu industry marketing of its products and its raw material purchases take place in a competitive and efficient market with many participants and good conditions for entry.

There are no obvious widespread shortages of inputs and the barriers preventing the smaller firms from entering or competition are small. A Research Development and Training Centre covering the whole industry, although concentrating the bulk of its activities on medium and small-scale sector firms would allow the upgrading of smaller firms towards Good Manufacturing Practices for Traditional Drugs (GMPTD) or in Indonesia (GMPOT), but the smaller firms would certainly not be able to pay the full costs or charges of the new centre's charges for training, testing and providing backstopping technical services. Support from the Centre to plant cultivation and collecting should be limited to assistance to both regular and home garden farming only when there is a continuing and demonstrated scarcity of an important medicinal plant or herbs and work should be concentrated in the established farming centres.

Continuing work to provide farmers with improved cultivars through the Pembinaan Kesejahteraan Keluarga (PKK) or Family Welfare Movement should be encouraged. The volumes required by the Jamu Industry on an annual basis (Section I of this report and Annex 7) are too small to justify a major cultivation drive, which might actually lead to falling farmer incomes.

Overall, raw material purchases by the organised industry is estimated at USD 30-35 million with a further USD 5 million purchased by Jamu businesses and Jamu peddlers from the markets for their preparations.

Industry ex-factory sales (or turnover) is some Rph. 400-455 billion in 1995/1996 based on an incomplete estimate for 1994 of Rph. 274 billion. Additional sales by small Jamu businesses and peddlers (Jamu Gendong) are a further Rph. 30-50 billion rupiah. Markups in the industry are between 50-80 percent (from factory to retail sales) leading to the overall pattern shown below :

**Estimate of Jamu Industry : Purchase, Output and Sales**

|   | USD             | Rupiah          |
|---|-----------------|-----------------|
| 1. Industry raw material purchases (estimated)      | 25-30 million   | 65-75 billion   |
| 2. Industry ex-factory sales (output)               | 250 million     | 400-455 billion |
| 3. All-industry jamu sales at retail selling prices | 280-330 million | 650-800 billion |

Even if the largest 15-20 firms account for 75-80 percent of industry turnover, there is a great need for a special Research and Development and Training Centre to support the whole industry. The 20-30 percent of turnover accounted for by small industry, jamu business and the peddlers accounts for USD 50-60 million at ex-factory prices and a minimum of \$ US 75-90 million at retail selling prices.

In addition to detailed work on the industry structure (see Section III below). The consultant and the counterpart team have updated and reworked the Capital Budget, Staffing and Total running cost budgets for the centre (see Parikh Section VI) while endorsing "Section III - Requirements for a viable industry" in K.T.Parikh's report and his broad outline of Space, Cost, Staffing and Equipment (see Parikh report Annexure 10).

At the same time a detailed estimate of workable running cost recovery from training, testing charges and technical service fees show that the project could be viable from the startup of the Research and Development and Training Centre provided the response of industries can be guaranteed (Section VII).

This analysis shows that the bulk of the effort was spent on attempting to secure worthwhile estimates of the industry's structure, the value of its raw material purchases, factory output value and value of its sales at retail selling prices since the Ministry of Health data bases remain seriously deficient. The export sector data covering the values and volumes are even more severely limited, and the numbers involved are much larger than previously calculated and we have used the 1993, 1994 and 1995 customs statistics combined with those of the Indonesian Jamu Exporters Association. It will be clear that our work has confirmed the economic importance of the Jamu industry in Indonesia in terms of both employment and sales volumes.

### III. STRUCTURE OF THE INDONESIAN JAMU INDUSTRY

#### **Raw Material Purchases, Ex-Factory Sales, Retail Sales, Size Distribution of Firms, Equipment and Exports**

This section of the report aims to consolidate data already partially presented in Section I and II. It must be emphasised again that all figures shown are estimates subject to correction when Ministry of Health and Industry databases are upgraded as strongly recommended in this report.

### Raw Material Purchases

These purchases are estimated at some 25,000 metric tonnes (17000-18000 MT by the registered firms and up to 3000-5000 tonnes by smaller Jamu businesses and the Jamu pedlars, who buy their materials for grinding direct from medicinal plant merchants in the markets of Indonesia's major cities). The value is estimated at USD 25-30 million (Rph. 55-65 billion). Many of the raw materials are bulk plants of relatively low value(Annex 8). Raw material costs would amount to 12-15 percent of ex-factory sales and perhaps 20 percent or more for Jamu businesses and peddlers.

### Ex-Factory Sales

Industry output figures for 1994, 1995 and 1996 cannot be derived from the Ministry of Health printouts due to seriously incomplete and deficient databases. A key figure is Rph. 274.1 billion for 1994, which the Industry Association takes from the Ministry of Health, but industry returns do not support this figure. Checks suggest that ex-factory sales in 1996 after 10 percent per annum growth from 1994 will be some Rph. 400-455 billion with a further addition of Rph. 30-50 billion for smaller Jamu sales outlet costs. A total figure of producer sales is valued at Rph. 400-455 billion (USD 160-180 million).

### Industry Sales at Retail Sales Price

It is emphasised that the markups from factory to retail sales average between 50-80 percent Factory - Distributor - Agent - Sub Agent - Retailer. Jamu businesses and peddlers grind their own powder as well as mix them with factory produced materials and sell both types of products.

This level of markup produces a value of Rph. 600-800 billion (USD 250-300 million) for retail sales, which is likely to be broadly accurate and Rph. 600 billion is likely to be the minimum level of retail sales of Jamu in 1996.

### Size Distribution of Firms (see Annex 9)

There is clear evidence from many sources that only 15-20 large firms with turnovers larger than Rph. 2 billion account for 75-80 percent of turnover (i.e. Rph. 275-300 billion out of factory sales of Rph. 400 billion).

A further group of 20-25 firms with turnover of between Rph. 500 million and Rph. 2 billion probably account for at least 7-10 percent or Rph. 35-40 billion. The remaining 500 small firms account for less than 10 percent of sales or under Rph. 40 billion and possibly below Rph. 30 billion. Jamu businesses account for Rph. 10-20 billion and the Jamu Gendong peddlers for Rph. 20-25 billion (only their own home-produced material).

The structure of industry sales is summarised below:

|                    | Rph. billion |
|--------------------|--------------|
| Largest 20 firms   | 300 - 330    |
| Medium 20-25 firms | 50           |
| Small 500 firms    | 50 - 75      |
| Jamu Businesses    | 10 - 20      |
| Jamu Pedlars       | 20 - 25      |
| Total              | 430 - 500    |

The lower figures fall well within the Rph. 400-440 billion range discussed above.

There is no sufficient data on the numbers and margins in the distribution systems to allow us to attempt a similar analysis of sales breakdown within the system, which is broadly as follows :

|                                |                  |
|--------------------------------|------------------|
| Distribution and Wholesaler    | 250 - 300        |
| Retailers                      | 5,000            |
| All Shops (Warung)selling Jamu | 50,000 - 100,000 |
| Jamu Businesses                | 5,000 - 10,000   |
| Jamu Pedlars                   | 30,000 - 40,000  |

### **Employment**

Employment generated in collecting, growing, processing and transporting medicinal plants is estimated at between 60-80,000. Factory employment is currently estimated at 16,000 - 17,000 (Ministry of Health-1993 data) but employment including Jamu businesses is probably between 20-25,000. Employment in retail distribution including jamu vendors and Jamu peddlers with a share of shop-based employment is probably between 75-100,000. Overall employment in Jamu raw material supply, factory production and retailing is likely to be 160,000-200,000 people and could be substantially higher.

Against this background of producer/factory sales of USD 170 million and retail sales of USD 250 million and employment of a minimum 160,000-200,000 people throughout Indonesia, exports still only make a small contribution of between 5-10 percent to the employment total.

### **Exports**

Official figures seriously underestimate exports of Jamu plants and Jamu medicines. These data show sales of medicinal plants at less than USD 3 million (plants used in pharmacy). Exports of Jamu medicines are probably between USD 3-5 million, but the latest 1995 export statistics show a figure below USD 3 million. Total exports if fresh ginger is included are probably between USD 40-50 million.

Exports can certainly be expanded substantially, but the bulk of any increase is likely to be in the form of medicinal plants to the Chinese medicine industry and Jamu medicines to the growing South East and East Asian regional markets (ASEAN Markets). The Netherlands remains, the most important European market.

### **Conclusions**

The structure of the industry and its overall size and importance in sales and employment dictate that while the Research, Development and Training Centre would serve the whole Jamu manufacturing and distribution industry, it would be dedicated to and concentrate the bulk of its efforts to serving and developing the 500 firms (i.e. those outside the top 20 units) and upgrading them to Good Manufacturing Practices for Traditional Drugs. However, its specialised technical and marketing expertise would be available, particularly in the field of export marketing, to the leading 20 Jamu firms.

#### IV. PROBLEMS OF THE MINISTRY OF HEALTH DATA BASES AND THE TRADITIONAL DRUGS INDUSTRY IN INDONESIA

The Ministry of Health now holds registration data on a total of 559 firms, 49 large firms and 510 small firms with less than Rph. 600 million (\$ 250,000) in net assets excluding land and building. These numbers have risen sharply as follows :

|           | LARGE<br>(IOT) | SMALL<br>(IKOT) | TOTAL |
|-----------|----------------|-----------------|-------|
| 1991/1992 | 4              | 372             | 376   |
| 1992/1993 | 17             | 384             | 401   |
| 1993/1994 | 21             | 397             | 418   |
| 1994/1995 | 23             | 458             | 481   |
| 1995/1996 | 49             | 510             | 559   |

Source : Directorate General POM 1996

The bulk of the increase in large firms from 23 in 1994/1995 to 49 in 1995/1996 is due to the registration of pharmaceutical firms with only a very small percentage in Jamu medicines rather than an expansion in large Jamu companies. The regulations governing the licencing and registration of Jamu industry are given in **Annex 10**.

The data held on all these firms consists of the following :

- \* Name of firm.
- \* Large or small classification (I.O.T. or I.K.O.T.).
- \* Address.
- \* Name of owner.
- \* Name of responsible technical person.

We have examined the computer printouts on the industry for the years ending March 1995 and 1996. The major problems are as follows:

Only 190/200 firms are listed against the 480 or 559 firms registered.

Return of turnover details is apparently voluntary and extremely incomplete with several of the largest firms missing (on the basis of the 1995 data some 4/5 large firms' data and some Rp. 80-100 billion of turnover are missing along with over 300 small and medium sized Jamu producers).

It appears that the top 20 firms account for between 80/85 percent of turnover in the industry, but this estimate is based on very poor and incomplete returns.

It appears that there are only some 15/20 medium-sized firms with a turnover of below Rp. 2 billion, but over Rp. 500 million, but again returns are incomplete.

Small or very small firms numbering 500 account for less than 10 percent of turnover, although only 150 are listed in these computer printouts.

Some important firms are missing from the printouts e.g. Sinda Budi Sentosa, Nyonya Meneer, Sido Muncul, Gunung Sari, etc.

The export figures for the industry in 1995 are not based on returns, but estimates.

The industry total output figures for 1995 of Rp. 176 billion for industry output is a partial figure covering the bulk of the industry, but omitting 3 to 5 very large firms and 300 medium or small firms ( a plausible projection for Jamu output would be between Rp. 375-425 billion).

All these errors and omissions mean that it is very difficult to use the computer printouts to analyse industry structure, the size distribution of firms, the sales importance of the 300 missing firms, total industry output and level of exports.

Without all this missing data it will be very difficult to plan the upgrading of the small and medium-sized firms which is the goal of Bappenas and the Ministry of Health. A major effort is required to upgrade the quality of data on all firms and their turnover held on the Ministry of Health's databases concentrating at first on turnover, employment and raw material usage.

#### **V. EXPORTS AND EXPORT MARKETING OF JAMU MEDICINES AND PLANTS USED IN PHARMACY (1993 - 1995)**

There is considerable uncertainty over the level of exports by the Jamu Industry. The statistics are uncertain, but it is first important to exclude the closely associated bulk items exported in 1994 and 1995.

Fresh ginger exports averaged over 40,000 metric tons in 1994/1995 and were valued at over USD 13 million. There are also some further major exports of Cubeb pepper, Long pepper, Cardamomum and Kumis kucing as well as 8-10 further items amounting to 25-30,000 tons valued at USD 25-30 million according to Exporters Association estimates. In essential oils, Indonesia exported over USD 25 million each year of which the bulk was PATCHOULI and around USD 3 million per annum was made up of other essential oils (not specified). Indonesia exported only marginal tonnage of dried ginger and turmeric and no garlic, which is smuggled into Indonesia as a result of very high domestic prices.

Of the exports of plants used in pharmacy, only three plants are separately classified in the trade statistics (export values in a Thousand US dollars).

|   | 1994 | 1995 |
|---|------|------|
| Temulawak ( <i>Curcuma xanthorrhiza</i> )     | 33   | 37   |
| Cubeb Pepper ( <i>Piper cubea</i> )           | 353  | 490  |
| Kumis Kucing ( <i>Orthosiphon aristatum</i> ) | 167  | 160  |

Source : Trade Statistics Indonesia 1994 and 1995

Temulawak and Cubeb Pepper were taken by Singapore while in the case of Kumis Kucing the bulk was bought by Germany for treatment of kidney diseases (see Dr.A.P.DHARMA Indonesian Medicinal Plants Jakarta 1987 pp. 145-148).

There were also significant exports of "Other plants for pharmacy" shown below (in USD millions), but these figures should be raised 20 times according to industry sources but these were not separately classified.

|      |      |
|------|------|
| 1993 | 1.10 |
| 1994 | 1.03 |
| 1995 | 1.20 |

Some of the most important plants in use in European or Chinese medicine listed in Dr. A.P. Dharma's book are given in **Annex 11**.

More detailed figures are possibly available from individual exporters but the bulk of other plants exported or used in pharmacy is absorbed by the Chinese medicine industry and is not shipped to Western Europe or North America.

Indonesian exports of Jamu medicines are extremely confused. The Department of Health shows figures as follows :

| Year | Thousand US Dollars |
|------|---------------------|
| 1990 | 4,000               |
| 1991 | 620                 |
| 1992 | 500                 |
| 1993 | 100                 |
| 1994 | 900                 |

Source : Unknown

**The Industry Association (G.P.Jamu) shows exports of :**

| Year | Thousand US Dollars |
|------|---------------------|
| 1989 | 616                 |
| 1990 | 506                 |
| 1991 | 867                 |
| 1992 | 823                 |
| 1993 | 938                 |

Source : BPEN Department of Trade Reproduced by MOORYATI SOEDIBYO, Jakarta 1995  
(see **Annex 13** - Bibliography)

The figures from the official Exports Statistics derived from the Customs data shows figures as given below, but actual exports are probably over USD 10 million :

**Exports of Indonesia (Other human medicaments)**  
(These products are definitely Jamu Medicines)

|              | (Thousand US Dollars) |              |              |
|--------------|-----------------------|--------------|--------------|
|              | 1993                  | 1994         | 1995         |
| <b>TOTAL</b> | <b>1,052</b>          | <b>1,750</b> | <b>2,708</b> |
| Hongkong     | 81                    | 67           | 53           |
| Thailand     | 393                   | 228          | 349          |
| Singapore    | 132                   | 217          | 172          |
| Phillipines  | 439                   | 733          | 251          |
| Malaysia     | 120                   | 89           | 161          |
| Netherlands  | 29                    | 35           | 9            |
| U.S.S.R.     | -                     | 89           | 1,544        |

Source : Official Trade Statistics 1993-1995 volume 1

Small amounts were shipped in 1994 and 1995 to Taiwan, Mozambique and Nigeria, but until the USSR apparently became the major market in 1995, all the main markets were in South East Asia, but Nyonya Meneer has an established 75-80 shop distribution system in the Netherlands and their exports are not shown and may fall into cosmetics.

A more reliable estimate of exports and export marketing problems of Jamu medicines has been provided by the Indonesian Jamu Exporters Association in Semarang, but undoubtedly these volumes can be expanded with better export marketing, but official statistics seriously understate the importance of Jamu.

The export prospects of the medicinal plants can be explored by thoroughly examining full lists of European and US. import requirements and by working with selected importers of medicinal plants and their extractives, but Jamu medicines will have to be sold through homeopathic, nature cure and herbal medicine outlets largely in South East and East Asia and many of the medicinal plants and their extractives will continue to be bought by Chinese medicine producers in the region (see Annex 5 on International Marketing Research).

## **VI. THE ORGANIZATION AND STRUCTURE OF THE PROPOSED RESEARCH, DEVELOPMENT AND TRAINING CENTRE**

This report fully endorses the principal finding of K.T. Parikh's report that a Research, Development and Training Centre should be established (Report DP/ID/SER.A/1742 p.8). It also supports the recommended structure of the scientific committee (op.cit p.9) and makes no changes to the membership of that supervising committee. The broad outline the Centre's Department is endorsed (op.cit pp 10-11), although it is necessary that a Marketing and Commercial Department should be created to work closely with the Pharmacy (Pilot plant processing) and the Training Department. Full details of the staffing and budget for this new department can be found in **Annex 12**.

It is at present assumed that the centre will be located at Kimia Farma's Bekasi site with the agricultural centre at Banjaran 19 km from Bandung also on Kimia Farma land.

The full details of the reporting procedures for the Director are not yet clear, but it is likely that he will report on administrative and logistic matters to the President Director, PT. Kimia Farma, but all budgetary and strategic decisions are likely to be made to the Director-General of Drug and Food Control in the Department of Health. The Department of Health will be required (on a counterpart basis) to fund any deficit in the Centre's running cost budget. It may be essential that collaboration with 450-500 small business (registered as I.K.O.T. Traditional Drugs Small Industry) will not be successful if full costs are charged. The possible options have been worked out. (A possible compromise would be for I.O.T. firms to pay full cost charges when working with the Centre, but for all I.K.O.T firms to be charged reduced rates for the first few years). In addition, to these recoveries an annual research and development grant or allocation will be required to fund these parts of the Centre's activities.

It is important for ensuring future donor funding as well as UNIDO's role as executing agency that:

1. Clear reporting lines are laid down between the Director and management of the Centre and the President Director of Kimia Farma and the Directorate General of the Drug and Food Control at the Department of Health.
2. Responsibility for the running cost budget, research grant and charging policy is clearly allocated.



3. The size of the capital and annual running cost budget be broadly decided in advance.
4. The Department of Health is aware in advance that there is likely to be a small continuing annual deficit on running costs if it is not possible to recover full costs, by charges from the 500 small and medium sized companies, who will be the priority clients of the Research and Development and the Training Centre. The Centre is being established to enable these companies to upgrade their production facilities and improve their technical, financial, marketing and commercial skills and they cannot be expected to bear the full costs of this exercise.

It is strongly recommended that before the donor agencies are approached for capital cost funding, these points are clarified by the concerned Indonesian authorities, particularly PT. Kimia Farma, Directorate General of Drug and Food Control, Department of Health and Bappenas (see section VII, VIII and IX below this report for upworked figures on Capital cost and Staff and Running cost budgets as well as Charging policy).

#### **VII. REWORKED CAPITAL COST BUDGET FOR THE PROPOSED RESEARCH AND DEVELOPMENT AND TRAINING CENTRE (WITH COMMENTARY)**

|  | <u>US. Dollars</u>  |
|--|---------------------|
| 1. Land (including licensing and permits)  | 1,000,000.00        |
| 2. Buildings (including Site Services, Mechanical and Electrical, Roads and Professional Services) | 1,050,000.00        |
| 3. Laboratory Equipment (earlier report figures revised)   | 1,200,000.00        |
| 4. Polyvalent Pilot Plant and Small-Scale Equipment (revised)                                      | 600,000.00          |
| 5. Furniture and Fittings  | 500,000.00          |
| 6. Water Treatment and Electrical Control Equipment  | 650,000.00          |
| <b>Sub Total (1-6)</b>   | <b>5,000,000.00</b> |
| 7. Executing Donor Agency (Consultancy Technical Assistance, Advisory Backup and Training)         | 750,000.00          |
| 8. Contingencies   | 500,000.00          |
| <b>TOTAL (1-8)</b>   | <b>6,250,000.00</b> |
| <br>   |                     |
| 1. <b>Land</b>   |                     |

Counterpart contribution of the Republic of Indonesia (PT. Kimia Farma) 2000 m<sup>2</sup> at Bekasi site valued at USD 200,000 and 7 Hectares at Banjaran village 19 km from Bandung valued at 600 m suitable for a Medicinal Plants, Agricultural Research and Training Centre valued at USD 700,000 (It is probable that with licenses etc. the total would be over USD 1 million, but this total would have to be raised if a further Agricultural Training Centre is to be established in Central Java the main growing, trading and processing province for Jamu ingredients).

#### **2. Buildings**

A floor area of 1700-1800 m<sup>2</sup> with 90 percent air conditioned and 200 m<sup>2</sup> at the Bandung Agricultural Research Station for offices, showers and changing rooms cost Rph. 14.8 billion at Bekasi and

Rph. 1.2 billion at Bandung. Total Rph. 16 billion (USD 6.5-7.5 million) to which a series of extra charges must be added.

**3. Laboratory Equipment**

Laboratory equipment estimates are amended to include some additional items and inflation.

**4. Pilot and Small-Scale Production Equipment**

This equipment is needed for the production of 500 l batches and most importantly for training the Jamu industry's production managers and operators in Good Manufacturing Practices for Traditional Drugs. The plant has been made more versatile and with installation and allowing for 2 years inflation is likely to cost a minimum of USD 600,000.

**5. Furniture and Fittings**

These items are required for 2 Training Centres and their offices as well as 1300 m<sup>2</sup> of Laboratories.

**6. Water and Waste Treatment and Electrical Control Devices**

Waste and Water Treatment Plant is compulsory at the Bekasi site and the electrical transformers etc. are required to take the feed from the Bekasi area's sub-station.

**7. Executing Agency or Donor Agency**

This amount is a tentative estimate of the cost of supporting consultancy, technical advisory backup and training for the 5 years from the starting of the Research and Development and Training Centre.

**8. Contingencies**

This provision is to take into account further delays of the proposed Centre.

**VIII. STAFFING, TRAINING AND RUNNING COST BUDGETS AND INCOME**

The basic form and structure of this section is derived from K.T.Parikh's report and a detailed estimate prepared by the counterpart team for both the centre Staffing and the Training Budget. Only the Annex. 12 on The Commercial and Marketing Department was prepared by this consultant.

It will be noted that the number employed and the gross salary bill is significantly lower than in K.T.Parikh's, but the figures given below for 55 staff members are based on discussions with the President of Kimia Farma.

**EXPENDITURE COST OF THE 1<sup>st</sup> YEAR****\* FIXED COST/MAN POWER RECURRING COST (Item A - K) :**

Man power recurring cost requirement for individual departments (Laboratories) within the center.

| (A) Director's office and administration<br>Man power | Per year     | Man Power |
|---|--------------|-----------|
| - Director one @ \$ 1,553.00 per month                | \$ 20,195.30 | 1         |
| - Assistant Director one @ \$ 1,332.00 per month      | \$ 17,310.25 | 1         |
| - Financial Control one @ \$ 443.853 per month        | \$ 5,770.08  | 1         |
| - Chief Account one @ \$ 443.853 per month            | \$ 5,770.08  | 1         |
| - Secretary one @ \$ 332.889 per month                | \$ 4,327.56  | 1         |
| - Account clerks two @ \$ 221.926 per month           | \$ 5,770.08  | 2         |
| - Clerks two @ \$ 221.926 per month                   | \$ 5,770.88  | 2         |
| Sub total   | \$ 64,913.43 | 9         |
|   |              |           |
| (B) Training Centre Department.<br>Man power          | Per year     | Man Power |
| - Chief Librarian one @ \$ 998.668 per month          | \$ 12,982.69 | 1         |
| - Assistant Librarian one @ \$ 665.779 per month      | \$ 8,655.13  | 1         |
| - Chief Training Scientist one \$ 998.668 per month   | \$ 12,982.69 | 1         |
| - Assistant Scientist two @ \$ 665.779 per month      | \$ 17,310.25 | 1         |
| - Clerks one @ \$ 221.926 per month                   | \$ 2,885.04  | 1         |
| - Chief Information Scientist @ \$ 998.668 per month  | \$ 12,982.69 | 1         |
| Sub total   | \$ 67,798.49 | 6         |
|   |              |           |
| (C) Botany Pharmacognosy Lab. Department<br>Man power | Per year     | Man Power |
| - Chief Research Scientist one @ \$ 998.668 per month | \$ 12,982.69 | 1         |
| - Research Scientist two @ \$ 776.742 per month       | \$ 20,195.30 | 2         |
| - Technicians two @ \$ 177.541 per month              | \$ 4,616.07  | 2         |
| Sub total   | \$ 37,794.06 | 5         |
|   |              |           |
| (D) Analytical Chemistry Lab. Department<br>Man power | Per year     | Man Power |
| - Chief Research Scientist one @ \$ 998.668 per month | \$ 12,982.69 | 1         |
| - Research Scientists two @ \$ 776.742 per month      | \$ 20,195.30 | 2         |
| - Technicians two @ \$ 177.541 per month              | \$ 4,616.07  | 2         |
| Sub total   | \$ 37,794.06 | 5         |

|     |  |                  |           |
|-----|--|------------------|-----------|
| (E) | Pharmacy and Pilot Plan Lab. Department<br>Man power       | Per year         | Man Power |
|     | - Chief Research Scientist one @ \$ 998.668 per month \$   | 12,982.69        | 1         |
|     | - Research Scientist two @ \$ 776.742 per month \$         | 20,195.30        | 2         |
|     | - Technicians two @ \$ 177.541 per month \$                | 4,616.07         | 2         |
|     | Sub total \$   | <u>37,794.06</u> | <u>5</u>  |
| (F) | Agronomy and Forestry Lab Department<br>Man power          | Per year         | Man Power |
|     | - Chief Research Scientist one @ \$ 998.668 per month \$   | 12,982.69        | 1         |
|     | - Research Scientist two @ \$ 776.742 per month \$         | 20,195.30        | 2         |
|     | - Technicians two @ \$ 177.541 per month \$                | 4,616.07         | 2         |
|     | Sub total \$   | <u>37,794.06</u> | <u>5</u>  |
| (G) | Clinical Research Lab Department<br>Man power              | Per year         | Man Power |
|     | - Chief Research Scientist one @ \$ 998.668 per month \$   | 12,982.69        | 1         |
|     | - Research Scientist two @ \$ 776.742 per month \$         | 20,195.30        | 2         |
|     | - Technicians two @ \$ 177.541 per month \$                | 4,616.07         | 2         |
|     | Sub total \$   | <u>37,794.06</u> | <u>5</u>  |
| (H) | Pharmacology And Toxicology Lab. Department<br>Man power   | Per year         | Man Power |
|     | - Chief Research Scientist two @ \$ 998.668 per month \$   | 25,965.38        | 2         |
|     | - Research Scientists two @ \$ 776.742 per month \$        | 20,195.30        | 2         |
|     | - Technicians two @ \$ 177.541 per month \$                | 4,616.07         | 2         |
|     | Sub total \$   | <u>50,776.75</u> | <u>6</u>  |
| (I) | Microbiology Lab. Department<br>Man Power                  | Per year         | Man Power |
|     | - Chief Research Scientist one @ \$ 998.668 per month \$   | 12,982.69        | 1         |
|     | - Research Scientist one @ \$ 776.742 per month \$         | 10,097.15        | 1         |
|     | - Technicians one @ \$ 177.541 per month \$                | 2,308.03         | 1         |
|     | Sub total \$   | <u>25,387.87</u> | <u>3</u>  |
| (J) | Commercial and Marketing Department                        | Per year         | Man Power |
|     | - Chief Marketing Specialist one @ \$ 1,500 per month<br>1 | \$               | 18,000.00 |
|     | - Senior Marketing manager two @ \$ 1,250 per month \$     | 30,000.00        | 2         |
|     | - Market Research one @ \$ 1,000 per month \$              | 12,000.00        | 1         |
|     | - Secretary one @ \$ 600 per month \$                      | 7,200.00         | 1         |
|     | Sub total \$   | <u>67,200.00</u> | <u>5</u>  |

|     |                                      |    |            |       |
|-----|--------------------------------------|----|------------|-------|
| (K) | - Office Boy one@ \$88.770 per month | \$ | 1,154.01   |       |
|     | Sub total                            | \$ | 1,154.01   |       |
|     | Grand total (A up to K)              | \$ | 466,200.85 | 55    |
|     |                                      |    | =====      | ===== |

Obviously some of these fixed and variable costs should also be recovered from the small and medium scale Jamu industries from Research, Development and Training Centre's activities. It may be that the centre would not be in a position to recover full costs from small industry firms (I.K.O.T.) with turnover of less than Rph. 500 million, although a significant recovery could be made from firms with turnover of up to Rph. 5 billion but full costs should be recovered from large scale units (I.O.T.) who participate in the training courses, whose factory sales exceed Rph. 5 billion.

### OPERATIONAL COSTS

There can be further recurring operational costs, from a range of support and supply requirements as given below:

|  |                |
|--|----------------|
| * Replacement of Laboratory Equipment                                | 20,000.00      |
| * Replacement of Computers/Photocopies                               | 10,000.00      |
| * Paper for Laboratories/Offices etc.                                | 15,000.00      |
| * Chemicals (Laboratories Supplies)                                  | 20,000.00      |
| * Telephone, Fax and Electricity                                     | 20,000.00      |
| * Agricultural Supplies (Planting Materials, Fertilizer)             | 10,000.00      |
| * Transport for course Participants (Bandung)<br>(Hire of Minibuses) | 5,000.00       |
| Annual Cost Estimate - TOTAL   | USD 100,000.00 |

There can also be recurring cost for staff consultancy visits to Jamu industries throughout Indonesia, which will involve staff members in significant air travel, hire of vehicles and overnight stays in major Jamu areas such as Central Java as they work to publicize the centre's training courses, analytical testing facilities and technical service functions for upgrading the Jamu industry and for problem solving in small and medium scale industries. An initial estimate is shown below :

|   |                      |
|---|----------------------|
|   | <b>Rph.</b>          |
| Air Travel (80x300,000)                   | 24,000,000.00        |
| Vehicle Hire (200 daysx200,000)           | 40,000,000.00        |
| Overnight Stay & meals (160 daysx120,000) | 43,000,000.00        |
| Total                                     | 107,000,000.00       |
|   | (Roughly USD 45,000) |

### TOTAL GROSS RECURRING BUDGET

|                                   |                   |
|-----------------------------------|-------------------|
| Staff                             | 466,000.00        |
| Operating Costs (All major items) | 100,000.00        |
| Travel and Allowances             | 45,000.00         |
| <b>Total</b>                      | <b>611,000.00</b> |

**INCOME EXPECTED**

For calculation purposes the following training courses are envisaged in an year.

|  |                          |
|--|--------------------------|
| Group A (90 Trainees) Agricultural:            | 15 Trainees in 6 Groups  |
| Group B (200 Trainees) Jamu Vendors:           | 20 Trainees in 10 Groups |
| Group C (160 Trainees) Factory Supervisors:    | 20 Trainees in 8 Groups  |
| Group D (120 Trainees) Pharmacists & Chemists: | 15 Trainees in 8 Groups  |

The income from these courses could be as follows depending on the option adopted:

|   |                |
|---|----------------|
| Subsidized or no fee and free board & lodging for groups A & B and C & D to be charged all expenses | \$ 150-200,000 |
| Subsidized or no fee for Groups A & B but no free Board and lodging and C & D to be charged         | \$ 250-300,000 |
| Fees charged for all groups   | \$ 500-550,000 |

Hence, the staff costs can be covered provided fees are charged from all groups. The management could take a decision on how much of the staff costs are to be covered or how many more courses could be given each year.

**ESTIMATED RECOVERY OF COSTS**

|   |               |                   |
|---|---------------|-------------------|
| * Income from courses   |               | 500,000.00        |
| * Probable Recovery on Analytical Testing of Samples:                               |               |                   |
| - Analytical 1000 samples at USD 50   | 50,000        |                   |
| - Pharmacology 100 samples at USD 500   | 50,000        |                   |
| - Toxicology 10 samples at USD 8000   | <u>80,000</u> |                   |
| Total   |               | 180,000.00        |
| Consultancy services to small and medium enterprises                                |               | 50,000.00         |
| * Technical service fees for industry (Annual retainer) 10 firms at USD 10,000/p.a. |               | 100,000.00        |
| Total Recoveries (Estimated)  |               | <u>830,000.00</u> |

Annual recurring costs of USD 611,000 are likely to be matched by recoveries of USD 830,000 if fees are charged for all courses. But as there is a net income, the possibility of subsidised fees for groups A & B may be favourably considered.

## IX. CHARGING FOR THE RESEARCH DEVELOPMENT AND TRAINING CENTRE'S SERVICES

Our analysis in Section VIII above is calculated to produce an annual profit vis a vis running costs but may be less in view of initial uncertainties in demand for the Centre's testing facilities and technical service fees to be charged to large and medium (I.O.T. registered) firms.

The principles of charging are suggested in the training budget. Agricultural and Jamu vendor courses may not attempt to recover training costs while the cost of courses for Factory Supervisors and Pharmacists and Chemists will have to be fully charged.

The Centre will charge any I.O.T. firms full costs of Analytical, Pharmacological and Toxicological testing and the full costs will also be reflected in the Technical Service fees charged to I.O.T. firms. However, 80-90 percent of the Centre's activities in training and upgrading to Good manufacturing Practices for Traditional Drugs will be concentrated on the 500 or more I.K.O.T. firms with small and medium sales turnover. Initially these firms will be charged at a subsidised rate (i.e. over the first 2-3 years), but it should be the goal of the Institute to charge for its consultancy, testing and technical services.

## X. FINDINGS

1. The Jamu medicine industry is an important and growing industry providing substantial sales turnover and employment. Its raw material ingredient requirements support a significant number of farmers, sorters, traders and transporters.

Export of Jamu medicines and plant extracts is still small, but substantial tonnages of processed and unprocessed herbs and spices continue to be exported worldwide.

### Industry Output

- \* Factory output is valued at Rph. 400-455 billion (USD 170-190 million).
- \* Retail sales value is some Rph. 600-800 billion (USD 240-320 million).

### Employment

|  |                        |
|--|------------------------|
| Agriculture  | 60,000 - 80,000        |
| Manufacturing  | 25,000 - 30,000        |
| Retail Sector<br>(including Jamu Bisnis and<br>Jamu Gendong) | 80,000 - 100,000       |
| Total  | 165,000 - 210,000 jobs |

Raw Material Usage is at least 25,000 tons locally with a further exports of 60-70,000 tons including 40,000 tons of fresh ginger. These materials are valued at a minimum of some Rph. 140-160 billion (USD 65-75 million).

2. The structure of the industry in turnover terms is heavily concentrated. 70-75 percent of sales are controlled by the leading 10 large firms. A further 8-10 percent of sales is controlled by a further 15 firms. The remaining 500 small firms probably cover only 10-12 percent of total factory sales.

3. Much of the uncertainty on output, retail sales, raw material usage, employment figures and on the structure of the Jamu industry can be traced to the inconsistent quality of the 1993-1995 industry databases maintained by the registration agency of the Directorate General of Drug and Food Control in the Department of Health (Directorate of Traditional Drugs).

4. The Jamu industry, as these raw material usage figures makes clear through its domestic sales and exports, contributes to the incomes of important numbers of farmers in key spice herbs and medicinal plant production centres.

5. The Jamu industry has enjoyed (it is estimated) substantial growth from 1990-1996 in volume output of between 60-80 percent and between 125-150 percent in rupiah value terms (current prices unadjusted for inflation).

6. The Research, Development and Training centre will provide for worker, staff and manager training, testing and technical services to the whole industry, but will have the principal objective of working with the 500 Traditional Drugs Small Industry (I.K.O.T.) firms to upgrade these units towards Good Manufacturing Practices for Traditional Drugs. The Centre would also provide technical support and backstopping and advice on finance, business planning and marketing.

7. Such a Centre would cost up to USD 7 million and can be run without a loss depending on the response of the industries and their participation in courses.

8. The RDT Centre should consider opening a second agricultural centre in Central Java to supplement the planned agricultural training unit outside Bandung.

It is considered probable that the management of the proposed centre will report to the Director-General Drug and Food Control in The Department of Health and that the annual unrecovered operating cost budget will be provided by the same Directorate-General as part of the project's counterpart budget.

9. The Kimia Farma land at Bekasi and at Banjaran near Bandung valued at up to USD 1 million will also have to be a major counterpart contribution to the centre's capital budget.

10. Further financial and legal investigations are required to determine whether the Research, Development and Training Centre could be established and operated as a non-profit making company (U.P.T.) reporting through The President Director of P.T. Kimia Farma to The Directorate General and Director Traditional Drugs in The Drugs and Food Control of the Department of Health (see Recommendation 2 below).

## **XI. RECOMMENDATIONS**

1. A Research and Development and Training Centre costing around USD 7 million should be established as soon as possible. It will require a gross/annual operating budget of USD 611,000 million, all of which could be recovered depending on the option of charging selected.

2. The Directorate-General of Drug and Food Control in The Department of Health seems initially best placed to establish, manage and administer the centre, but detailed project management could be subcontracted to P.T. Kimia Farma.



3. The records of the Directorate of Traditional Drugs are in such inadequate condition that a major effort should be made immediately to obtain much better statistics on turnover, employment and raw material usage not only for the top 20-25 firms (I.O.T.), but also for a representative sample of 50-100 out of the 500 (I.K.O.T.) smaller firms, who have registered.
4. Agricultural training activities should work closely with the BALITTRO, the Spices, Herb and Medicinal Plants trade and the Industry Exporters Association. Activity should be concentrated in the traditional centres of production where both farmers and harvest labour are experienced in the growing and harvesting practices required to produce good quality medicinal plants and herbs.
5. It is recommended that the oligopolistic structure of the industry (with few firms; say 20-25) accounting for 75-80 percent of industry sales) is recognised. The 500 (I.K.O.T.) small and medium firms will require major support and assistance in the process of upgrading.
6. The Centre must work for the whole Jamu industry but should charge all large (I.O.T.) companies the full cost of any services provided and concentrate all its support and training activities on the large number of medium and small firms.
7. It is recommended that UNIDO be retained as the Executing Agency for the Centre working with the chosen donor agency on detailed project formulation and implementation as soon as funding is agreed.
8. The size of Jamu industry in terms of sales turnover, employment and raw material purchases from the farmers as well as the need to upgrade the large number of small firms (I.K.O.T.) to Good Manufacturing Practices for Traditional Drugs and improve their finances and marketing clearly indicate that this project and the Research, Development and Training Centre should be taken forward as soon as possible on a priority basis by the concerned Indonesian authorities.

**UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION**

**JOB DESCRIPTION**  
*SI/INS/94/802/11-54/073QAO*

|                    |  |
|--------------------|--|
| Post title         | Market Analyst   |
| Duration           | 1.0 m/m  |
| Date required      | ASAP   |
| Duty station       | Jakarta, Indonesia   |
| Purpose of project | <ol style="list-style-type: none"> <li>1) Stimulating rural growth process through the development of selected Indonesian medicinal plants products for export.</li> <li>2) Finding market opportunities and using effective marketing technique to promote them abroad.</li> </ol>  |
| Duties             | <p>The expert in collaboration with the Directorate General of Drug &amp; Food Control, Ministry of Health and the counterpart staff at Kimia Farma, is expected to carry out the following :</p> <ul style="list-style-type: none"> <li>- Assess the market potential (internal as well as global) for selected indigenous medicinal herbs and potential candidates for introduction into the country as well as their products.</li> <li>- Survey present sources of supply and export value of selected medicinal herbs products originating in tropical regions that are currently imported into industrialized countries.</li> <li>- Examine the feasibility of crop wise cultivation of selected species in Indonesia and recommend optimum scale of plantations locally.</li> <li>- Identify network and nodes of marketing information for Indonesian medicinal plants internal as well as global.</li> <li>- Advise on market strategies and requirements for increasing exports of medicinal plants products.</li> <li>- List probable international buyers and brokers for the selected products.</li> <li>- Recommend other plant products with an export market that could be produced in Indonesia.</li> <li>- Prepare a final report with findings/recommendations for submission to UNIDO, in a hard copy and on a diskette (using Word Perfect 5.1/5.2).</li> </ul> |

## LIST OF 20 LEADING PLANTS APPROVED BY FDA AS JAMU

| NO | NAME OF PLANTS                               | PART USED | ANNUAL USE (KG) |
|----|--|-----------|-----------------|
| 1  | <i>Kaempferiae galanga</i> L.                | Rhizome   | 490,000         |
| 2  | <i>Languas galanga</i> Stunz.                | Rhizome   | 481,000         |
| 3  | <i>Curcuma xanthorrhiza</i> Roxb.            | Rhizome   | 472,000         |
| 4  | <i>Zingiber officinale</i> Roxb.             | Rhizome   | 357,000         |
| 5  | <i>Curcuma aeruginosa</i> Roxb.              | Rhizome   | 356,000         |
| 6  | <i>Foeniculum vulgare</i> Mill.              | Fructus   | 321,000         |
| 7  | <i>Alyxia reinwardtii</i> BL                 | Cortex    | 283,000         |
| 8  | <i>Piper retrofractum</i> Vahl.              | Fructus   | 269,000         |
| 9  | <i>Parkia roxburghii</i> G. Don.             | Semen     | 175,000         |
| 10 | <i>Zingiber zerumbet</i> Smith.              | Rhizome   | 155,000         |
| 11 | <i>Curcuma domestica</i> Vahl.               | Rhizome   | 151,000         |
| 12 | <i>Syzygium aromaticum</i> Merr. & P.        | Flos      | 131,000         |
| 13 | <i>Centella asiatica</i> Urb.                | Herba     | 126,000         |
| 14 | <i>Carum copticum</i> Benth.                 | Fructus   | 124,000         |
| 15 | <i>Orthosiphon aristatus</i> Miq.            | Folium    | 98,000          |
| 16 | <i>Zingiber americana</i> BL                 | Rhizome   | 93,000          |
| 17 | <i>Eurycoma longifolia</i> Jacq.             | Radix     | 84,000          |
| 18 | <i>Boesenbergia pandurata</i> (Roxb) Schlet. | Rhizome   | 83,000          |
| 19 | <i>Zingiber purpureum</i> Roxb.              | Rhizome   | 73,000          |
| 20 | <i>Glycyrrhiza glabra</i> L.                 | Radix     | 72,000          |

Source : This estimate was prepared by Department of Health POM from incomplete industry returns and all volumes should be increased by 4 times

**LIST OF GOVERNMENT DEPARTMENTS, RESEARCH INSTITUTIONS  
AND JAMU FIRMS VISITED**

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1. **Ministry of Health, Directorate General of Drug and Food Control (P.O.M.).**
  - \* Drs. Wisnu Katim ( Director General of P.O.M.)
  - \* Dr. Johnny Ria Hutapea ( Director Traditional Drugs )
2. **National Planning and Development Broad (BAPPENAS).**
  - \* Ir. Sri Irawati Susalit
3. **P.T. Kimia Farma**
  - \* Drs. H. Imam Hidayat ( President Director ) \* Drs. Santiko Ruslan
4. **Research Institute for Medicinal Plants (BALITTRO) Bogor.**
  - \* Dr. Ir. Djiman Sitepu \* Drs. Sudiarto
5. **Ministry of Industry and Trade (Directorate General of Agricultural and Forestry Base Industry).**
  - \* Syahwir Syarief ( Director ) \* Jusri Hamid
6. **The Indonesian Exporters Association for Medicinal Herbs (Semarang) (40 Members)**
  - \* Hartono Chandra ( President )
7. **Jamu Medicines and Cosmetics Exporters Association (Jakarta) (Over100 Members)**
  - \* Dip. Ing. Thomas Hartono
8. **Industries Visited in Semarang/Solo/Wonogiri**
  - a. **P.T. Sido Muncul**
    - \* Drs. Suhadi ( Production Director )
    - \* Dra. Ernawati ( Q.C.)
    - \* Dra. Anna Mariana Sujono ( Q.C.)
  - b. **Perusahaan Jamu Borobudur**
    - \* Lina Susanti ( Owner Managing Director )
    - \* Rashid ( Production )
    - \* Y. Dennie Winardi ( Marketing )
  - c. **Perusahaan Jamu Air Mancur**
    - \* Dr. Neng Sri Suharty ( Research and Development Manager )
    - \* Dra. Sri Nooryani Bardan ( Q.C.)
    - \* Drs. Maruto ( Purchasing )
  - d. **Perusahaan Jamu Me You**
    - \* Ratih Jarmanto (Owner)
  - e. **Perusahaan Jamu Nyonya Meneer (Semarang)**
    - \* Visit to Museum with details of their employment and overseas distribution in Netherlands and agents.
  - f. **Perusahaan Jamu Akar Sari**
    - \* Nyonya Satya Husada (Owner)
  - g. **Perusahaan Jamu Podang Mas & Sari Husodo**
    - \* Marwanto Isiang (Owner)

## IMPORT LIST 1995

| NO | COMODITY                           | VOLUME<br>(TON) | HARGA PER<br>KG (Rp) | NILAI<br>(Rp)   |
|----|------------------------------------|-----------------|----------------------|-----------------|
| 1  | TUMBAR IRAK (Coriandrum sativum)   | 2.000           | 3.000                | 6,000 M         |
| 2  | KLABET (Trigonella foenum-graecum) | 450             | 3.000                | 1,350 M         |
| 3  | MUNGSII (Carum copticum)           | 450             | 2.800                | 1,260 M         |
| 4  | PUE KAK (Cinnamomum culilaban)     | 300             | 12.500               | 3,750 M         |
| 5  | MAJA'AN (Quercus lusitanica)       | 450             | 3.200                | 1,440 M         |
| 6  | INGGU (Ruta graveolens)            | 300             | 95.000               | 28,500 M        |
| 7  | GADUNG CHINA (Smilax china)        | 360             | 5.000                | 1,800 M         |
| 8  | JINTEN HITAM (Nigella sativa)      | 450             | 4.600                | 2,070 M         |
| 9  | JINTEN PUTIH (Cuminum cyminum)     | 1.000           | 4.000                | 4,000 M         |
| 10 | ADAS (Foeniculum vulgare)          | 600             | 3.400                | 2,040 M         |
| 11 | KAYU MANIS (Glycyrrhiza glabra L.) | 720             | 7.000                | 5,040 M         |
|    | <b>TOTAL</b>                       | <b>7.080</b>    |                      | <b>57,250 M</b> |

## INTERNATIONAL MARKETING OF MEDICINAL PLANTS AND THEIR DERIVATIVES WITH PARTICULAR REFERENCE TO INDONESIA

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1. Indonesia has a list of 152 plants approved for use as Jamu by The Directorate General of Drug and Food Control in The Ministry of Health. A list of major plants used, 49 in number has also been recently prepared and finally a list of 14 selected important plants of determined efficacy has been prepared during the present set of consultancy studies. (See Annexure 3 for 152 for jamu approved plants, Annexure 2 for major plants used and Annexure 7 all in the report DP/ID/SER.A/1742 prepared by K.T. Parikh).

2. Within these lists of plants there are some which are already being exported, some which have considerable (or limited) export prospects either in their crude plant form or after manufacturing to partially processed extractives, or fully processed derivatives either to Europe or to the Chinese medicine markets in Singapore, Hongkong and China.

3. These bulk plant materials are often dried spices, spice seeds or herbs (ginger, garlic, turmeric, galangal or fennel) etc., but a detailed review will undoubtedly reveal within these lists competitive medicinal plant products, which are imported into Western Europe or North America. The marketing problems are considerable, but not insuperable.

4. It is important to note that the best guide to the marketing of medicinal plants with its thorough discussion of trade channels and practices is the International Trade Centre UNCTAD/GATT's

" Markets for selected Medicinal Plants and their derivatives " GENEVA 1982

The report is based on data up to 1980 and now 16 years later is necessarily not up to date and it made no attempt to cover Chinese medicine's massive ingredient requirements.

5. Indonesia is a grower and a supplier of some of the products studied such as the Cinchona species (quinine), Carica papaya L (papain), and among the laxative plants Plantago ovata (Psyllium), but the volumes are very limited. Most Indonesian growers and exporters are not aware of the dominant position of China, India and Pakistan in the key volume products such as Ginger, Turmeric, Chillies and Garlic or the low level of imports of plants such as Galanga, which is important for Jamu medicines, but they do export substantial tonnages to all the Chinese trading centres.

Imports of medicinal plants are often mixed with spices and herbs in the trade statistics and detailed breakdowns for the botanicals are not available. Major imports are also made for flower flavoured teas (Hibiscus and Chrysanthemum).

6. However, the Indonesia exporter must carry out the following steps if he is going to succeed in exporting in O.E.C.D. markets :

- Analyse the quality in terms of active ingredient
- Work out his likely fob. cost of 50, 100, 1000 kg of material.
- Prepare 200 and 500 gram samples of standard quality (fully dried etc.)
- Attempt to analyse the likely price level of major competitors currently supplying the market

The best service on prices is still a weekly publication :

- Chemical Marketing Reporter  
Schell Publishing Company  
100 Church street,  
New York, N.Y. 1007, USA.

Then with the help of Indonesian export support services the correctly prepared and costed samples must be offered to importers in key markets.

7. A full list of importers is available in the International Trade Centre's publication (p.188-206), but there have been many amalgamations, takeovers and changes of address since 1980. This market annex will list 2 or 3 of the most important importing firms in each key market (see below).

Germany :

Julius Grossman GMBH  
Deichstrasse 48  
2000 Hamburg 11

Paul Muggenburg  
Wandelweg 24  
2000 Hamburg 1

E.H. Worlee & Co.  
Bellevue 7  
2000 Hamburg 60

France :

Chemidrog  
1 Avenue de Villars  
75341 PARIS

Ilverni della Beffa  
43 Ave de Friedland  
75008 Paris

Emile Ardin  
21 Avenue R.P. Corentin Chaksee  
92270 Bois Colombes

Netherlands :

Kolle and Co.  
P.C. Hoofstrant 33  
Amsterdam

E.H. Worlee & Co  
Kapittelweg 395  
Hilversum

Switzerland :

Dixa AG  
Stationstrasse 39a  
9014 St.Gallen

Siegrieg AG  
Unter Bruhlstrasse  
4800 Zofingen

U.K. :

John Kellys (London) Ltd.  
32 Prescott street  
London E.1. 8BB

Wilson and Mansfield  
Hadden House Haslemere  
Surrey GU27 1LH

26

Zimmerman and Hobbs  
Dawson Road  
Bletchley  
Milton Keynes MK, TR

United States :

Meer Corporation  
9500 Railroad Avenue  
North Bergen  
N.Y. 07047

S.B. Penick & Co  
1050 Wallstreet West  
Lyndherst, N.Y. 07011

Botanicals International  
2500 EL. Presidio Street  
Long Beach  
California 90810

George Uhe & Co Ltd.  
76 Ninth Avenue  
New York N.Y. 10011

Japan :

Hino Pharmaceutical Co Ltd.  
33 Doshocko 2-chome Higashi-ku  
Osaka 541

Taisho Pharmaceutical Co Ltd.  
24-1 Takada 3-chome Toshino-ku  
Tokyo

8. It must be stressed that samples should not initially be sent to potential importers (communication should be restricted to letter or fax). But the Indonesian exporter must give clear indications on the cultivars used if possible with Latin botanical and English trade name of each medicinal plant or derivative offered and chemical analysis of each batch of material should be made available along with the quantity offered for a trial shipment and an indicative price (linked to competitors' price levels devised from Chemical Marketing Reporter's weekly lists and information received from trade sources).

9. Indonesia is already a major exporter of spices (USD 75-100 million), spice oils and oleoresins (USD 30 million) and non-wood forest products such as gum Rosin, Turpentine and gum Damar (USD 50 million) as well as significant volumes of medicinal plants, their derivatives and herbal medicines with a probable total of USD 40-50 million, but the bulk of this material is shipped to Chinese buyers (see Section V above).

10. This short note was prepared to assist in the analysis of the export base and the expansion of export of medicinal plants, their extracts and derivatives and herbal medicines. Exporters must reduce their dependency on Singapore merchants, who continue to act as a clearing house for most Indonesian spice, essential oils and medicinal plant exports, but this process has already begun with major shipments being regularly made during the peak (May-August) season direct to Chinese ports as well as through Hongkong.



**RESEARCH PRIORITIES FOR SPICES AND MEDICINAL PLANTS AS DEVELOPED  
BY BALITTRO (THE AGRICULTURAL RESEARCH INSTITUTE, BOGOR)**

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Balittro has carried out work to establish priorities for future research on spice and medicinal plants based on 1993 consumption volumes by the Jamu industry.

The six criteria used assigning 3, 2 or 1 points were :

- \* Consumption by Jamu industry
- \* Safety
- \* Farmers' income
- \* Export
- \* Cultivation Possibility
- \* Post-harvest Treatment

They are now concentrating their efforts on :

- \* KENCUR                   (Kaempferia galanga)
- \* LENGKUAS               (Langus galanga)
- \* TEMULAWAK           (Turmeric)
- \* JAHE                     (Ginger)
- \* ADAS                    (Fennel)
- \* CABE JAWA             (Long pepper)

All of which scored 15 or 16 out of 18 possible ranking points.

The Balittro research work is effectively being concentrated on the bulk food or spice crops which come from the ginger, galangal and turmeric families, although the percentage of source of these crops absorbed by the Jamu industry is moderate compared to the volume consumed as a spice ingredients in food.

Further work is needed to plan for the expansion of output of selected smaller volume medicinal plants, but undoubtedly at present the Indonesian Exporters Association for Medicinal Herbs would endorse the BALITTRO priority crops, which are certainly within the top ten volume crops used as ingredients by the Jamu Industry.

It is hoped that the RDT Centre's agricultural centres would work very closely with BALITTRO on the expansion of cultivation of these crops in Key Production Centres.

**VOLUME USAGE OF PLANTS APPROVED BY DIRECTORATE GENERAL OF DRUG AND FOOD CONTROL, MINISTRY OF HEALTH, FOR USE IN JAMU : Implications for cultivation policies**

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1. An attempt was made by the officials of the Directorate General of Drug and Food Control in the Ministry of Health to match the 152 plants (see annexure 3 report DP/ID/SER.A./1742 prepared by K.T. Parikh), with industry offtake in 1993. Overall usage was shown as 6213 tonnes, offtake may have risen to 6700/7000 tonnes by 1995 and a further 2000-2500 tonnes may be used by JAMU gendong (jamu medicine pedlars) This total offtake of all materials would be probably estimated to amount to 9000-10,000 tonnes on annual basis in 1996, but we believe that actual offtake is likely to be a minimum of 25,000 tons (see Annex 11).
  2. It is important to note that this offtake is not very large in agricultural terms compared with the volume grown for domestic food or spice use in Indonesia or for export. (Turmeric, Garlic, Ginger, Galangal and Chillies).
  3. Furthermore the bulk of the industry's requirement in volume terms is concentrated in the leading 10 or 15 plants and requirement of many of least used plants is marginal or minuscule.
  4. The top 10 plants account for 3455 tonnes out of 6213 tonnes (13000 tonnes out of 25000 or 55 percent of the total). The top 15 plants 4100 tonnes of estimated usage of 6213 (66 percent).
  5. The requirement for plants from 15/30 in order of importance is less than 100 tonnes p.a. From 30/75 the annual requirement falls from 50 tonnes p.a. to 10 tonnes p.a. From 75/100 the annual offtakes falls from 10 tonnes of annual usage to only 4 tonnes and the total annual requirement of the 52 least important plants (in volume terms) is less than 50 tonnes.
  6. It is, of course, conceded that many of the low volume plants may be especially high in active ingredients as well as being many times higher in price than the bulk plants. However, immense care needs to be taken before advising farmers to expand production of an item, which is only used in limited volume (e.g. Piper retrofractum Vahl. (Long pepper) which has a measured annual jamu offtake of only 269 tonnes (Overall less than 300-350 tonnes) as such expansion could easily lead to a glut and sharply lower prices for the farmers.
  7. Until better information is available on overall offtake and the relative prices of key ingredients any recommendation on expansion of cultivation should be advanced with extreme caution to avoid damage to farmers' interests and their confidence, particularly since the Department of Health's POM estimate in 1993 of 6223 tonnes must be raised to at least 25000 tonnes, which trade estimates and industry turnover calculations suggest is a minimum annual ingredients requirement for Jamu medicines.
- A further tonnage of raw materials is also required by the major Jamu cosmetic manufacturers, but this report has not made any estimate of these volumes.
8. However the extent of collection of raw materials from the wild (naturally growing) should be estimated and corrective measures should be taken to conserve these plants and the biodiversity. In keeping with the requirements of the Biodiversity convention and the Agenda 21 activities, indiscriminate exploitation of wild plants should be controlled. Hence there can be the need to initiate systematic cultivation of such plants as ISO 14,000 would specify these requirements.

### ESTIMATE OF RAW MATERIAL USAGE IN THE INDUSTRY (See Annex 9)

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1. Two large firm with sales of Rph. 35-40 billion per annum each gave us figures on their raw materials for ingredients at 2000 tonnes per annum excluding such items as rice, sugar, palm powder, egg powder and milk powder used widely in health drinks. Therefore the largest 8-10 firms with sales totalling 300 million would have raw material usage of roughly 15,000 tonnes per annum on the basis of broadly similar raw usage in their Jamu medicines.
2. Medium firms with turnover of Rph. 50 billion would require an additional 2500-3000 tonnes per annum.
3. Small-scale firm with Rph. 50-75 billion in ex-factory sales would take a further 3000-4000 tonnes.
4. To these factory purchases of 20500-22,000 metric tonnes must be added a further minimum of 2000-3000 tonnes purchase by Jamu Bisnis and Jamu Gendong for direct processing.
5. This total for material usage of 22500-25,000 metric tonnes is accepted throughout the industry as much more realistic than the 1993 POM calculation based industry usage of 6223 tonnes which must now regrettably be discarded. Estimated usage is four times larger than that previous estimate and even this calculation may be an underestimate if the extent of sales under declaration is substantial among the 8-10 largest Jamu medicine groups.

#### 6. ESTIMATED VALUE OF INDUSTRY INGREDIENTS PURCHASES

From this figure of 22500-25,000 tonnes it is possible to crudely calculate the value of raw material and plant sales to the Jamu industry. An industry estimate of Rph. 2500/kg for raw materials average price and with exception (the distinction between Wet Ginger at Rph. 1500/kg and Dry Ginger at Rph. 6000/kg) of Rph. 75000/kg for Ginseng was confirmed by another producer on the basis of a different set of ingredients.

The estimated value of raw material purchases would therefore be minimum Rph. 55-65 billion (USD 27-32 million).

**THE ROLE OF LARGE, MEDIUM AND SMALL FIRMS IN THE JAMU MEDICINE  
AND COSMETIC INDUSTRY (EX-FACTORY SALES AND RETAIL SALES)**

**1. THE LARGEST FIRMS (I.O.T.)**

The Jamu medicine industry is dominated by a number of very large firms with estimated turnover at more than Rph. 10 billion. Two Jamu cosmetic companies MUSTIKA RATU and SARI AYU also have turnovers above this level and a very large health drinks company SINDE BUDI SENTOSA in West Java has sales of the Jamu product KAKI TIGA (Three Legs) of more than Rph. 50 billion, although it does not appear on industry databases.

The eight firms listed below are apparently the largest with an estimated turnover measured in ex-factory sales value as declared by them in 1995.

|                       | RPH. BILLION |
|-----------------------|--------------|
| <u>CENTRAL JAVA</u>   |              |
| AIR MANCUR            | 35 - 40.0    |
| BOROBUDUR             | 10 - 12.0    |
| JAGO P.T.             | 40 - 45.0    |
| LEO AGUNG RAYA        | 12 - 15.0    |
| MARGUNA TARULATA      | 17 - 20.0    |
| NYONYA MENEER         | 50 - 60.0    |
| SIDO MUNCUL           | 40 - 45.0    |
| SUB TOTAL             | 204 - 237.0  |
| <u>SOUTH SULAWESI</u> |              |
| TAWON JAYA MAKASAR    | 25 - 30.0    |
| OVERALL TOTAL         | 229 - 267.0  |

It should be emphasised that if some 5-15 percent cosmetic sales is included, it is probable that these figures are considerable under estimates of real sales, which might be 30, 50 or 70 percent larger than the actual reported figures. Some important firms such as SINDE BUDI SENTOSA and GUNUNG GIRI are missing. Total sales by the 10 largest firms are projected at a minimum of Rph. 300-330 billion.

## 2. MEDIUM-SIZED FIRMS (I.O.T./I.K.O.T.)

There are some 10/12 firms with reported turnover shown between Rph. 10 and Rph. 2 billion their total turnover is some Rph. 30-40 billion, but with errors and omissions actual sales probably exceed Rph. 50 billion. (A number of these second tier firms are registered at I.O.T. (ie. not Traditional Drugs Small Industry).

## 3. SMALL FIRMS (I.K.O.T.)

The balance of over 500 firms in the industry have sales turnover of less than Rph. 2 billion, but there are not many firms with turnover between Rph. 1-2 billion and most firms are below Rph. 200 million in declared sales.

The assumption of turnover of Rph. 100 million only (USD 40,000) would give total sales of a further Rph. 50 billion in sales and if actual sales are some Rph. 200 million the additional sales would be a further Rph. 100 million. It is probably safer to assume that these small Jamu firms may account for up to Rph. 50-75 billion with an average turnover of between Rph. 100-200 million, but the Department of Health must carry out a sample survey covering 50/100 of these I.K.O.T. firms as soon as possible as it is these firms who will be the main customers of the Research Development Training Centre once it is established.

## 4. OVERALL STRUCTURE

A revised and estimated structure of the industry in 1996 is shown below:

|                    | RPH. BILLIONS    |
|--------------------|------------------|
| Large Scale Firms  | 300 - 330        |
| Medium Scale Firms | 50               |
| Small Scale Firms  | 50 - 75          |
| <b>T O T A L</b>   | <b>400 - 455</b> |

It should be noted that these are likely to be the minimum level of ex-factory sales of the Jamu industry in 1996.

## 5. RETAIL SALES

It is noted that the retail sales markup is typically between 50-75 percent (i.e the difference between the ex-factory sales invoice to distribution, agent/wholesaler and the final retail price paid by the consumer at retail shop, Warung or to a Jamu Gendong (pedlar).

It is also important to add a further Rph. 30-50 billion for material bought by small Jamu Bisnis and Jamu Gendong processed by them and then sold to members of the public.

Total retail sales are likely to fall in the range between Rph. 650 billion and Rph. 800 billion (USD 280-350 million). It is most unlikely that industry sales at a retail level are less than Rph. 600 billion (USD 250 million) and could well be as much as Rph. 1000 billion (USD 400 billion) if the larger firms are underreporting their sales by a very significant margin.

## LICENSING AND REGISTRATION OF THE TRADITIONAL DRUG INDUSTRY IN INDONESIA

The most important regulations governing the Jamu Industry is found in the decree 246/MENKES/PER/V/1990 The whole of general provision Chapter I Articles 1, 2, 3 and 34 are reproduced below.

### CHAPTER I GENERAL PROVISION

#### *Article 1*

In this Regulation of the Minister :

1. Traditional Drugs : shall mean the material or the mixture of the materials in the form of plant materials, animals, mineral materials, galenic preparations or the mixture of them, which has been used traditionally for treatment on the basis of experience.
2. Traditional Drug Industry : shall mean an industry which products traditional drugs with a total assets in excess of Rp. 600,000,000,- (six hundred million rupiahs) not including the value of land and building.
3. Traditional Drug Small Industry : shall mean a traditional drugs Industry with total assets not exceeding Rp. 600,000,00,- (six hundred million Rupiahs) not including the value of land and building.
4. Compound "Jamu" Business : shall mean a business of compounding, mixing and or processing of Traditional drugs in the form of slices, powder, liquid, "pilis", "tapel" or "parem", on small scale at a place without labelling and or trade mark.
5. "Jamu" pedlar business : shall mean a business of compounding, mixing, processing and distributing marketing traditional drugs in the form of liquid, "pilis", "tapel" or "parem", without labelling and or trade mark and is offered for direct use/consumption.
6. Producing : shall mean making, mixing, processing, transforming, filling, packing and or labelling traditional drugs to be marketed.

7. Distributing : shall mean presenting, delivering, possessing or controlling the stock at the selling location, in Traditional Drugs Industry or other place, including in vehicles with the objective of selling it, except if the stock at that place could reasonably be suspected to be for own use.
8. Licensed Traditional Drugs : shall mean foreign traditional drugs produced by a traditional drugs industry on the approval of the related company by using the brand and trade name of the original company.
9. Labelling : shall mean writings or drawings which are put on the packing, container or label and brochure which is enclosed with the traditional drugs and provides informations about the traditional drug.
10. "Pilis" : shall mean traditional drugs in solid form or paste, which is used by way of applying it lightly on the forehead.
11. "Parem" : shall mean traditional drugs in solid, paste or pulp like form which is used by smearing it over the feet and hands or on the other parts of the body.
12. "Tapel" : shall mean traditional drugs in solid, paste or pulp like form which is used by smearing it throughout the surface of the stomach.
13. Galenic : shall mean the extraction result of a preparation material or a mixture of materials which originate from plants or animals.
14. Additional, material : shall mean any substance which have no efficacy as medicine which is added to traditional drugs to increase the quality, including preservation, to give colour, to improve the taste and smell as well as to stabilize the colour, taste, smell or even the consistency.
15. Production Code Number : shall mean the mark of a numeral and or letter which indicate a batch, so that it would be possible to trace the production batch.
16. Batch : shall mean a quantity of traditional drugs which is made a certain cycle of production so that it has a homogeneity.
17. Minister : shall mean the Minister of Health of the Republic of Indonesia.



18. Director : shall mean the Director General of Drugs and Food Control.
19. Head of Provincial Health Office Health : shall mean the head of the Provincial Health Office of the Ministry of Health of the Republic of Indonesia.
20. Head of PQCLDF : shall mean the head of the Provincial Quality Control Laboratory of Drug and Food.

### **Article 2**

1. To establish a Traditional Drugs Industry must have a License from the Minister.
2. To establish a Compound "Jamu" and a "Jamu" pedlar business license is needed.

### **Article 3**

1. The traditional drugs which is produced, distributed in the territory of Indonesia as well as for export must first be registered as an approval of the Minister.
2. Excepted from the provisions in section (1) are the traditional drugs produced by :
  - a. Small Traditional Drug Industries in the form of slices, "pilis", "tapel" and "parem"
  - b. Compound "Jamu" Business.
  - c. "Jamu" padler business.
3. Traditional Drugs produced by Small Traditional Drug Industries other than those referred to in section (2) letter a, shall be imposed on the provision of section (1).

### **Article 34**

The labelling marking which is stated on the packing, container, label and or brochure must contain the information concerning :

- a. The name or the trade name of the traditional drug.
- b. The compositions;
- c. The weight, content or the quantity of traditional drug in each container;
- d. The dosage of use;
- e. The method of use;
- f. The efficacy or the usefulness;
- g. Counter indication; (if any);
- h. Expiration;
- i. Registration Number;
- j. Production code number;
- k. Name of the industry and address-at least the name of the city and the word " I N D O N E S I A " ;
- l. For licensed Traditional Drug it must also be inserted the name and address of the license issuing industry; in accordance with that which has been agreed on at the registration.

**List of most important plants in use in European medicine**  
(Source: A.P. Dharma's Book)

- \* ANTANAN (*Centella asiatica*) as 1% ointment or 2% a power in chronic wounds or ulcers.
- \* BIDARA LAUT(*Strychnos nux vomica*) as Tincture of strychnine
- \* CENGKEH (*Syzygium aromaticum*) (Clove oil is used as a painkiller particularly for toothache)
- \* JAHE (*Zingiber officinale*) as indigestion remedy and liniment in the form of gingeroil or powder.
- \* KAYUPUTIH (*Melaleuca leucadendron*) as Cajuput oil is used externally for colic, headaches etc. and as a substitute for eucalyptus oil)
- \* KEMUKUS (*Piper cubeba*) for stomach disorders and vomiting.
- \* KINA (*Cinchona succirubra*) (Quinine is used as an anti-malarial and also in Jamu for diarrhea and dysentery)
- \* KUMIS KUCING (*Orthosiphon aristatus*) (Java tea is used as a diuretic to treat kidney disease and is imported into Germany)
- \* KUNYIT (*Curcuma longa/domestica*) (Turmeric is used to treat pain and as an ointment)
- \* LADA PANJANG (*Piper retrofractum*) (Long pepper or Cabejavais widely used in Chinese medicine to relieve pain)
- \* TEMULAWAK(*Curcuma xanthorrhiza*) (Ginger like plant used for treatment of abdominal ills and to cure gall bladder inflammation)

**MARKETING AND COMMERCIAL DEPARTMENT OF PROPOSED  
RESEARCH, DEVELOPMENT AND TRAINING CENTRE**

Annex 12

1. The operation of the proposed Research, Development and Training Centre for the Jamu Industries, particularly its building, laboratory equipment and pilot plant requirements has been thoroughly examined in two documents :

Feasibility Study Centre of Training and Development of Small Industries on Indonesian Traditional Medicines (Directorate General for Drug and Food Control, Ministry of Health and PT. Kimia Farma Jakarta September 1995).

"High Level Advice for Establishment of an R&D Facility, A Pilot Plant and a Training Centre for Improvement of Process Technologies for Herbal Medicine" prepared by K.M. Parikh UNIDO consultancy report DP/ID/SER.A/1742 November 1995 Vienna.

2. Differences in the capital, manpower and overall running cost budgets are discussed elsewhere in this report, but it is necessary as the centre will be working mainly with over 500 medium, small or household businesses for it to have an effective Marketing and Commercial Department linking with both the Pharmacy and Pilot Plant Processing Department and the Training Department.

3. The function of this department will be as follows :

- \* To assist firms to improve their marketing efforts in the domestic market and train their sales and commercial staff.
- \* To advise the leading firms on export market potential of medicinal plants, derivatives and extracts as well as herbal medicines i.e. Jamu ingredients and Jamu medicines.
- \* To assist all firms in planning domestic or export market research.
- \* To assist the Training Centre in planning courses for owners and managers in :
  - Budgeting
  - Financial planning
  - Marketing
  - Market Research
- \* To investigate costs of production of raw material suppliers particularly on products with export potential or products where raw material shortage may hamper the industry's growth if extremely severe price fluctuations are experienced.

4. Space and staffing requiremnt

|          |   |           |
|----------|---|-----------|
| Area     | : 150 m <sup>2</sup> at \$ 500 per m <sup>2</sup> | \$ 75,000 |
| Manpower | : Chief Marketing Specialist at 1500 p. month     | \$ 18,000 |
|          | 2 Senior Marketing Managers at \$ 1,250 p.m.      | \$ 30,000 |
|          | 1 Market Research Manager at \$ 1000 p.m.         | \$ 12,000 |
|          | 1 Secretary at \$ 600 p.m.                        | \$ 7,200  |
|          | Sub Total   | \$ 67,200 |

5. It is anticipated that the consultancy services of this Marketing and Commercial Department would be available to the whole jamu industry on export marketing and raw material supply i.e. The 49 firms registered with the Directorate of Traditional Drugs as having net assets (excluding land and buildings) of more than Rupiah 600 million (USD 250,000), but that its training marketing, commercial, financial expertise would be heavily concentrated on the 500 firms (registered) under the Traditional Drugs Small Industry as well with some household units and Jamu businesses.

6. It is important to recognise that a Commercial and Marketing Department is an essential component of the Research, Development and Training Centre. It is felt that assistance through training and consultancy in finance and marketing will be one of the most important requirements to achieve better performance in the medium and small sector firms and that the budget shown above is the minimum for effectiveness.

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