

TRADE IN MEDICINAL PLANTS



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I. INTRODUCTION

A. BACKGROUND

Plants have been used since ancient times to heal and cure diseases and to improve health and wellbeing. Despite ancient nature of the tradition, medicinal plants still form the basis of traditional or indigenous health systems and are reported by the World Health Organization (WHO) to still be used by the majority of the populations in most developing countries. Medicinal and aromatic plants (MAPs) play a significant role in meeting the demands of the traditional medicine markets which are found both domestically in the producing and in overseas markets. Traditional medicine, for example, which is related to traditional Chinese medicine (TCM), Indian ayurveda and Arabic unani medicine and to various forms of indigenous medicine, as well as the complementary or alternative medicine utilized in industrialized countries, is achieving growing credibility in many parts of the world. The percentage of people using traditional medicines decreases in developed countries: 40-50 percent in Germany, 42 percent in the USA, 48 percent in Australia and 49 percent in France¹.

The last three decades have seen substantial growth in herb and herbal product markets across the world. Rapidly rising exports of medicinal plants during the past decade attests to worldwide interest in these products as well as in traditional health systems. According to the Secretariat of the Convention on Biological Diversity, global sales of herbal products totalled an estimated US\$60 000 million in 2002².

At present, 80 percent of the population in developing countries rely largely on plant-based drugs for their health care needs, and the WHO has estimated that in coming decades a similar percentage of the world population may well rely on plant-based medicines. Thirty percent of the drugs sold worldwide contain compounds derived from plant material.

As a result of the expanding interest in medicinal and aromatic plants, new income-generating opportunities are opening up for rural populations. With many of the MAPs gathered from the wild, the collection and sale of MAPs is providing a complementary source of cash for many extremely poor rural households. However, despite the fact that the products collected can have very high value in the final products, the collectors typically receive only a small share of the final value, either because they are unaware of the real value, are unable to market it in the form wanted by buyers or are unable to market to these buyers.

B. FOCUS OF THE STUDY

This report aims to provide an overview of the markets for MAPs and their requirements, in order to highlight both the opportunities that exist for developing countries and to indicate what needs to be done in order to expand these opportunities further. A further aim is to support developing countries in their efforts to develop and improve their medicinal plants industries and assist them to make informed decisions on the development of their medicinal plant industry and the products they produce from the plant material that is harvested.

The report provides information on some of the main issues related to production and marketing of medicinal plants and identifies some of the main constraints to be overcome by developing countries in order to successfully produce and export them.

¹ **TITZ A.** 2004. *Medicinal Herbs and Plants – Scope for Diversified and Sustainable Extraction*. 22-26 July 2004, Bangalore.

² **WHO.** 2003. *WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants*, p. 1. Geneva.

The study focuses most of its attention on broad trends or tendencies, or on the most common situations, as it is not possible to discuss each individual product, country or situation. It draws out some conclusions that are general in application. However, it is important to appreciate that the specifics of individual trade situations vary significantly with the product and the country being considered. Therefore, detailed analysis is required before any commercial commitment or significant investment is considered.

C. DATA AND INFORMATION SOURCE

Information has been drawn from a number of documents and papers. These are referenced throughout the report. The main sources have been:

- FAO. 1997. Non-wood forest products 11. *Medicinal plants for forest conservation and healthcare*. Rome.
- Background papers prepared for the Workshop on Medicinal Plants, 22-26 July 2004, Bangalore, India. The specific objective of the workshop was to initiate a move towards jointly developing strategies for capitalizing on available opportunities and potentials for sustainable commercial exploitation of medicinal herbs and plants in a manner that would maintain and enhance biodiversity in the Asia/Pacific region.
- WHO. 2003. *WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants*. Geneva.

A more detailed list of references can be found at the end of the report.

The data on trade are based on the compilation of items coded under the Standard International Trade Classification (SITC) codes noted below. The data shown in the report should be considered as indicative, as these materials are not used exclusively for medicinal end-uses: they may also be used in products such as cosmetics, paints, dyes, insecticides and detergents.

Table 1. SITC codes and commodity codes

SITC code	Product	Commodity code
292.4	Plants and parts of plants (including seeds and fruit) of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes	140190 00 0
292.41	Liquorice roots	1211.10
292.42	Ginseng roots	1211.20
292.49	Others, including pyrethrum, tonquin beds, mint, linden, verbena, <i>Organum vulgare</i> and <i>Salvia officinalis</i>	1211.90

Source: Kuipers, in FAO, 1997. *Medicinal plants for forest conservation and healthcare*, Non-wood forest products 11, FAO. Rome.

D. QUALIFICATIONS

Assessment of all aspects of medicinal plant markets is difficult to achieve with any degree of certainty at a global level. An assessment at an individual market level is easier, but still not straightforward. Difficulties arise from the wide diversity of plants that are involved, limited availability of data, inaccuracy of any data that are available and the fact that not all medicinal plant material ends up in medicinal or health uses. At the production level an unknown proportion of the material gathered may be used by the gatherers or traded informally or bartered. This is especially true in developing countries.

II. PRODUCTION/SUPPLY AND DISTRIBUTION

A. PRODUCTION

According to the study carried out by Kuipers for FAO, there are two sources of supply of medicinal plants: i) material collected from the wild; and ii) cultivated material³.

Wild harvesting

Wild harvesting is the collection of plant material from wild sources. This material can take many forms, such as the bark, leaves, fruits, herbs, flowers, wood or roots. It may be collected from many locations, including open pasture, waste agricultural land, gardens, the roadside or forest land. In some cases the plants may be “weeds” found in agricultural or waste land; in others they may be plants or parts of plants found in horticultural areas or in forest land.

The bulk of the material traded (both domestically and internationally) is still wild harvested and only a very small number of species are cultivated⁴. It is difficult to provide accurate global data on the volume of wild harvested medicinal plants as it is very difficult to distinguish between wild and cultivated material. Although data can be indicated for some specific cases, there is very little actual global data on the volume of wild harvested medicinal plants.

Herbal raw material is often either collected by wage labourers (often from outside the state) or farmers with small landholdings. Cultivation of herbal raw material is rare: in Bangladesh, for example, more than 90 percent of the collection of medicinal plants is from the wild. Illegal and unscientific collection is common. Although the major part of wild harvested material is sourced from developing countries, a surprisingly high amount is also gathered in developed countries.

Of major concern is the fact that a significant part of wild harvested material is now traded commercially. As the prices paid to the gatherers tend to be very low, commercial plant gatherers of “mine” the natural resources rather than manage them, as their main objective is to generate an income. Although there are many common species that can be harvested sustainably and with little impact on their survival, an increasing number is not in this category. Of particular concern for the sustainability of the wild resource is the fact that many of the materials are the roots of plants, which are the most difficult plant parts to harvest sustainably.

According to the *Report of the Task Force on Conservation and Sustainable Use of Medicinal Plants*, a critical factor in wild harvesting is the availability of cheap labour to undertake the very labour intensive work of gathering. Because in many cases income from such sources represents the only form of paid employment for inhabitants of remote rural areas, there is a ready availability of workers. Further, contractors who employ the collectors often act as middlemen and traders as well. Collectors are often dependent on contractors as they are poor and often owe money to the contractors⁵.

Most countries have few or no regulations which control the collection of material from the wild. India, Bulgaria and Nepal are notable exceptions. India has banned the export of several wild species in their raw material form, although the export of finished products containing the material is allowed. A major part of the high range Himalayan plants are wild harvested and many

³ Kuipers, in FAO, 1997. *Medicinal plants for forest conservation and healthcare*, Non-wood forest products 11, FAO, Rome.

⁴ Wild harvested material is often sold as cultivated. An estimate for Germany suggests that some 70-90 percent of the medicinal plant material imported into that country has been wild harvested (Lange, 1996).

⁵ *Report of the Task Force on Conservation and Sustainable Use of Medicinal Plants*, Government of India, Planning Commission, March 2000.

of these are close to extinction from over-harvesting or unskilful harvesting: *Nardostachys jatamansi*, *Aconitum* spp., for example.

Cultivated material

Cultivated material is more suitable for large scale uses, such as the production of drugs by pharmaceutical companies, which require standardized products of guaranteed or known content and quality. These quality requirements are becoming increasingly important as drug regulations become more stringent in many countries.

Argentina, China, Hungary, India, Poland and Spain are examples of countries that cultivate some materials on a large scale. Requirements of successful commercial cultivation operations are to produce high quality drugs using low input cultivation methods while recognizing that the material has to compete on a highly competitive international market.

Given the higher cost of cultivated material, cultivation is often done under contract. In the majority of cases, companies tend to cultivate only those plant species which they use in large quantities or in the production of derivatives and isolates, for which standardization is essential and quality is critical. Some grower cooperatives or collaborative ventures have been set up to enable growers in some countries to achieve greater negotiating power and achieve higher prices. These have tended to be in developed countries, such as the Netherlands, and in Eastern European countries which export significant quantities to the rest of Europe and to North America.

Globally, the areas cultivated are limited because cultivated material bears higher production costs, must have secure land ownership or access and requires more sophisticated (and costly) management expertise. Costs must be carried for long periods – in many cases over ten years. The low prices of wild harvested material make the return to cultivation low in many cases.

B. DISTRIBUTION

The supply chain is often very long with as many as six or seven marketing stages involving primary collectors and producers, local contractors, regional wholesale markets, large wholesale markets and specialized suppliers.

The long supply chain contributes to the low prices primary collectors and farmers receive for their products. As collection is still more common than cultivation, huge differences in the quality of raw materials occur. The differences concern the amount of active ingredients based on where the plants were grown, what parts of the plants are being used, how the plants were harvested and how they were stored. Raw material is often also adulterated as collection from the wild cannot guarantee the uniformity of raw material.

Industry buys from suppliers and wholesalers rather than direct from smallholders because of the substantial quantities and broad range of raw material that is needed. This makes product traceability nearly impossible. Currently, contract farming and buy-back arrangements provide the only practical alternatives for exporters whose customers require traceability.

C. IMPROVING PRACTICES

Cultivation of medicinal plants faces a number of problems, partly due to the typically small scale of operation. These include the following:

- The majority of farmers have small land holdings;
- Shortage of labour in rural high altitude areas;
- Long period between crop growing and harvesting;
- Bureaucratic difficulties in obtaining permits for cultivating restricted species;
- Lack of technology and difficulties in cultivating medicinal plants (particularly in high altitude areas);
- Even if cultivation technologies are developed, problems with packaging, storage, transportation and quality control persist and are neglected;

- Experiences as well as the needs of farmers are often not included in the research activities of the laboratories;
- The link between research institutes and industry is weak;
- The lack of planting material and the poor quality of planting material; and
- Prices are too low to make cultivation attractive.

These features contribute to the limitations faced by many developing countries, and some are equally applicable to wild harvested plants as to those cultivated. Some possible actions to improve conditions in developing countries at the production and post-harvest stages are summarized in the following table.

Table 2. Possible actions for improving medicinal plants practices

Optimal commercialization requirements	Current situation	Possible actions
Standardized cultivation methods	90 percent of raw material is collected from the wild.	Cultivation according to GAP ^{a/}
Ensure quality and quantity	Collection from wild often causes inconsistent quality (variations in active ingredients) depending on the area plants grew.	- Cultivation according to GAP; - Recognized quality labs at regional or national level with assured quality control
Controlled post-harvest handling	Many stakeholders involved in post-harvest handling and collectors often dependent on contractors. No adequate post-harvest handling can be ensured.	- Cultivation according to GAP; - Establishment of farmer cooperatives at village or regional level that can sell directly to exporters
Unadulterated material, no unwanted plants or ingredients, reliable botanical identification	Collection from wild often results in plants being mistaken and unwanted plant material included.	Cultivation according to GAP
Possibility to select and develop genotypes with commercially desirable traits	Too many stakeholders are involved in the country of origin. Farmers cannot sell directly to exporters; the needs for flexibility and development cannot be met.	- Cultivation according to GAP; - Establishment of farmer cooperatives at village or regional level who can guarantee a critical mass of cultivable land to meet the individual needs of exporters.
Product standards which can be easily adjusted to regulatory requirements and consumer demands	Too many stakeholders are involved in the country of origin. Farmers cannot sell directly to exporters; the needs for flexibility and development cannot be met.	- Cultivation according to GAP; - Establishment of farmer cooperatives at village or regional level who can guarantee a critical mass of cultivable land to meet the individual needs of exporters.

^{a/} GAP refers to good agricultural practice, a recommended system of producers and best practices for medicinal and aromatic plants.

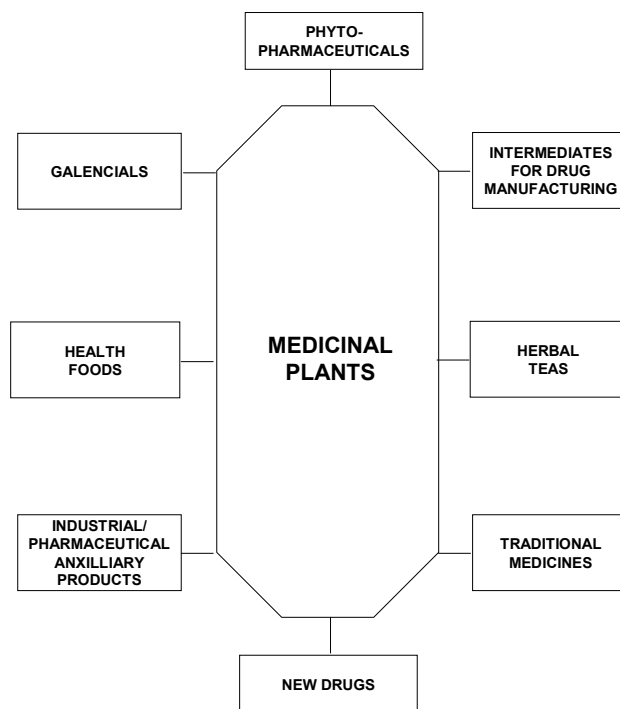
Source: Titz, A.

III. MARKET CONDITIONS

A. PRODUCTS TRADED

Medicinal and aromatic plants are traded both as commodities and, in some cases, as processed final products. Demand for a wide variety of species is increasing as these markets expand and new end-uses are developed. The range of products obtainable from medicinal plants is shown in Figure 1.

Figure 1. Industrial Uses of Medicinal Plants



Source: De Silva, 1997.

Each of these groups can contain a wide range of products. For example, herbal products can be used in the following product categories:

- Herbal medicinal products
 - a) conventional
 - b) traditional
- Food supplements/dietary supplements
- Foodstuffs
- Cosmetics

Examples where the highest use of traditional medicines are practiced include⁶:

- 100 percent in the United Arab Emirates
- 100 percent in China
- 70 percent in India
- 70 percent in Pakistan
- 70-80 percent in Africa

Pharmaceutical companies use medicinal plants:

- For the isolation of single purified drugs;
- In advanced extract form where the extract is highly standardized in terms of the active constituents it contains. In many cases, these are in admixtures with other ingredients;
- As starting material for the production of other semi-synthetic pharmacologically active substances. For example, plant saponins can be extracted and altered chemically to produce sapogenins required to manufacture steroids.

⁶ Titz, A. *Medicinal herbs and plants – scope for diversified and sustainable extraction*. 22-26 July 2004. Bangalore, India.

A significant percentage of medicinal plant material is used to make plant extracts. This is carried out either by the end product manufacturers or by extract companies. In addition to the market for medicinal plants, there is an expanding market in developed countries for botanical-based products, such as health foods and supplements, herbal drinks and various health and personal care products. The market for herbal products throughout the world is currently worth around an estimated US\$60 billion per year with a growth rate of 7 percent⁷.

B. MARKET FEATURES IN SELECTED COUNTRIES

*China*⁸

The market in China is large and shared between public and private ownership. Thirteen of the top companies which produce TCMs are listed publicly on the domestic stock exchange. Fourteen are state-owned.

Between 1990 and 2001 the total area of medicinal crops increased from 153 000 to 827 000 hectares (Table 3). This underlines the Chinese leadership in the sector. China's planted area is some 20 percent greater than the USA, the second largest supplier. As shown in Table 3, the planted area in most of the main countries has been growing substantially.

Table 3. Area of medicinal crops in selected countries, 1990-2001

Country	Area			
	1990	1995	2000	2001
	'000 hectares			
China ^{a/}	153	279	676	827
USA ^{b/}	200	519	522	692
Japan ^{b/}	125	100	65	39
Canada ^{b/}	40	102	232	347

^{a/} Source: China National Bureau of Statistics.

^{b/} Sources: Statistics Canada; Wisconsin Department of Agricultural Trade and Consumer Protection.

It should be underlined that TCM tends to use the roots of plants, which are the most difficult plant parts to harvest sustainably. However, GACP for production of herbal materials in China can be traced back to more than two thousand years. The first work on Chinese herbology (Shen Nong Ben Cao Jing) mentioned that practitioners should pay more attention to the influences of such things as the environment and location, soil and water, time and season, process and store and so on for cultivation and collection of herbs⁹. Over time, TCM has developed a theory of geo-herbalism which has been used in the evaluation of efficacy, quality and safety, making TCM well known in the world. The GAP system was introduced into China from Europe in 1999 and has been adopted officially on 1 June 2003. GAP plantations of more than 30 medical species, such as peony, ginseng, liquorice and agelica, are now distributed throughout China. Some manufacturers have also been involved in GAP. For example, 999 Medicinal Inc. has set up plantations in Inner Mongolia, Shandong, Hebei, Shanxi, Anhui, Yunnan and Guizhou Provinces in order to guarantee material quality.

However, GAP is seen as a heavy burden for the production of traditional medicines in developing countries as it has increased costs and reduced yields against already low returns to producers. In developed countries, GAP is relatively easier to implement but its introduction should result in improvement and standardization of TCM¹⁰.

⁷ For disaggregated data see Annex Tables 2-5.

⁸ The information in this section has been taken from the country studies prepared for the Workshop on Medicinal Plants held in Bangalore, India, 22-26 July 2004.

⁹ The Shen Nong Ben Cao Jing (*The Divine Farmer's Materia Medica Classic*) is one of the ten premodern classics of Chinese medicine selected in China as nationwide research priorities within the Chinese medical literature.

¹⁰ Institute of Chinese Materia Medica, China Academy of Traditional Chinese Medicine, Beijing.

India¹¹

India has a long-standing knowledge and understanding of using medicinal plants in its codified medical systems, as well as through its highly diverse folk traditions. The knowledge of plant identification, methods of collection and processing, biological activities and uses was transmitted both orally and in written form by traditional medical cultures in India.

Medicinal plant trade in India is substantial with total turnover of Rs. 2 300 cores of ayurvedic and herbal products, while major over-the-counter products contribute around Rs. 1 200 cores. Despite its substantial domestic trade and its long experience with herbal medicines, India has not been able to capitalize on this by promoting use in developed country markets. To achieve improvement in this area, India must identify products which may be relevant to diseases found in the developed world and for which no medicine or only palliative therapy is currently available. This would enable rapid access of these herbal medicines into developed country markets.

There are major challenges in tapping the substantial potential for utilizing medicinal, aromatic and natural dyes plants (MADPs) nationally in India, as well as in export markets. At the forefront of these problems is ensuring consistent and acceptable quality. Traditionally, because the usage of plants was a part of a local community's culture and health practices quality was more manageable. However, this tradition is being rapidly eroded as control of medicinal development and usage moves to the industry.

Table 4. Annual demand for prioritized medicinal plants – India

Species	Demand (tonnes)		Annual Growth Rate (Percent)
	2001-2002	2004-2005	
Amla	22 730	41 783	22.5
Andrographis	2 005	2 197	3.1
Ashwagandha	7 029	9 128	9.1
Asoka tree	7 051	10 724	15.0
Atis	270	448	18.4
Bacopa	3 823	6 622	20.1
Bael tree	5 381	7 085	9.6
Black nightshade	2 078	2 192	1.8
Chirata	965	1 285	10.0
Chlorophytum	38	61	17.2
Costus	1 414	1 826	8.9
Flamelily	65	101	15.4
Guggul	1 505	2 549	19.2
Holy basil	3 297	5 403	17.9
Indian aconite	322	3 427	30.0
Indian barberry	1 187	1 829	15.5
Indian tinospora	2 258	2 933	9.1
Jatmansi	675	867	8.7
Liquorice root	873	1 360	15.9
Long pepper	3 993	6 280	16.3
Phyllanthus amarus	2 213	2 985	10.5
Picrorhiza	220	317	12.9
Rauwolfia	424	589	11.6
Sandalwood	635	1 073	19.1
Sen N/A	6 463	11 677	21.8
Shatavari	10 925	16 659	15.1

Source: National Medicinal Plants Board (NMPB).

¹¹ The information in this paragraph has been taken from the country studies prepared for the Workshop on Medicinal Plants held in Bangalore, India, 22-26 July 2004.

Quality in the case of medicinal plants includes identity, purity and safety, as well as efficacy. However, there are many challenges involved in quality standardization of MADPs. These include the following:

- Unlike allopathic drugs that have a single or a set number of compounds that can be easily standardized, plants have a plethora of phytoconstituents that contribute to their bioactivity;
- Bioactivity also varies according to time (day, season, constellar position) and to region (arid, marshy);
- There are differences in the bioactivity depending on the way the plant has been collected, processed and stored.

Phytoconstituents that attribute specific medicinal properties to a plant are not present in uniform quality or quantity under different edaphic conditions. The medicinal and toxic property of a plant may also vary according to the kind of processing used. Traditional, ancient Indian systems of medicine recognized this and had specific recommendations for the collection of medicinal plants and the preparation of formulations in order to obtain the best efficacy.

The current relevance of the recommendations for selected medicinal plants needs to be determined using modern analytical tools such as chromatography and bioassay. These techniques would indicate, respectively, the differences in the chemical profiles and their significance on the bioactivity of plants collected and/or prepared according to traditional advice.

The potential growth in domestic market demand in developing countries is exemplified by the growth projections for India by the National Medicinal Plants Board, as shown in Table 4. These projections indicate a high annual growth rate for many of the species.

*Malaysia*¹²

In Malaysia there are three sources of medicinal plants used by the industry, namely from the wild (forests), from plantations and through imports. Previous uncontrolled collection of herbal material has resulted in depletion of the wild resources. A study conducted by Azmi & Norini to estimate the demand and supply of medicinal plants from the forests by both collectors and the herbal industry in northern states of peninsular Malaysia estimated that the collectors may collect between 300 to 500 kg of medicinal plants on every collection trip, with an average of 2.67 trips per month.

The herbal industry in Malaysia is facing a shortage of local raw materials to meet the demands of the growing industry, with the result that the industry is heavily dependent on imports for its raw materials and processed herbs (Malaysian Herbal Industry Outlook, 2004). This is highlighted in the trade statistics which show that imports of medicinal and aromatic plants between 1995-1999 exceeded exports by a wide margin (Table 5). The majority of the imports came from China, India and Indonesia. Singapore and Thailand were the major importers of medicinal and aromatic plants from Malaysia (Malaysia Department of Statistics, 2000).

Table 5. Value of trade in medicinal and aromatic plants in Malaysia (1995-1999)

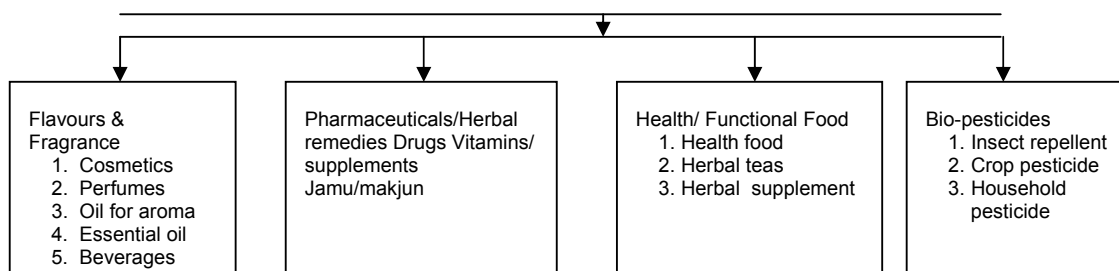
	Imports (RM)	Exports (RM)
1995	409.9	46.4
1996	430.6	63.4
1997	383.5	52.8
1998	393.6	47.8
1999	626.7	83.1

Source: Proceedings of the Seminar on Medicinal and Aromatic Plants, 2000.

¹² The information in this paragraph has been taken from the country studies prepared for the Workshop on Medicinal Plants held in Bangalore, India, 22-26 July 2004.

The Malaysian herbal industry has grown rapidly and has the potential to become a significant industry in Malaysian agriculture. Botanicals (including their extracts, exudates and essential oils) have found application in a wide range of products that includes food and beverages, pharmaceuticals, herbal/traditional medicines, health care, heal enhancing products, dietary supplements, flavours and fragrances, cosmetics and toiletries and various consumer goods, such as dyes, detergents, biopesticides and other industrial chemicals. They can be classified into four major product groups (Figure 2).

Figure 2. Classification of herbal industry by major product groups - Malaysia



Source: Proceedings of the Seminar on Medicinal and Aromatic Plants, 2000.

The Malaysian Third National Agricultural Policy (1998-2010) identified the Speciality Natural Products Industry as a “new and future” industry group. This group refers to natural products based on botanicals (herbs, medicinal plants, spices and aromatic plants) and aquatic plants and animals. These have been showing considerable growth in recent years, with the pharmaceutical market growing at about 10 to 15 percent per annum, the health related food product industry growing at 20 percent per annum and the market for cosmetics and toiletries growing at 10 percent per annum (Tunku Mahmud, 1999).

OECD countries

In the OECD group, the EU, United States and Japan are the most involved in the medicinal plants trade. In these, imports have always been greater (often substantially) than exports. As shown below EU imports of medicinal plants, excluding intra-EU trade, are higher than those into the US and Japan, while exports (by value) are considerably higher than from the US when intra-EU trade is taken into account.

Figure 3. Exports and imports of medicinal plants – EU, USA and Japan

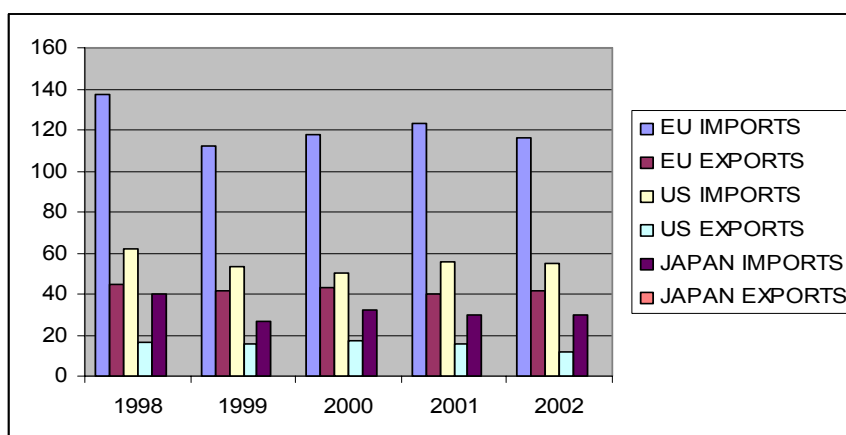


Table 6. Exports and Imports – Japan 1998-2002

Imports:						Exports:					
	1998	1999	2000	2001	2002		1998	1999	2000	2001	2002
thousand tonnes											
Medicinal Plants						Medicinal Plants					
World total	40.1	27.0	32.5	29.6	29.9	World total	0.2	0.1	0.1	0.1	0.1
Ginseng roots						Ginseng roots					
World total	0.4	0.3	0.5	0.6	0.9	World total	0.0	0.0	0.0	0.0	0.0
Liquorice roots						Liquorice roots					
World total	1.5	2.4	4.2	1.9	2.0	World total	0.0	0.0	0.0	0.0	0.0
Plants & parts of plants, used in pharmacy, perfumery, or for insecticidal and similar purposes excluding liquorice and ginseng roots						Plants & parts of plants, used in pharmacy, perfumery, or for insecticidal and similar purposes excluding liquorice and ginseng roots					
World total	38.2	24.2	27.9	27.0	27.0	World total	0.2	0.1	0.1	0.1	0.1

Table 7. Exports and Imports – EU 1998-2002

Imports:						Exports:					
	1998	1999	2000	2001	2002		1998	1999	2000	2001	2002
thousand tonnes											
Medicinal Plants						Medicinal Plants					
World total	137.1	111.8	118.0	122.8	116.3	World total	44.4	41.8	43.2	40.1	41.9
Intra-EU	28.1	26.0	26.7	33.0	26.5	Intra-EU	30.2	27.1	29.6	26.5	27.0
Extra-EU	108.9	85.9	91.3	89.7	89.8	Extra-EU	14.2	14.8	13.6	13.6	14.9
	137.1	111.8	118.0	122.8	116.3						
Liquorice roots, fresh or dried						Liquorice roots, fresh or dried					
World total	9.2	5.1	5.6	9.6	5.0	World total	1.6	1.3	1.0	1.2	3.6
Intra-EU	1.2	0.9	0.7	0.6	0.5	Intra-EU	1.2	1.0	0.7	0.8	0.9
Extra-EU	8.0	4.2	4.9	9.0	4.6	Extra-EU	0.3	0.3	0.4	0.4	2.6
Ginseng roots, fresh or dried						Ginseng roots, fresh or dried					
World total	0.7	0.8	0.7	0.7	0.9	World total	0.3	0.1	0.1	0.2	0.3
Intra-EU	0.1	0.1	0.2	0.1	0.2	Intra-EU	0.2	0.1	0.1	0.1	0.2
Extra-EU	0.6	0.7	0.6	0.6	0.7	Extra-EU	0.1	0.0	0.0	0.0	0.1
Plants & parts of plants, used in pharmacy, perfumery, or for insecticidal and similar purposes, excluding liquorice and ginseng roots						Plants & parts of plants, used in pharmacy, perfumery, or for insecticidal and similar purposes, excluding liquorice and ginseng roots					
World total	127.2	105.9	111.6	112.5	110.4	World total	42.5	40.4	42.1	38.7	38.1
Intra-EU	26.8	24.9	25.8	32.4	25.9	Intra-EU	28.7	26.0	28.8	25.6	25.9
Extra-EU	100.4	80.9	85.8	80.1	84.5	Extra-EU	13.8	14.4	13.2	13.1	12.1

Table 8. Exports and Imports – United States 1998-2002

Imports:						Exports:					
	1998	1999	2000	2001	2002		1998	1999	2000	2001	2002
thousand tonnes											
Medicinal Plants						Medicinal Plants					
World total	62.2	53.1	50.3	55.6	54.8	World total	16.6	15.3	17.4	15.8	12.0
Liquorice roots, fresh or dried						Liquorice roots, fresh or dried					
World total	12.7	14.1	10.6	11.2	12.2	World total	0.2	0.3	0.4	0.1	0.3
Ginseng roots, fresh or dried						Ginseng roots, fresh or dried					
World total	1.1	0.7	0.5	0.5	0.4	World total	0.8	0.6	0.5	0.5	0.5
Plants & parts of plants, used in pharmacy, perfumery, or for insecticidal and similar purposes, excluding liquorice and ginseng roots						Plants & parts of plants, used in pharmacy, perfumery, or for insecticidal and similar purposes, excluding liquorice and ginseng roots					
World total	48.5	38.3	39.2	43.9	42.0	World total	15.6	14.5	16.4	15.2	11.2

Source: COMTRADE (Japan), FAS, USDA (US), EUROSTAT (EU).

Almost 95 percent of the total EU imports of medicinal plants (HS 1211) (intra- and extra-EU) is of plants, parts of plants, seeds and fruit, used in perfumery, medicaments or for insecticidal, fungicidal or similar purposes, fresh or dried, cut and uncut, crushed or powdered (HS 121190). The remaining five percent are imports of liquorice roots (HS 121110) and ginger roots (HS 121190). The main suppliers of ginseng roots into the EU are China, the Republic of Korea and the US, whilst the main suppliers of liquorice roots are Turkmenistan, China and Azerbaijan.

EU exports of medicinal plants are mainly intra-EU. The main extra-EU markets are the US, Brazil and Japan, which mainly import liquorice roots fresh or dried from the EU, while Australia, the US and Switzerland are the main importers of ginseng roots¹³.

Herbal products can be marketed in Europe as either medicinal products or food products. Regulatory requirements in the EU are strict and growing (as with those in many developed countries). Claims made regarding medicinal products may only relate to the treatment and the prevention of disease for which the product has been authorized. Claims for foodstuffs may not relate to the treatment or prevention of a disease and only to normal body functions.

An EU-wide regulation on nutrition and health claims is currently under discussion and will strictly control the scientific substantiation of claims for food products. However, it will allow the use of disease risk-reduction claims, if they can be substantiated by scientific background and/or clinical data. Legislation on traditional herbal medicinal products was harmonized in early 2004 by Directive 2004/24/EG. This Directive will be fully applicable once incorporated into the national legislation of the 25 Member States of the EU by 31 October 2005.

Traditional herbal medicinal products are characterized by the fact that their efficacy can neither be demonstrated by clinical studies nor by bibliographical data. Their efficacy may only be apparent from long term traditional use and experience. Long term use is defined as a minimum use for 30 years, of which at least 15 years of safe use must be demonstrated within the Community. If the applicant can only demonstrate less than 15 years within the Community, the country where the registration is filed may submit the application to the European Medicines Agency (EMA) for decision.

the ten premodern classics of Chinese medicine selected in China as nationwide research priorities within the Chinese medical literature.

IV. INTERNATIONAL TRADE

A. INTRODUCTION

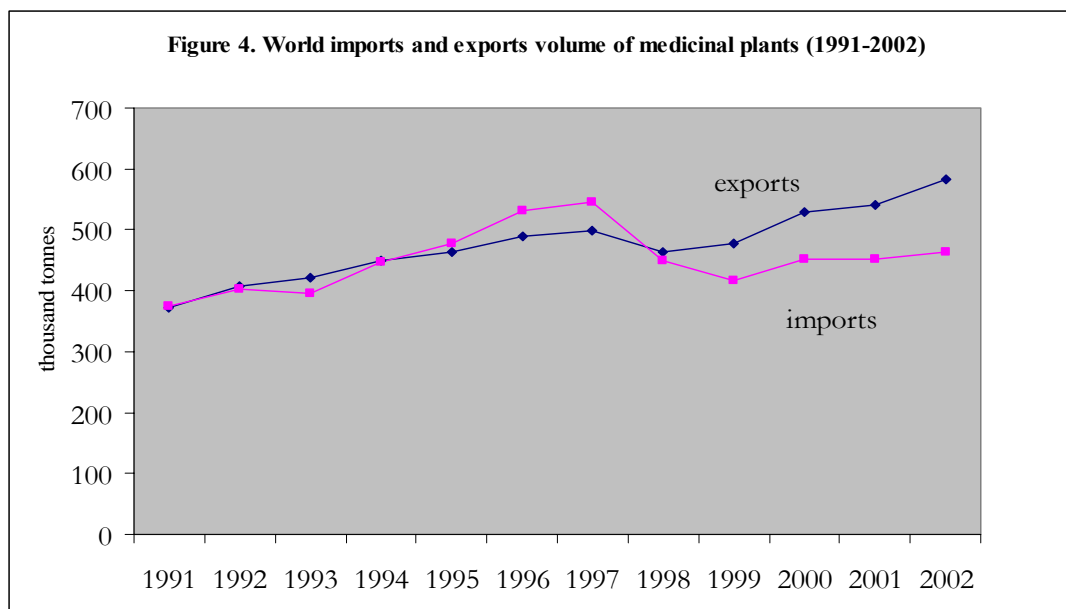
Trade in medicinal plants is difficult to estimate accurately because much of the local trade is either unrecorded or poorly classified and because medicinal plants are also used in non-medicinal end-uses and not reported separately. Domestic trade, in particular, is poorly recorded. Rising global interest in medicinal plants has also created a sustained and largely “underground” trade in plant materials, many of which are being collected in LDCs in an unregulated manner, resulting in indiscriminate harvest of wild varieties and serious damage to biodiversity. It is, therefore, not possible to assess global trade in all medicinal plants. In addition, official trade statistics either do not identify the plants individually or do not separate their medicinal use from other usage.

It should be noted that this report focuses on international trade issues in plant material. Medicinal plants are, however, inputs into a wide range of materials that are used in medicinal or health products (see section III.) and modified forms or different products which contain elements of these plants are on-trade. These latter are not considered in this report because of the difficulty of identifying them (e.g. many are traded as medicines or health foods rather than as medicinal plants). Germany, for example, is one of the main importers of medicinal plants and also a major international producer and exporter of medicines.

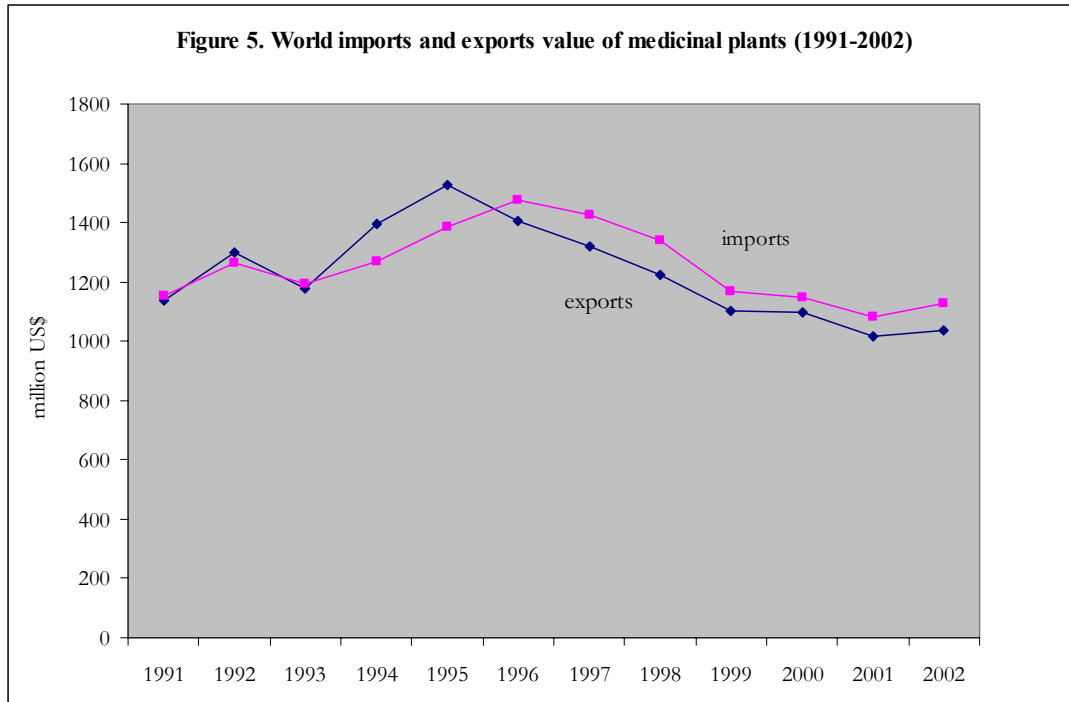
Accepting these data limitations, the following information provides a broad picture of the international trade although, for the above reasons, the data shown should only be considered as indicative¹⁴.

B. MARKET OVERVIEW

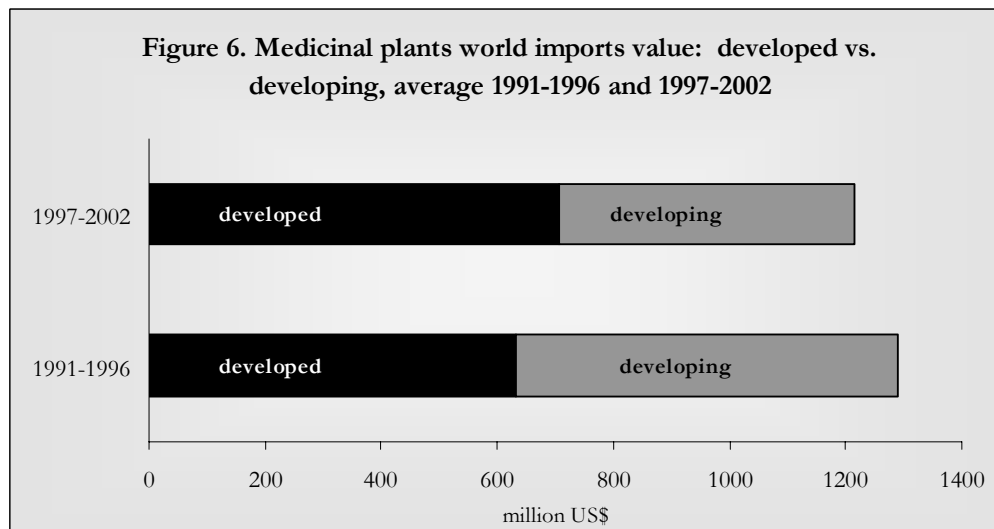
In volume terms both global exports and imports have been increasing, although the total value has been declining, suggesting falling average unit prices.

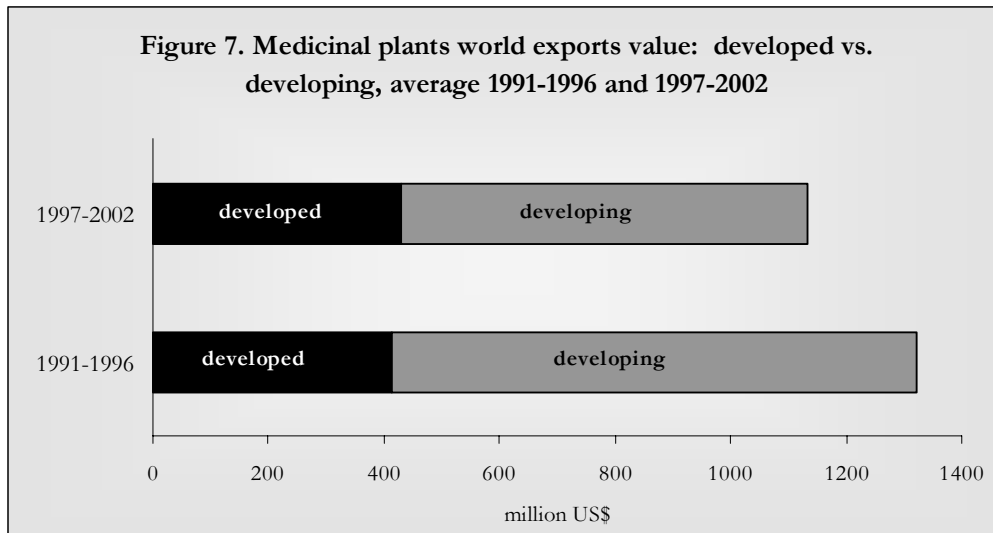


¹⁴ Institute of Chinese Materia Medica, China Academy of T¹⁵ See Section II for further comments on this issue.

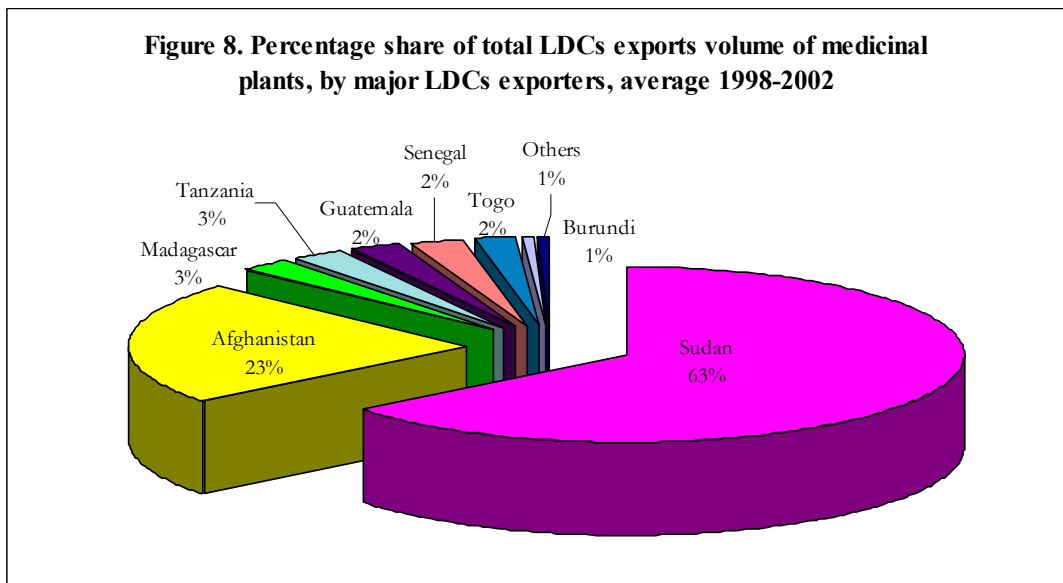


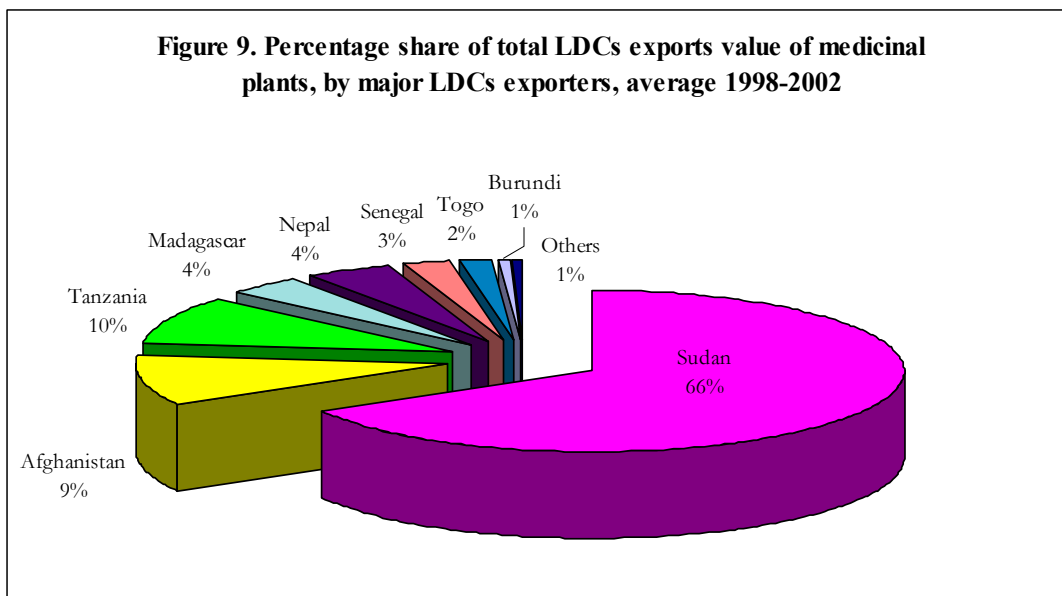
Despite the fact that consumers in developed countries are not using traditional medicines as frequently as those in developing countries, in absolute terms developed and developing countries import similar values of medicinal plants. Developing countries, however, are the dominant exporters.





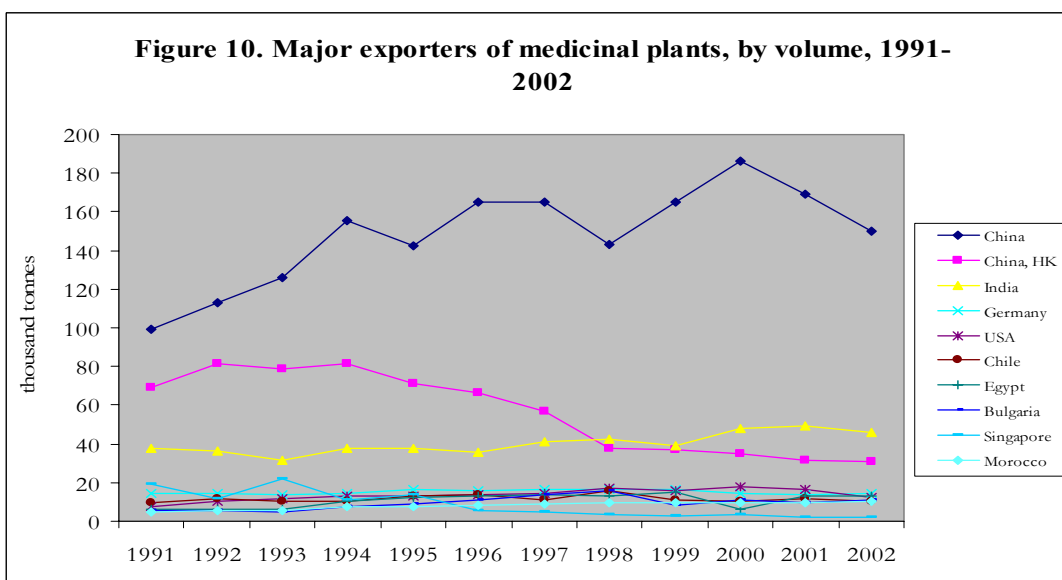
The contribution of LDCs as exporters is shown in the graphs below. Sudan and Afghanistan can be seen to be the dominant exporters in this group over the period 1998-2002, although as shown in Annex Tables 2-5 their share in global trade was small (less than 2 percent).

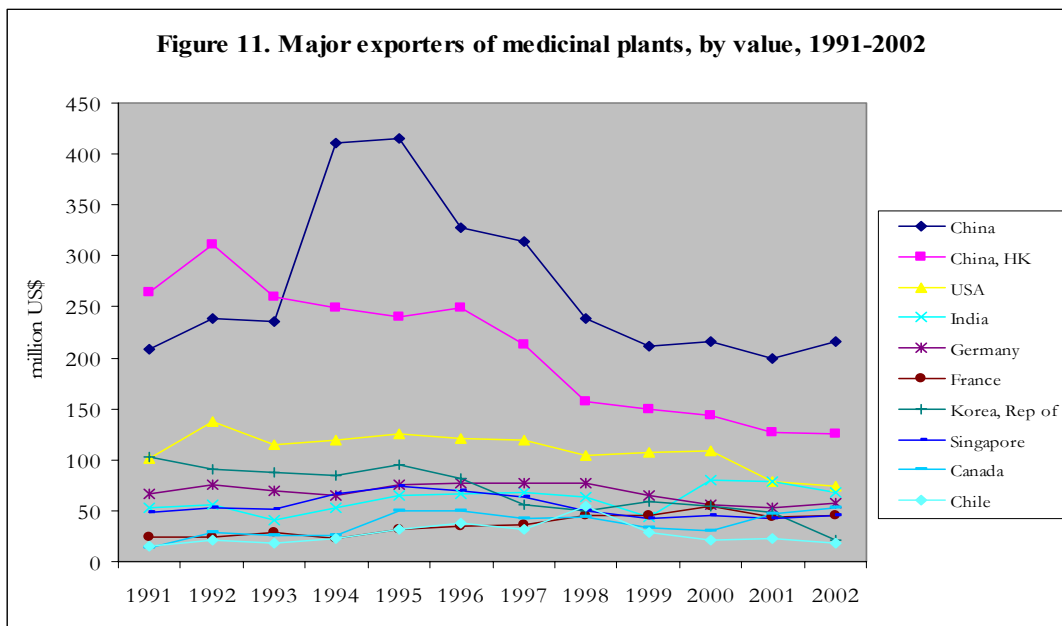




C. EXPORTERS

Markets for herbal medicines in developed countries – especially in Europe and the United States – are highly regulated and very difficult to penetrate, particularly for developing countries and LDCs whose materials have not undergone the stringent tests required by developed country pharmaceutical manufacturers before mass production. Developed countries therefore tend to export unprocessed or slightly processed materials. In the case of India, around 80 percent is export of raw materials including dried plants, extracts and isolated ingredients. The export of finished medicinal products, mostly homoeopathic and ayurvedic medicines, accounts for the remaining 20 percent. Some developing countries with a long tradition of use of medicinal plants are major exporting countries – China, the Republic of Korea, Chile, India, Brazil and Thailand, for example. Exports are predominantly in raw material form and only to a lesser extent finished products. With their large populations and ancient heritage of traditional herbal-based medicines, China and India are two of the world's largest markets for medicinal plants, though not necessarily the largest traders.



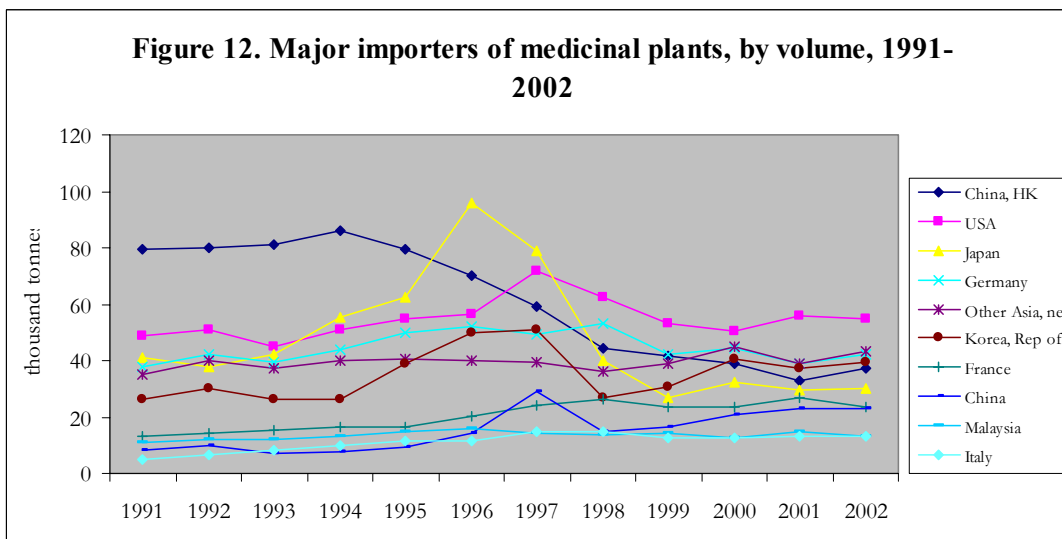


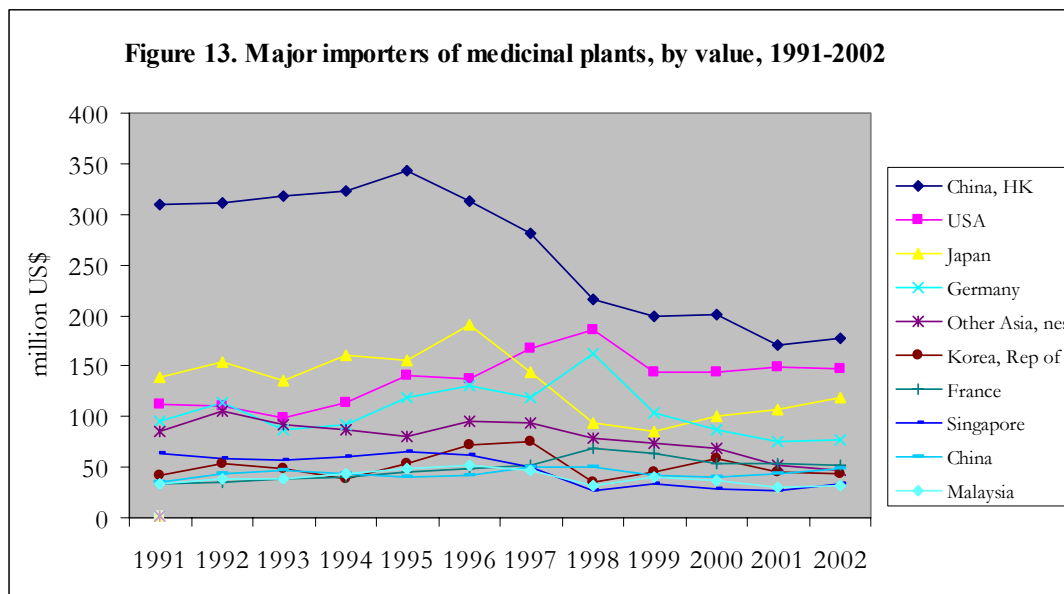
D. IMPORTERS

The main importing countries are, by value, China, Hong Kong Special Administrative Region (SAR); the US; Japan and Germany. The latter is the leading importer within Europe because its pharmaceutical companies are major players in the world market.

The market for herbal products is very diverse throughout the world, with each region or each country having its own prerequisites for bringing those products on the market.

The classification of the products may also vary widely among the different countries. In one country a herbal substance may be classified as medicine, in another as food. Food and medicine often require different quality approaches, as the quality assurance systems used for food (hazard analysis and critical control point [HACCP] or food GMO, for example) tend to differ from the systems to be used for medicines (pharmaceutical good manufacturing practice [GMP]). Additionally, the heavy metal and residue limits tend to vary between the different product groups. It is therefore important that these variations are accommodated and guaranteed by the country of origin.





In order to meet these types of variations, the basic requirements for gaining entry into developed country markets are evidence of:

- Well documented traditional usage;
- Single-plant medicines;
- Medicinal plants free from pesticides, heavy metals, etc;
- Standardization based on chemical activity profiles; and
- Safety and stability.

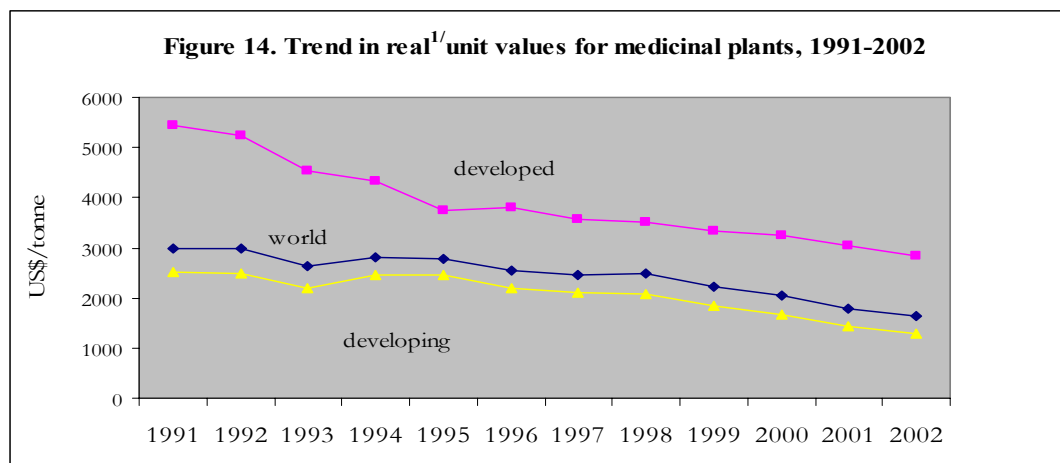
E. PRICES

It is very difficult to generalize regarding prices because of the wide range of products and materials included as medicinal plants. An indication of international prices for a number of products in selected markets, and at varying pricing points is given as general information in Annex Table 1. This highlights the variability shown in different markets for different materials and product forms, and between different pricing points (for example, fob and cif). It emphasizes that any assessment of market potential needs to be done at a product and market level.

At a macro level, it appears that average real prices were falling over the period 1991-2002.

As with many agricultural products in developed countries the share received by local producers and gatherers for raw plants is usually low¹⁵. Since the cost of production in organized cultivation is invariably higher than the prices paid for wild collections, it is difficult to persuade communities to undertake organized cultivation. Research in Nepal has clearly indicated that there is a significant difference between the returns from wild collections and those from cultivation of medicinal plant species in that country¹⁶. The differences in profitability have been, and remain, a serious disincentive to organized cultivation.

¹⁶ Seti Project implemented by IUCN, Nepal; Pers. Com. Sagendra Tiwari.



^{1/} Adjusted for inflation using the MUV deflator (source: International Financial Statistics, IMF).

F. TARIFFS

Imports into many markets are affected by government import restrictions. The severity of such restrictions can affect the accessibility of some markets to imports of medicinal plants. The most obvious of these are tariffs, but others such as quotas, phytosanitary standards, and packing requirements may also exist and create difficulties for medicinal plant trade. Table 9 indicates tariff rates for medicinal plants for a number of markets. In general, rates on most materials into developed countries are zero or low. Those on a number of products into developing countries which have a local industry they wish to protect are substantially higher (although there may be exemption to some rates). For example China indicates rates of 22 percent *ad valorem* on some of its imports; India has a rate of 15 percent (with some exemptions); Turkey 35 percent; and Bangladesh 22.5 percent. This level of tariff makes exporting to these markets extremely difficult. On the other hand tariffs into the EU, USA and Japan are zero or very low.

Table 9. Typical tariff rates for medicinal plants in selected markets

Plants and parts of plants (including seeds and fruits), of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not cut, crushed or powdered	
Country (2003)	Applied MFN rate
	(... Percent ...)a/
EU	free
USA	free-6.8
Japan	free-4.3
China	6.2-22.0
India	15.0*-29
China, Hong Kong SAR	free
Thailand	1.0-31.0
Turkey	35.0
Bangladesh	7.5-22.5
Pakistan	10.0
Chile	6.0
Singapore	free

a/ ad valorem, unless otherwise specified.

* Rate reduction under general exemption.

For full details see Annex Table 13

V. CONSTRAINTS TO THE DEVELOPMENT OF TRADE

While developing countries, especially the Least Developed Countries (LDCs), face opportunities for developing the markets for medicinal plants and their products, they also face a number of limitations and constraints which must be overcome in meeting the demands of the developed country markets.

For the use in medicines and health end uses markets require medicinal plants and their materials which are:

- Consistent in quality and free from contaminants. They require unadulterated material, no unwanted plants or ingredients, reliable botanical identification;
- Materials which contain the required medicinal and health ingredients;
- For large scale production, consistent and reliable volumes; and
- Materials which meet the (often varied) regulatory requirements of different markets.

These requirements imply supplies which are carefully selected, harvested, and sensitively handled and stored throughout the post-harvest and transport operations.

Many of these requirements are difficult to meet fully under wild harvesting conditions and/or where small scale and often untrained operators are involved. Even under cultivation, when many smallholders are involved these conditions are less likely to be consistently met. Improvements imply better training, collection, information, supervision, testing and post-harvest facilities.

De Silva, 1997 indicated that the following are common constraints that developing countries face in successfully moving from trading in unprocessed medicinal plants to processing medicinal plants, and in being more competitive in global markets. Many of these are common limitations which must be addressed in all aspects of the medicinal plant industry – not just in the processing area:

- Poor harvesting (indiscriminate) and post-harvest treatment practices;
- Lack of research on development of high-yielding varieties, domestication, etc.;
- Inefficient processing techniques leading to low yields and poor quality products;
- Poor quality control procedures;
- Lack of research and development on product and process development;
- Difficulties in marketing;
- Lack of local markets for primary processed products; and
- Lack of access to latest technological and market information.

Lack of knowledge of their supply capabilities. Few countries have carried out an inventory of species, and determined the sustainable off-take of their national resources. Prospects for cultivation are yet to be studied. At present, few have the resources and institutional capability to advise on policy or the regulatory mechanisms to provide consistently high-quality products. Know-how in processing technologies is also deficient, as is the availability of sustainable production processes.

Limited knowledge of plant properties. There is limited knowledge of the herbs' medicinal properties beyond traditional knowledge and belief. This restricts the use and marketability of the plants.

Intellectual property rights. An issue of potentially major importance to all developing country exporters is intellectual property. Plants have been used in traditional medicines for centuries and hence cannot be protected by patent. They can be registered as individual or regional trademarks, with explicit rules of origin. Knowledge of the whole intellectual property rights (IPR) field is limited in the developing countries, as is access to IPR systems. This issue is currently under discussion, debate and negotiation on a broader scale than medicinal plants in the World Trade Organization (WTO).

VI. CONCLUSIONS

This report has provided an overview of trends and conditions relating to medicinal plants, their production and markets. It has not been possible to provide a detailed analysis because of the complexity of the product group and the limited market information that is available. The report should therefore be seen as an initial effort to increase awareness of both the potential and problems associated with trade in medicinal plants.

Some key features of the trade in medicinal plants are highlighted by this review:

- Pressure on the natural resource is increasing for the plants which are in greatest demand. In many situations this is causing concern for the long-term sustainability of the natural resource. Appropriate management of medicinal plant resources is needed to help conserve biodiversity and provide critical resources to build sustainable rural livelihoods. Solution to the problems requires greater cooperation between those producing, harvesting and trading in the plant material, including governments which often have responsibility for much of the resource.
- The increasing market for the plant materials that are used in health and medical products. It is clear that interest in, and therefore the market for, products which are based on natural materials and which are produced without harmful chemicals or pesticides has been increasing rapidly in many countries as consumers become increasingly health-conscious, and the search for cures for many major health problems continues. Consumers in developed countries are becoming more aware of natural products; and are demanding greater information on the ingredients and the additives found in their food, drink and health products – including information on processes used to grow the plant raw materials used in the products they are purchasing¹⁷. In some situations they are also willing to pay higher prices.
- International trade in medicinal plants is expanding. As a result of the above, interest in medicinal plants trade has been increasing. This has not as yet, however, resulted in substantial benefits to developing countries or particularly benefits to growers and producers. Export markets have not seen increasing prices for raw materials. There are a number of reasons for this, including the fact that much of the resource in developing countries is harvested in the wild and by poor people. As a consequence of this, and of the long market channels used, pressure is maintained on prices and on the quality and reliability of material supply. For the export markets, trade is largely in unprocessed or slightly processed form, with much of the return going to traders and other intermediaries.
- Regulation is increasing. Greater awareness of the complex and increasingly stringent health and safety regulatory requirements that must be met in the main developed country markets is needed. Information on the origin and the quality of raw material is of utmost importance. Products can only be marketed if the steady quality of the raw material can be ensured. The introduction of new herbs to markets is often very difficult and needs appropriate scientific documentation. For this reason developing countries must improve their understanding of the regulations and ensure they are able to meet them, if they are to successfully trade into these markets. Even the requirements in the domestic markets of the developing countries themselves are becoming increasingly complex.
- There is a lack of detailed, accurate, information available. There is a need to improve the extent and the accuracy of the statistics that are available on all aspects relating to the markets and trade in medicinal plants. This includes a need to overcome difficulties

¹⁷ See for example discussions on certification processes, FAO, 2003; Vantomme & Walter, 2003.

associated with a) definitions b) statistical classifications c) obtaining accurate data. Without this information it is difficult to develop an accurate picture of the production, trade conditions, and the market requirements for these materials and the products produced from them, and consequently for countries and companies to develop effective industries.

A. AREAS FOR IMPROVEMENT

In the light of this review, a number of actions are considered important at a country level for improving the medicinal plant industry and enhancing the development of a more effective trade in medicinal plants and their products in developing countries.

- *Establish a critical mass of cultivable land in order to guarantee larger consistent supply.* Promote farmer cooperation at village or regional level to guarantee a critical mass of cultivable land. Collectors should be organized into associations and clusters so that changes can be introduced in an effective and efficient manner.
- *Reduce the number of intermediaries* involved in the distribution and marketing chain, and increase the negotiating power of the producers and collectors. This would enhance the profit of primary farmers and collectors, many of whom are among the poorest of the population.
- Improvements are needed in the areas of *post collection handling, value addition and product presentation.*
- *Research and development on the chemical composition and the effect of poor practices on the active ingredients* of the selected species. These efforts would be facilitated by improved cooperation and coordination between many of the groups with an interest in this subject – namely those involved in education, research, production, distribution and marketing. Greater cooperation between researchers and farmers needs to be encouraged. Associated with these efforts, there is a need for improved product development.
- *Country authorities to develop effective strategies* to support improved cultivation, quality controls systems, provision of high quality planting materials, and the encouragement of investments in new technologies.
- *Undertake a more in-depth global overview* of the demand and supply of medicinal plants, herbal products and herbal drugs in order to clarify market issues, and consider more effective solutions. Many of the issues require more country and market-specific analysis because of the differing market conditions, approaches used, and materials and products being focussed on. Case studies of successful marketing approaches being used may assist other organisations or countries.
- Developing countries should aim to *cultivate their resources in a sustainable manner* and enter markets at the early stages of the value chain by first supplying developed country manufacturers with unprocessed raw materials. They can then move towards providing herbal supplements before tackling the highly regulated market for herbal remedies.
- *Identify products which would be most amenable to sustainable commercial development* and industrial processing in the supplying countries.

-
- *Value-addition through processing, and improved marketing* of the medicinal plants. It is also important that the benefits of the expanded interest in medicinal plants be more equitably shared.
 - *Enterprise development and promotion of the complete market chain.* A strong market orientation is essential for the development of the sector. A holistic approach needs to be adopted for the promotion of trade. Specific interventions which only target the collectors are insufficient. The organic nature of the produce should be explored and capitalized on for export marketing.

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ANNEX TABLES

Annex Table 1. Indicative Prices in Selected Countries at Different Pricing Points

Raw Materials (Indicative Prices)				
UNITED STATES OF AMERICA				
		Sep-01	Mar-02	
Product	Source	Price		Destination
		US\$/kg		
Peppermint leaf	USA		0.5-0.8	FOB US ports
Valerian root	Europe	1.5-2.0	1.5-2.0	CIF US ports
Ginger	China	1.5-1.8	1.6-1.8	FOB New York
Turmeric (5% Curcumin)	India	1.3-1.5	1.2-1.4	CIF New York
Saw Palmetto	USA	2.6-3.4	2.2-2.6	FOB Florida
Chillies S4	India	1.10-1.25	1.10-1.25	CIF US ports
WESTERN EUROPE				
		Sep-01	Mar-02	
Product	Source	Price		Destination
		US\$/kg		
Dandelion leaf	Bulgaria	1.9-2.0	1.9-2.0	FOB Central Europe
Valerian root	Poland	1.9-2.5	1.9-2.5	CIF UK Ports
Elder Flowers	Hungary	3.6-4.5	3.5-4.2	CIF UK Ports
Aniseed	Southern Europe/Turkey	1.9-2.1	1.5-2.0	FOB Central Europe/CIF UK ports
Echinacea herb	USA		0.8-1.0	CIF European Ports
Ginger whole fingers	China	1.6-2.8		CIF North Europe
Milk Thistle herb	East Europe	0.7-0.9	0.7-0.9	FOB Central Europe
Fennel	East Europe	1.3-1.5	1.3-1.5	FOB Central Europe
Borage Oil	East Europe	8.0-10.0		CIF UK Ports
Evening Primrose Oil	East Europe	10.5-12.5	10.5-12.5	CIF UK Ports
EASTERN EUROPE				
		Sep-01	Mar-02	
Product	Source	Price		Destination
		US\$/kg		
Valerian root	Poland		1.75-1.85	CIF UK Ports
St John's Wort herb	Bulgaria	1.5-1.6	1.5-1.6	CIF North Europe
Milk Thistle seed	East Europe	0.7-0.9	0.7-0.9	FOB Central Europe
Fennel	East Europe	1.3-1.5	1.3-1.5	FOB Central Europe
Aniseed	Southern Europe	1.9-2.1	1.9-2.1	FOB Central Europe
Dandelion leaf	Bulgaria	1.9-2.0	1.9-2.0	FOB Central Europe
Source: MNS				

CHINA		Indicative Import Prices for FCL		
		Sep-01	Mar-02	
Product	Source	Price		Destination
		US\$/kg		
Chillies (small)	China		1.6-1.8	CIF North America
Ginger whole fingers	China	1.3-1.6	0.9-1.1	CIF European Ports/CIF Hong Kong
Green Tea leaf	China		23.0-7.0	FOB China Ports
Grade 1 Korean Ginseng	Korea	70.0-75.0		Wholesale
Turmeric fingers	China	0.6-0.8	0.6-0.8	FOB Chinese Ports
Cassia Bark whole	China	0.9-1.1	0.9-1.1	CIF Europe
Garlic powder	China		0.5-0.8	CIF Hong Kong
Garlic whole	China	1.3-1.4		CIF USA
JAPAN		Indicative Import Prices for FCL		
		Sep-01	Mar-02	
Product	Source	Price		Destination
		US\$/kg		
Cassia Bark	VietNam	1.7-2.0	1.7-2.0	CIF Japanese Ports
Ginger whole fingers	China	1.6-1.8	1.7-1.9	CIF Japanese Ports/FOB Chinese Ports
Grade 1 Korean Ginseng	Korea	60.0-70.0		CIF Japanese Ports
Turmeric fingers	Alleppey India		0.8-0.9	CIF Japanese Ports
INDIA		Indicative Import Prices for FCL		
		Sep-01	Mar-02	
Product	Source	Price		Destination
		US\$/kg		
Ginger unbleached	Cochin	1.4-1.6	1.1-1.2	CIF Japanese Ports/CIF US Ports
Turmeric fingers	Madras	0.5-0.6	0.4-0.6	CIF European Ports
Chillies S4 type	India	1.2-1.4	1.2-1.4	CIF USA
Psyllium 95% whole husk	Tinnevely	2.4-2.6	2.5-2.7	FOB South Indian ports
Source: MNS				

Botanical Raw Materials (Indicative Prices)					
NORTH AMERICA					
		Sep-02	Sep-03	Dec-03	
Product	Source	Price			Destination
		US\$/kg			
American ginseng root	USA/Canada	45-176	88-154	132-154	FOB Grower
Black cohosh rhizome *	USA	8.3-9.9			FOB Eastern US
Black cohosh rhizome	Canada		6.6-15.2	6.9*	C&F Canada
Black cohosh rhizome **	USA	20			FOB Pacific NW
Chamomile flower	Canada		4.6-7.4	3.1	C&F Canada
Coriander seed	Canada	0.75			FOB New York
Coriander fruit	Canada		0.3-0.5	0.43-0.46	FOB Grower
Cascara sagrada bark*	USA/Canada	3.8-9.9			FOB Pacific NW
Echinacea flowering tops**	USA/Canada	3.1-7.7	3.5-7.1	3.1-8.6	FOB Pacific NW
Echinacea angustifolia root**	USA/Canada		18.7-41.9	12.6	FOB Pacific NW
Echinacea pallida root**	USA	4.4-17.8			FOB Pacific NW
Echinacea purpurea root**	USA/Canada	8.6-14.6	7.7-18.2	13-26	FOB Pacific NW
Flaxseed	Canada	0.24-0.26	0.29	0.26-0.28	FOB Thunder Bay
Garlic bulb powder	USA	0.8			FOB Pacific NW
Goldenseal rhizome*	USA	74.9			FOB Pacific NW
Goldenseal rhizome**	USA		88.1-101.4	88-101	FOB Pacific NW
Hop strobile	USA	7.1-10.5		10.5	FOB Pacific NW
Mexican wild yam root	Mexico		12.1	3.9-6.9	FOB California
Nettle herb**	USA		4.4		FOB Pacific NW
Peppermint leaf	USA	2.2	2.1-2.2	2.9-2.4	FOB Pacific NW
Peppermint leaf**	USA	8.7-9.7	8.7-9.7	7.7-8.8	FOB Pacific NW
Red clover herb**	USA/Canada		6.1-6.4	6.8	FOB Pacific NW/C&F Canada
Saw palmetto fruit*	USA	2.5-4.0			FOB Florida
Slippery elm bark*	USA	14.4-18.7		14.4-22.3	FOB Eastern US/FOB West Coast
Spearmint leaf**	USA		6.0-7.3	6.1-8.8	FOB Pacific NW
Wild black cherry bark*	USA	7.7-13		7.7-8.8	FOB Eastern US/FOB West Coast
* Wild collected					
** Certified organic					

EASTERN EUROPE					
		Sep-02	Sep-03	Dec-03	
Product	Source	Price			Destination
		US\$/kg			
Aniseed	Turkey	2.0-2.1	1.9-2.1	1.9-2.1	CIF New York
Aniseed**	Turkey	7.3			CIF San Francisco
Coriander fruit	Bulgaria/Bulgaria & Romania		0.62	0.66	CIF New York
Coriander seed	Austria	2.2			CIF San Francisco
Cumin fruit	Turkey		1.34	1.3	CIF New York
Fennel fruit	Egypt/Turkey	1.2	0.96	1.2	CIF New York/Marseilles
Fenugreek seed	Turkey	0.79	0.75	0.75	CIF New York
Rosemary leaf	Turkey		1.32		CIF New York
Sage leaf	Albania		1.85		CIF New York
** Certified organic					
Source: MNS					

CHINA					
		Sep-02	Sep-03	Dec-03	
Product	Source	Price	Destination		
		US\$/kg			
Asian ginseng root, whole	China	61	61.7	61.7	FOB California
Astragalus root	China	7.0-15.0	7.5-15.4	7.2-15.4	FOB California
Cassia bark	China	1.3 (ton)			CIF New York
Dong quay root, whole	China	8.8	8.8-12.5	8.8-12.5	FOB California
Eleuthero root	China	6.6	6.6	6.6	FOB California
Fennel fruit	China		1.1		Rotterdam
Garlic bulb	China	0.5-1.2 (ton)	1.12	1.12	CIF US Ports
Ginger rhizome	China	1.1-1.3 (ton)	1.1-1.2	1.6	CIF New York
Green tea leaf	China	1.1-2.0 (FCL)	2.1	1.9-4.4	CIF California
Licorice root	China	6.6-8.8	6.6-8.8	4.4-4.6	FOB California
Rhodiola root	China	55	55	55	FOB California
Safflower	China		8.1-8.8	4.18	California
Schisandra fruit	China	10.8-12.5	11	12.5	FOB California
Star anise fruit	China		4.3-4.5	3.5-4.5	US Ports
INDIA					
		Sep-02	Sep-03	Dec-03	
Product	Source	Price	Destination		
		US\$/kg			
Aniseed	India		1.6-1.8		EU Ports
Cassia bark	Chennai	1.22	1.19	1.16	FOB India
Cinnamon bark	Delhi	1.23	1.25	1.19	FOB India
Coriander fruit	Mumbai		0.62	0.59	FOB India
Fennel fruit	India/Mumbai	1.0	1.06	1.04	FOB India
Fenugreek seed	Mumbai		0.36	0.34	FOB India
Garlic bulb	Mumbai	0.9	0.41	0.37	FOB India
Ginger rhizome	Cochin	0.76	1.2	1.6	FOB India
Green tea leaf	South India	1.9-3.5 (FCL)			CIF Bay Area
Gymnema leaf	India		0.85 (FCL)		Indian Port
Neem leaf	India	3.9	3.9		FOB India
Psyllium husk	India	3.7-4.1	3.7-4.1	3.6-4.4	FOB India
Senna leaf	India		0.85	3.3-3.9	FOB Mumbai
Senna pods	India		0.68		FOB Mumbai
Tribulus fruit	India	5.9	5.9		FOB India
Turmeric rhizome	India/Cochin/Mumbai	0.8-1.0	1.05-1.2	1.1-1.3	FOB India

NORTH AFRICA				
		Mar-03	Dec-03	
Product	Source	Price	Destination	
		US\$/kg		
Basil leaf	Egypt	1.21-1.32		NY Spot Price
Cola nut	Ghana	4.25	4.25	FOB Ghana
Fennel fruit	Egypt	1.3	1.39	NY Spot Price
Ginger rhizome	Nigeria	1.76		NY (short supply)
Griffonia seed	Ghana	7.0	7	FOB Ghana
Gymnema leaf	Ghana	5.0	5	FOB Ghana
Leleshwa leaf	Kenya	5.0		Kenya
Myrrh oleo-gum-resin	Eastern Africa	6.0	6	FOB Ghana
Sweet marjoram leaf	Egypt	1.49	1.59	NY Spot Price
Rosemary leaf	Morocco	1.32	1.32	NY Spot Price
Thyme herb	Morocco	1.65	1.54	NY Spot Price
Source: MNS				
AFRICA				
		Sep-03		
Product	Source	Price	Destination	
		US\$/kg		
Basil leaf	Egypt	1.01-1.28	New York	
Bitter melon whole plant	Ghana	5.0	FOB Ghana	
Cola nut	Ghana	4.25	FOB Ghana	
Coriander fruit	Morocco	0.77	Antwerp	
Elephant vine seed	Ghana	10.50	FOB Ghana	
False yohimbe stem bark	Ghana	3.0	FOB Ghana	
Fennel fruit	Egypt	1.39	New York	
Ginger rhizome	Ghana	3.5	FOB Ghana	
Griffonia seed	Ghana	7.0	FOB Ghana	
Gymnema leaf	Ghana	5.0	FOB Ghana	
Myrrh oleo-gum-resin	Eastern Africa	6.0	FOB Ghana	
Sweet marjoram leaf	Egypt	1.45	New York	
Rauwolfia root	Ghana	9.5	FOB Ghana	
Rosemary leaf	Morocco	1.17	New York	
Shea butter	Ghana	2.50	FOB Ghana	
Thyme herb	Morocco	1.47	New York	
Velvet bean seed	Ghana	10.5	FOB Ghana	
Source: MNS				

Table 2: World exports volume of Medicinal plants												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
WORLD	371.9	406.4	421.1	449.4	463.1	489.0	497.5	463.7	478.0	529.1	541.4	583.6
DEVELOPED	60.8	76.6	78.0	85.3	108.0	105.7	118.0	129.6	124.4	127.2	120.3	132.3
North America	8.0	10.5	11.9	13.8	14.0	15.3	15.8	19.3	17.9	19.7	18.8	15.7
USA	7.7	10.0	11.4	13.2	12.9	14.0	14.4	17.4	15.9	18.0	16.2	12.6
Canada	0.3	0.5	0.5	0.6	1.0	1.3	1.4	1.9	2.0	1.7	2.6	3.1
Europe	49.4	61.5	59.2	67.2	87.7	78.2	88.8	94.4	83.4	84.3	82.3	94.7
EU	32.3	34.6	35.1	39.0	54.1	38.7	45.9	44.1	40.7	40.2	39.7	47.6
Germany	14.4	14.2	14.0	14.6	16.5	15.5	16.5	16.5	16.1	14.3	13.6	14.2
France	5.6	5.1	4.8	3.9	5.7	6.3	10.0	9.0	9.2	10.1	8.1	11.0
Spain	3.1	3.2	2.6	3.1	3.1	3.4	4.3	4.2	4.8	5.7	7.9	11.9
Italy	1.7	2.0	2.6	3.4	4.4	5.3	4.2	4.0	3.8	3.7	3.6	3.1
Ireland	0.8	1.1	3.3	7.1	17.0	0.6	0.6	0.5	0.3	0.7	0.7	0.6
Belgium-Luxembourg	0.8	1.3	1.5	2.2	2.5	1.5	2.2	2.7	1.7	1.9	2.5	2.1
Austria	1.5	1.7	1.5	1.6	2.3	2.3	3.2	3.7	1.6	1.6	0.8	0.7
Netherlands	1.0	1.4	2.3	1.1	1.0	2.3	2.5	1.5	1.5	1.0	1.4	1.5
Other Europe	17.1	27.0	24.1	28.2	33.6	39.5	42.9	50.4	42.7	44.1	42.6	47.1
Poland	2.9	2.9	4.3	4.8	5.4	7.4	8.9	10.2	11.1	11.2	10.6	13.0
Bulgaria	5.6	5.5	4.7	7.2	9.1	10.8	13.8	15.4	8.3	10.9	9.9	11.3
Albania	5.9	6.2	5.0	5.7	6.2	6.9	6.3	8.2	9.0	7.5	8.7	9.1
Czech Rep.	0.3	0.5	1.9	2.7	2.7	4.0	2.1	2.6	5.0	5.0	4.9	4.9
Hungary	2.2	7.3	3.0	3.1	5.4	4.1	3.9	6.2	3.1	2.8	2.5	2.8
Croatia	0.0	1.8	1.7	1.6	1.3	1.3	1.1	1.3	1.4	1.6	1.6	1.9
TFYR Macedonia of	0.0	0.0	1.5	1.7	2.5	1.4	1.9	1.9	1.1	1.7	1.2	0.7
Serbia and Montenegro	0.0	1.5	0.3	0.0	0.0	1.4	1.6	2.3	1.6	1.6	1.6	1.7
CIS	0.1	0.1	3.2	1.2	1.7	6.4	6.8	8.3	8.1	9.1	10.2	13.1
Azerbaijan	0.1	0.1	0.1	0.1	0.2	1.9	1.6	2.3	3.3	3.0	4.4	5.4
Ukraine	0.0	0.0	0.0	0.0	0.0	1.9	1.7	1.7	1.2	1.3	0.9	0.1
Turkmenistan			3.1	0.9	1.3	2.0	3.0	3.5	2.1	2.9	3.3	5.6

Other developed	3.4	4.5	3.6	3.1	4.6	5.8	6.6	7.6	14.9	14.1	9.0	8.8
South Africa	0.0	0.1	0.4	0.4	2.0	2.7	3.5	4.9	11.3	9.9	3.9	5.2
Australia	3.0	2.9	2.5	2.2	2.3	2.7	2.7	2.2	3.0	3.7	4.8	3.2
DEVELOPING	311.1	329.8	343.2	364.1	355.1	383.3	379.6	334.1	353.6	401.9	421.1	451.4
Africa	16.4	18.9	19.3	26.8	28.2	33.2	36.8	34.9	36.8	33.4	33.4	39.4
Egypt	6.0	6.2	6.0	10.5	12.1	13.3	13.8	12.8	15.0	6.0	12.9	12.7
Sudan	2.4	3.4	4.3	6.4	5.4	7.4	9.4	8.3	9.2	12.9	6.2	12.7
Morocco	4.9	5.8	5.5	7.2	7.8	8.0	9.0	9.6	9.6	9.8	9.6	10.2
Cameroon	0.9	1.3	0.7	1.2	1.1	1.8	1.4	1.7	0.8	1.0	1.2	1.3
Tunisia	0.3	0.7	0.4	0.4	0.5	0.6	0.7	0.7	0.7	0.8	1.1	1.0
Kenya	0.6	0.5	0.8	0.6	0.4	0.8	0.7	0.6	0.5	0.4	0.2	0.2
Madagascar	0.6	0.4	0.7	0.2	0.4	0.3	0.5	0.4	0.4	0.4	0.4	0.5
Latin America and the Caribbean	24.5	26.5	23.5	22.4	26.1	36.0	36.0	38.1	32.9	60.5	103.4	151.9
Central American and the Caribbean	8.1	8.0	5.3	5.9	6.7	15.9	18.7	14.9	13.7	43.1	82.6	131.0
Mexico	8.0	7.9	4.7	5.2	6.2	15.1	17.6	13.9	13.0	42.6	81.9	130.2
Dominican Rep.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2
Costa Rica	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1
South America	16.4	18.5	18.2	16.5	19.4	20.1	17.3	23.2	19.2	17.4	20.8	20.9
Chile	9.7	11.6	9.9	10.4	12.9	13.7	11.1	15.8	11.0	9.9	11.9	10.0
Argentina	3.2	2.4	2.7	2.3	2.8	2.4	2.1	2.2	2.0	1.6	1.4	1.2
Peru	1.5	2.7	3.2	1.8	1.5	1.6	1.3	1.7	1.9	2.4	2.5	3.4
Brazil	1.0	1.1	1.2	0.9	1.0	1.2	1.3	1.7	1.7	1.8	1.8	2.0
Bolivia	0.6	0.3	0.2	0.5	0.5	0.6	0.6	0.6	0.6	0.3	0.5	0.4
Ecuador	0.1	0.1	0.2	0.2	0.3	0.2	0.3	0.2	0.4	0.8	1.9	2.3
Near East in Asia	13.3	13.6	14.8	11.9	12.6	17.9	22.3	17.2	18.1	10.4	10.8	11.5
Turkey	5.0	3.2	3.3	3.2	4.2	3.7	4.3	4.5	5.4	2.9	2.7	3.1
Afghanistan	4.6	1.8	3.9	3.0	2.6	9.0	13.0	7.6	6.1	2.0	0.6	1.2
Iran	0.8	4.1	4.4	1.9	2.4	3.4	2.6	2.4	3.6	3.3	4.2	3.7
Syria	2.6	3.3	2.6	3.5	3.1	1.5	1.4	2.0	2.0	1.5	3.0	3.2
Far East	256.8	270.6	285.4	302.6	288.1	296.3	284.5	243.9	265.8	297.2	273.0	248.6
China	99.0	113.3	126.0	155.4	142.5	165.0	165.2	143.1	165.2	186.4	169.2	150.3

Table 3: World exports value of Medicinal plants												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
WORLD	1135.8	1297.4	1176.4	1395.5	1525.1	1406.4	1320.9	1223.5	1102.4	1097.0	1016.2	1034.8
DEVELOPED	338.0	427.8	376.4	406.6	481.5	454.9	454.4	483.4	427.1	417.2	381.7	407.9
North America	113.8	165.8	140.6	144.7	174.3	170.3	161.5	147.9	139.4	138.1	125.7	126.2
USA	100.5	137.0	115.2	119.0	125.0	120.3	119.5	104.1	106.7	108.3	78.9	74.1
Canada	13.4	28.7	25.4	25.8	49.3	50.0	41.9	43.8	32.8	29.8	46.8	52.1
Europe	203.3	238.5	207.7	238.2	279.5	256.6	264.9	308.8	252.2	243.3	225.7	244.4
EU	163.1	181.7	165.5	189.5	215.1	186.6	188.2	203.2	185.7	180.9	169.9	177.4
Germany	66.1	75.7	69.6	65.6	75.1	77.5	76.6	76.3	65.6	55.5	53.0	56.7
France	24.4	24.0	28.2	22.8	31.9	34.7	37.0	44.8	45.8	54.3	44.0	45.2
Ireland	6.8	7.2	12.2	46.8	48.6	10.4	3.0	7.5	2.1	6.0	7.6	4.4
Italy	14.1	13.6	10.5	12.5	13.9	16.0	19.9	16.2	16.6	14.8	14.1	14.1
Spain	9.0	8.4	6.4	8.2	9.4	11.0	11.5	16.7	19.9	17.3	18.5	20.7
Belgium-Luxembourg	8.3	6.6	6.7	7.8	9.4	7.1	8.8	10.3	10.4	12.0	15.8	15.0
Austria	11.8	14.3	11.8	10.7	13.2	11.6	11.0	10.0	6.4	5.9	2.0	2.2
United Kingdom	12.8	17.7	8.8	5.8	4.8	6.1	9.3	9.6	6.3	5.9	5.3	6.7
Netherlands	3.7	5.6	4.7	3.6	3.4	6.1	4.9	5.4	6.0	3.2	4.0	5.9
Other Europe	40.2	56.8	42.2	48.8	64.4	70.1	76.7	105.5	66.5	62.4	55.8	67.0
Poland	6.4	7.5	7.9	8.9	12.4	16.3	21.9	26.7	20.8	18.4	14.8	21.9
Bulgaria	14.4	11.9	7.4	11.6	16.5	16.5	17.8	35.4	12.2	14.3	11.4	14.8
Albania	9.8	10.9	8.2	8.5	10.9	11.3	11.7	12.6	10.4	9.5	9.7	10.4
Hungary	6.2	13.6	5.5	6.1	8.2	7.3	7.8	9.0	5.7	4.4	4.5	5.0
Croatia	0.0	3.9	4.7	3.9	4.2	3.5	2.9	2.9	3.4	3.6	4.2	4.1
TFYR of Macedonia	0.0	0.0	2.0	2.5	4.2	2.7	4.4	4.7	1.9	2.2	1.6	1.0
Czech Rep.	0.0	0.0	2.3	1.9	2.5	2.6	1.9	2.4	2.5	2.4	2.7	3.0
Serbia - Montenegro	0.0	2.9	0.0	0.0	0.0	2.4	2.4	4.0	2.5	2.1	2.2	2.4
CIS	0.0	0.1	2.5	0.8	1.3	4.7	6.6	8.2	7.5	8.2	5.8	7.3
Ukraine	0.0	0.0	0.0	0.0	0.0	2.3	2.9	2.4	1.5	1.6	1.1	0.7
Turkmenistan	0.0	0.0	2.4	0.6	0.9	1.2	1.9	2.3	1.1	1.9	1.5	2.8
Azerbaijan	0.0	0.1	0.1	0.1	0.2	0.4	0.5	0.8	1.3	1.0	1.4	1.5
Russian Federation	0.0	0.0	0.0	0.0	0.0	0.6	1.3	1.3	0.8	0.8	0.7	0.9

Belarus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.1	1.8	0.1	0.4
Other developed	20.9	23.4	25.6	22.8	26.3	23.2	21.4	18.5	28.0	27.7	24.5	29.9
Australia	11.6	10.9	10.7	11.6	12.1	13.5	11.2	8.7	17.9	15.9	11.4	11.8
Japan	8.6	10.1	11.2	7.9	6.1	5.6	6.1	5.0	4.5	5.4	3.8	3.3
South Africa	0.0	1.0	1.7	1.5	6.0	2.2	1.9	1.9	2.5	3.9	8.1	12.8
DEVELOPING	797.8	869.6	800.0	988.9	1043.6	951.5	866.5	740.1	675.3	679.8	634.5	627.0
Africa	33.7	34.4	28.5	34.7	40.9	49.4	47.7	45.4	44.9	40.6	37.4	49.8
Egypt	12.6	12.0	9.6	11.4	13.6	16.1	18.1	15.2	15.0	5.0	11.4	11.2
Morocco	11.8	12.2	10.5	13.0	15.0	16.5	12.3	12.7	13.8	12.8	13.3	15.3
Sudan	6.3	6.7	4.7	7.3	7.2	9.8	10.9	11.8	11.6	14.6	5.8	16.9
Kenya	0.9	1.0	1.1	1.4	1.0	1.9	1.5	1.3	1.1	1.1	0.9	0.3
Tunisia	0.5	0.9	0.8	0.7	0.8	0.9	0.9	1.1	0.8	0.8	1.0	1.2
United Rep. of Tanzania	0.7	0.7	0.7	0.3	0.7	0.6	0.7	1.2	0.7	3.1	1.8	2.0
Cameroon	0.0	0.0	0.0	0.0	1.5	2.2	1.2	0.8	0.6	0.7	1.0	1.2
Madagascar	0.8	0.8	0.9	0.4	0.7	0.7	1.2	0.7	0.7	0.7	0.7	0.8
Latin America and the Caribbean	35.5	42.4	47.7	49.1	62.2	67.1	63.3	90.0	66.5	55.5	60.6	62.1
Central America and the Caribbean	8.9	9.0	11.1	11.0	11.8	11.8	13.4	16.0	17.6	18.6	21.9	27.5
Mexico	8.1	8.2	9.5	9.3	10.2	9.8	11.0	13.6	15.2	16.7	19.5	25.2
Costa Rica	0.5	0.5	0.9	0.9	0.6	1.0	0.9	1.1	1.5	0.9	0.6	0.6
Jamaica	0.2	0.3	0.3	0.6	0.5	0.5	0.5	0.7	0.5	0.5	0.5	0.5
Guatemala	0.0	0.0	0.4	0.2	0.6	0.5	1.0	0.6	0.4	0.4	0.3	0.3
South America	26.6	33.4	36.6	38.1	50.4	55.3	49.9	74.0	48.9	36.9	38.7	34.6
Chile	14.4	21.2	18.8	22.4	31.5	37.9	32.3	54.3	28.9	20.5	23.0	17.6
Brazil	3.2	3.2	4.7	4.9	5.8	5.9	6.0	7.4	6.1	5.8	5.1	5.9
Argentina	4.3	4.2	6.5	5.7	6.1	5.4	5.6	5.4	4.3	3.5	3.1	2.2
Peru	1.8	3.0	4.1	2.7	4.6	3.5	3.0	3.8	5.7	4.9	4.3	4.0
Bolivia	1.5	0.7	0.5	1.2	1.0	1.2	1.1	1.2	1.1	0.5	0.5	0.4
Near East in Asia	13.6	12.6	16.4	20.2	29.4	15.2	18.2	18.3	15.6	11.6	11.6	14.1
Turkey	6.7	4.5	7.8	13.1	22.4	5.7	6.1	9.5	7.4	4.9	4.5	4.9
Afghanistan	3.2	1.1	2.4	1.8	1.6	4.8	7.0	3.7	3.0	1.0	0.5	0.9
Iran	1.1	3.8	3.7	1.9	2.6	3.0	2.9	2.5	2.7	2.7	3.2	2.5
Syria	2.4	2.4	2.0	3.0	2.6	1.6	2.0	2.3	2.0	2.7	3.2	5.6
Far East	714.2	779.4	706.5	883.0	911.1	819.8	737.2	586.2	548.3	569.4	522.4	501.0
China	208.3	238.5	235.8	410.1	415.4	327.8	314.0	238.4	211.9	216.5	199.7	215.3

China, Hong Kong SAR	265.0	310.5	260.1	249.5	239.8	248.9	213.0	157.4	149.1	143.3	127.0	125.3
Rep. of Korea	103.0	90.0	88.1	84.3	94.8	81.8	55.3	49.1	58.6	54.9	47.8	21.5
India	52.8	55.1	40.7	52.2	65.7	66.9	68.5	63.9	44.2	79.5	78.6	68.7
Singapore	49.0	52.4	51.9	67.0	73.4	69.0	63.9	49.5	42.7	44.6	42.1	45.6
Other Asia, nes	8.4	4.5	4.5	3.2	5.2	8.3	5.4	11.1	21.2	12.0	9.4	10.7
Indonesia	8.4	9.7	9.0	5.6	4.4	4.4	7.6	4.7	5.5	6.9	5.3	4.3
Thailand	7.9	9.1	7.1	4.5	4.4	4.9	3.7	5.1	4.0	3.1	3.0	3.2
Pakistan	8.4	5.8	5.1	3.1	5.5	4.7	2.8	3.8	3.7	3.5	5.4	3.4
Malaysia	1.2	1.2	1.6	1.3	1.3	1.5	2.7	2.3	4.5	2.2	1.4	1.4
Oceania	0.9	0.9	0.9	1.8	0.0	0.0	0.0	0.0	0.0	2.7	2.5	0.0
Fiji	0.9	0.9	0.9	1.8	0.0	0.0	0.0	0.0	0.0	2.7	2.5	0.0

Table 4: World imports volume of Medicinal Plants												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
WORLD	375.1	402.8	395.7	446.4	477.3	532.5	544.5	449.8	416.5	451.6	452.4	462.8
DEVELOPED	183.8	194.7	192.2	229.8	249.4	299.5	310.0	272.7	227.8	236.2	244.3	239.4
North America	51.7	54.3	48.8	55.4	59.7	61.3	76.7	67.8	58.7	56.2	61.7	61.1
USA	48.6	50.8	44.9	50.8	55.0	56.4	71.9	62.3	53.1	50.3	55.7	54.7
Canada	3.1	3.5	3.9	4.5	4.8	4.9	4.8	5.5	5.6	5.8	6.0	6.4
Europe	87.6	98.8	96.0	113.0	121.5	136.0	147.0	158.0	133.7	136.6	142.5	137.9
EU	80.0	90.9	88.0	100.2	108.0	119.7	130.5	140.9	112.6	117.3	124.1	116.1
Germany	37.9	42.3	39.5	44.0	49.7	52.2	49.2	53.4	42.3	44.2	39.0	42.2
France	13.3	14.3	15.4	16.4	16.7	20.3	24.3	26.3	23.7	23.6	26.6	23.4
Spain	6.4	6.6	5.9	7.0	7.7	9.7	11.8	14.0	10.7	11.4	11.6	11.7
Italy	5.0	6.6	8.2	9.9	11.3	11.5	14.7	14.7	12.6	12.8	13.0	12.9
United Kingdom	4.6	5.4	6.3	7.2	8.3	8.3	9.3	8.4	6.9	8.5	7.0	7.7
Belgium-Luxembourg	3.5	4.3	4.0	6.4	5.0	4.1	6.2	7.5	6.4	5.4	5.5	6.5
Ireland	1.4	1.4	2.3	2.6	2.5	4.9	4.5	3.9	3.2	3.1	3.0	1.9
Austria	2.8	2.8	2.4	2.5	2.7	2.7	3.4	4.3	1.9	1.8	1.9	1.9
Netherlands	2.5	3.9	0.9	0.8	1.1	0.9	3.7	5.1	1.0	0.8	4.5	4.5
Greece	0.8	1.1	1.2	1.4	1.1	2.8	1.2	1.2	1.4	2.3	9.7	1.2
Other Europe	7.6	7.9	8.0	12.8	13.5	16.3	16.5	17.1	21.1	19.3	18.4	21.7
Poland	0.0	0.1	1.2	1.8	1.9	2.1	3.1	3.5	3.2	4.1	3.5	4.4
Czech Rep.	0.0	0.0	0.8	1.1	1.6	2.1	1.6	1.8	1.6	1.7	2.3	3.4
Switzerland	4.0	4.3	3.6	4.0	4.4	5.0	5.2	5.5	5.3	5.0	4.0	4.7
Slovakia	0.0	0.0	0.0	3.0	2.9	3.2	1.3	2.0	5.1	4.7	4.3	4.7
Hungary	1.8	0.8	0.8	0.9	0.8	0.7	1.1	1.2	2.9	1.1	1.0	1.0
Slovenia	1.0	1.6	1.1	1.2	1.1	1.2	1.0	0.7	0.5	0.7	0.9	0.7
Croatia	0.0	0.3	0.3	0.3	0.4	0.6	0.8	0.6	0.8	0.6	0.6	0.8
TFYR of Macedonia	0.0	0.0	0.0	0.0	0.0	0.6	1.5	0.5	0.4	0.5	0.3	0.3
CIS	0.0	0.1	0.7	1.6	1.1	1.4	2.1	2.7	3.8	5.7	4.9	4.7
Russian Federation	0.0	0.1	0.7	1.6	1.1	1.4	2.1	2.6	3.6	5.1	4.7	4.5
Other developed	44.5	41.5	46.7	59.9	67.0	100.8	84.3	44.2	31.6	37.8	35.1	35.6
Japan	41.1	37.7	42.4	55.1	62.4	96.1	79.2	40.1	27.0	32.5	29.6	29.9
Israel	1.9	2.0	2.2	2.4	2.2	2.3	2.4	1.5	2.0	2.7	2.5	2.7

Table 5: World imports value of Medicinal plants												
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
WORLD	1153.5	1263.1	1191.7	1266.8	1383.6	1477.3	1426.8	1337.8	1169.5	1148.7	1081.9	1128.4
DEVELOPED	543.0	605.4	545.7	619.8	698.2	781.8	768.9	835.9	673.3	647.4	644.7	673.2
North America	128.7	130.1	119.7	139.7	167.9	165.2	193.7	217.3	176.3	176.4	182.0	183.1
USA	111.5	110.3	98.1	114.3	141.2	138.0	166.8	186.6	144.8	143.7	148.2	147.1
Canada	17.2	19.8	21.6	25.4	26.7	27.3	26.9	30.8	31.6	32.7	33.8	36.0
Europe	259.2	304.2	271.6	298.7	351.5	398.8	405.6	496.9	383.0	344.2	333.1	348.1
EU	235.3	275.6	239.2	264.3	311.1	352.3	357.8	444.4	338.1	305.1	293.3	299.0
Germany	95.6	114.3	86.6	92.1	119.3	129.9	119.0	162.3	103.3	87.5	75.4	77.0
France	32.9	35.5	38.1	40.7	45.0	48.5	52.0	69.0	63.8	53.1	52.9	51.8
Italy	16.2	21.5	26.8	32.1	41.5	50.9	52.3	51.9	45.6	45.2	40.6	42.8
Spain	23.7	26.8	20.7	21.2	24.3	31.1	29.0	43.0	32.0	24.9	22.7	25.9
United Kingdom	14.0	16.5	19.0	22.8	25.9	30.9	29.5	31.1	29.7	36.0	34.5	35.4
Belgium-Luxembourg	16.2	18.1	12.2	16.7	15.8	14.2	20.9	28.0	25.2	21.3	21.3	21.4
Ireland	7.0	7.2	12.8	13.8	12.7	20.9	17.2	13.3	11.5	11.0	9.5	5.9
Netherlands	10.1	11.6	2.0	1.7	2.5	2.2	15.5	21.2	1.9	1.4	18.9	21.4
Austria	9.8	10.6	8.8	8.9	11.0	10.3	9.6	11.3	6.8	5.7	5.8	5.9
Denmark	3.4	3.6	2.6	4.1	3.5	3.5	5.0	4.1	8.1	10.5	4.0	3.6
Sweden	3.1	4.1	4.6	4.5	4.5	4.2	5.4	4.3	4.5	3.4	3.0	3.6
Other Europe	23.9	28.6	32.4	34.4	40.4	46.5	47.8	52.5	44.9	39.1	39.8	49.1
Switzerland	16.0	15.8	15.0	16.2	18.9	21.4	21.0	26.6	21.5	18.7	17.6	20.1
Czech Rep.	0.0	0.0	4.4	5.2	6.3	7.0	5.0	5.1	4.2	3.6	4.4	8.8
Poland	0.0	0.4	5.3	4.2	4.8	5.4	6.5	7.9	5.4	5.6	5.1	6.0
Hungary	3.0	3.9	3.4	2.1	2.2	2.2	2.8	2.4	4.0	2.4	2.7	2.8
Slovenia	2.1	3.4	2.0	2.9	3.2	3.0	2.2	2.1	1.6	1.6	1.8	1.6
Slovakia	0.0	0.0	0.0	1.8	2.1	1.8	0.9	1.1	2.1	1.7	1.6	2.1
Croatia	0.0	1.0	1.0	0.6	1.1	1.8	1.9	1.5	1.8	1.3	1.4	1.8
Norway	1.2	1.6	1.1	1.0	1.2	1.3	2.0	1.5	1.1	1.1	1.4	1.4
CIS	0.0	1.5	2.8	4.1	5.4	6.5	8.4	9.8	7.6	7.1	6.8	6.0
Belarus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.9	1.0	1.1	1.0
Russian Federation	0.0	1.5	2.8	4.1	5.4	6.5	8.4	8.5	6.6	5.7	5.5	4.7
Other developed	153.8	169.7	151.6	177.3	173.4	211.2	161.2	111.8	106.3	119.	122.	135.

										6	8	9
Japan	139.0	154.3	135.7	160.1	156.3	190.7	143.8	92.9	85.7	100.9	107.0	119.0
Australia	7.7	8.3	8.5	10.7	9.9	13.4	10.8	12.8	13.6	10.8	9.5	10.3
Israel	5.2	5.2	5.5	4.5	4.8	5.0	4.3	2.5	3.3	4.0	3.0	3.2
New Zealand	1.1	1.0	1.2	1.1	1.2	1.1	1.4	2.5	2.3	2.2	2.2	2.2
South Africa	0.8	0.8	0.8	0.9	1.2	1.0	0.9	1.1	1.5	1.8	1.1	1.2
DEVELOPING	610.5	657.5	645.9	647.0	685.4	695.6	657.9	502.0	496.3	501.3	437.2	455.2
Africa	2.4	2.9	3.7	5.8	7.2	4.3	4.4	3.7	3.6	4.1	5.6	6.1
Egypt	1.9	1.9	2.1	2.3	2.9	1.8	1.6	1.5	1.2	1.3	2.1	2.4
Morocco	0.1	0.4	0.6	0.6	0.8	0.7	0.5	0.6	0.7	0.6	0.9	1.1
Sudan	0.0	0.0	0.0	0.0	0.1	0.6	0.5	0.4	0.4	0.8	1.2	1.3
Nigeria	0.1	0.3	0.3	0.4	0.5	0.3	0.7	0.6	0.4	0.7	0.7	0.8
Madagascar	0.0	0.0	0.1	1.2	1.2	0.1	0.3	0.0	0.1	0.0	0.0	0.0
Tunisia	0.3	0.2	0.4	0.4	0.2	0.3	0.3	0.1	0.2	0.1	0.2	0.1
Latin America and the Caribbean	14.0	17.5	20.6	22.5	22.8	24.6	28.1	32.6	30.6	37.6	34.8	36.6
Central America and the Caribbean	3.5	6.0	6.4	8.2	7.6	8.5	10.7	11.9	11.2	18.8	18.4	24.5
Mexico	3.3	5.3	5.4	6.5	5.5	6.7	8.2	9.1	8.9	16.0	15.0	21.2
Costa Rica	0.1	0.1	0.2	0.1	0.3	0.3	0.6	1.2	0.4	0.5	0.9	0.6
Barbados	0.0	0.3	0.4	0.5	0.4	0.6	0.7	0.5	0.5	0.4	0.4	0.4
South America	10.5	11.5	14.2	14.3	15.2	16.1	17.4	20.7	19.4	18.8	16.4	12.1
Brazil	4.3	4.1	6.1	5.5	6.5	6.5	7.0	10.3	8.4	7.2	6.2	5.0
Argentina	4.6	5.0	6.0	5.7	4.7	5.3	5.6	5.6	5.9	5.5	3.7	2.0
Chile	0.2	0.3	0.4	0.3	0.6	0.8	0.9	1.3	2.0	2.6	1.9	1.8
Venezuela	0.7	0.8	0.6	0.7	0.9	0.7	0.8	0.9	1.1	1.3	1.5	1.0
Colombia	0.5	0.7	0.4	0.6	0.9	1.1	0.9	0.7	0.7	0.5	0.7	0.5
Uruguay	0.0	0.0	0.5	0.3	0.5	0.5	0.8	0.7	0.7	0.7	0.8	0.5
Near East in Asia	11.4	12.7	11.6	9.9	9.1	10.0	11.1	12.2	10.3	9.0	9.6	9.6
Saudi Arabia	10.7	11.8	10.6	8.7	7.1	8.6	6.9	8.3	6.4	5.7	6.4	6.2
Turkey	0.1	0.3	0.3	0.3	0.5	0.7	0.9	1.3	0.8	1.3	1.0	1.3
Jordan	0.5	0.5	0.6	0.5	0.7	0.5	0.6	0.6	0.6	0.5	0.8	0.7
Oman	0.0	0.0	0.0	0.2	0.3	0.0	1.5	0.4	0.4	0.4	0.6	0.6
Far East	582.7	624.4	609.9	608.9	646.3	656.7	614.3	453.5	451.1	449.7	386.4	402.2
China, Hong Kong SAR	308.8	311.2	317.3	323.0	343.2	312.2	281.2	215.2	198.7	201.4	170.5	176.7
Other Asia, nes	86.0	105.5	92.6	87.2	80.1	95.7	93.2	77.9	73.1	68.2	52.3	47.4

Table 6: US Exports Value of Medicinal plants, by major country of destination, 1998-2002					
Medicinal Plants	1998	1999	2000	2001	2002
	million US\$				
World Total	99.8	104.4	104.9	76.3	71.7
Hong Kong	29.1	33.6	39.8	21.4	21.9
Canada	11.6	12.5	12.6	12.1	10.5
Germany	6.7	4.2	5.2	3.5	5.8
China, Peoples Repub	4.8	3.3	4.0	2.3	9.6
United Kingdom	3.6	4.6	6.9	6.1	2.5
Malaysia	8.8	4.6	6.2	1.0	0.0
Japan	1.9	8.2	3.5	3.3	2.8
Taiwan	5.5	6.2	3.5	0.7	0.5
Ireland	2.9	2.3	1.9	2.2	3.5
Singapore	1.8	5.4	2.2	1.3	1.0
Saudi Arabia	1.2	1.1	2.3	5.4	0.0
Mexico	2.7	2.0	1.7	1.2	1.6
Italy	1.8	0.5	0.6	1.7	3.0
Australia	2.5	2.6	0.6	1.0	0.7
Netherlands	0.7	1.9	2.4	1.6	0.8
France	2.2	2.6	1.3	0.8	0.6
Korea, Republic Of	1.6	0.9	1.6	0.6	2.5
Kuwait	1.5	1.2	2.0	1.8	0.1
Spain	1.9	0.6	0.3	0.7	0.4
United Arab Emirates	0.8	1.3	0.4	0.9	0.2
Philippines	0.7	0.2	1.8	0.7	0.1
Russian Federation	1.8	0.1	0.2	0.3	0.1
South Africa, Republ	0.0	0.1	0.3	0.8	0.7
Brazil	0.2	0.4	0.5	0.5	0.3
New Zealand	0.4	0.4	0.3	0.4	0.2
Switzerland	0.1	0.4	0.5	0.3	0.4
Denmark	0.4	0.3	0.3	0.2	0.2
Israel	0.4	0.2	0.1	0.1	0.3
Sweden	0.1	0.0	0.0	0.6	0.4
India	0.1	0.4	0.0	0.3	0.1

Iceland	0.2	0.2	0.1	0.2	0.0
Kenya	0.1	0.2	0.2	0.1	0.0
Venezuela	0.0	0.2	0.2	0.1	0.0
Chile	0.1	0.1	0.1	0.1	0.1
Bahamas	0.0	0.0	0.3	0.0	0.0
Argentina	0.0	0.2	0.1	0.0	0.0
Costa Rica	0.1	0.0	0.1	0.2	0.0
Ecuador	0.0	0.0	0.0	0.3	0.0
Belgium-Luxembourg	0.0	0.0	0.0	0.1	0.1
Colombia	0.0	0.0	0.0	0.0	0.1
Source: FAS, USDA					

Table 7: US Exports Value of Liquorice roots, by major country of destination, 1998-2002					
Liquorice roots	1998	1999	2000	2001	2002
	million US\$				
World Total	0.9	1.0	0.7	0.4	1.2
Hong Kong	0.0	0.0	0.0	0.2	0.8
United Kingdom	0.0	0.1	0.0	0.2	0.2
Canada	0.1	0.1	0.0	0.0	0.1
Chile	0.0	0.0	0.0	0.0	0.1
Japan	0.8	0.6	0.2	0.0	0.0
Argentina	0.0	0.1	0.1	0.0	0.0
Brazil	0.0	0.0	0.1	0.0	0.0
Germany	0.0	0.1	0.0	0.0	0.0
Lebanon	0.0	0.0	0.1	0.0	0.0
Saudi Arabia	0.0	0.0	0.1	0.0	0.0
United Arab Emirates	0.0	0.1	0.0	0.0	0.0
Turkey	0.0	0.0	0.1	0.0	0.0
Source: FAS, USDA					

Table 8: US Imports Value of Medicinal Plants by major country of origin, 1998-2002					
Medicinal Plants	1998	1999	2000	2001	2002
	million US\$				
World Total	172.6	133.4	132.5	136.9	137.1
China, Peoples Repub	45.4	45.6	39.3	35.9	37.7
India	34.9	20.3	28.8	37.8	27.0
Germany	9.9	10.1	6.5	7.1	7.3
Hong Kong	2.2	3.0	6.7	6.1	7.0
Mexico	4.2	4.2	3.4	5.4	6.9
Egypt	3.8	4.3	4.5	4.8	5.3
Italy	0.6	2.4	4.2	6.2	8.8
Chile	7.7	3.6	1.9	1.2	1.4
Other Pacific Island	9.6	1.3	1.0	0.7	0.4
Albania	3.5	2.4	1.9	2.2	2.7
Korea, Republic Of	3.8	1.3	2.7	2.0	2.4
Spain	2.1	1.9	2.8	2.4	2.5
Japan	6.0	1.8	1.6	0.7	0.3
Canada	3.4	1.8	2.4	1.4	1.5
Taiwan	1.9	1.5	2.2	1.9	2.5
Azerbaijan, Republic	1.2	1.9	2.4	2.5	1.9
Turkey	1.3	1.6	1.5	1.7	2.5
Brazil	1.8	2.2	1.7	1.3	1.1
Peru	2.0	1.9	1.0	1.4	1.2
France	1.6	1.1	1.8	1.1	1.7
British Pacific Isla	3.9	1.5	0.5	0.6	0.0
Thailand	0.9	1.4	1.1	1.3	1.7
Israel	0.5	1.1	1.0	1.5	1.4
Turkmenistan	0.5	0.7	1.2	0.9	2.1
Bulgaria	2.3	1.3	0.8	0.4	0.4
Morocco	0.9	0.8	0.9	1.1	0.9
Poland	1.8	0.7	0.5	0.6	0.6
Afghanistan	1.9	1.2	0.2	0.0	0.1
Netherlands	0.7	1.4	0.4	0.3	0.4
Bolivia	1.0	0.9	0.4	0.5	0.3
Jamaica	0.6	0.7	0.5	0.5	0.7
Uzbekistan, Republic	0.5	0.7	0.5	0.3	0.6

New Zealand	1.4	0.3	0.2	0.0	0.3
United Kingdom	0.7	0.6	0.4	0.2	0.3
Macedonia	0.3	0.4	0.5	0.5	0.4
Croatia	0.2	0.6	0.5	0.4	0.2
Australia	0.5	0.4	0.2	0.2	0.2
Sweden	0.2	0.3	0.5	0.3	0.1
Western Samoa	1.3	0.0	0.0	0.0	0.0
Costa Rica	0.5	0.2	0.2	0.2	0.1
United Arab Emirates	0.4	0.9	0.0	0.0	0.0
Ghana	0.8	0.1	0.1	0.2	0.1
Pakistan	0.3	0.1	0.3	0.4	0.1
Indonesia	0.3	0.2	0.0	0.0	0.4
South Africa, Republ	0.3	0.1	0.1	0.2	0.4
Serbia/Montenegro	0.6	0.2	0.0	0.1	0.0
Philippines	0.1	0.1	0.4	0.1	0.2
Czech Republic	0.2	0.3	0.2	0.2	0.1
Hungary	0.3	0.1	0.1	0.1	0.2
Greece	0.2	0.0	0.2	0.3	0.1
Cote D'Ivoire	0.2	0.2	0.1	0.1	0.1
Switzerland	0.1	0.1	0.3	0.1	0.1
Guatemala	0.0	0.1	0.1	0.2	0.1
Paraguay	0.4	0.0	0.0	0.1	0.0
Togo	0.0	0.0	0.0	0.1	0.4
Haiti	0.0	0.0	0.0	0.1	0.3
Venezuela	0.0	0.3	0.1	0.0	0.1
Argentina	0.0	0.1	0.1	0.1	0.1
Denmark	0.0	0.0	0.3	0.1	0.0
Sri Lanka	0.1	0.0	0.1	0.0	0.1
Belgium-Luxembourg	0.1	0.0	0.1	0.1	0.1
Colombia	0.1	0.1	0.1	0.0	0.1
Vietnam	0.0	0.1	0.1	0.1	0.0
Source: FAS, USDA					

Table 9. Medicinal Plants	1998	1999	2000	2001	2002
	million US\$				
World total 1/	316.8	241.9	254.9	253.6	249.0
USA	40.1	35.2	38.0	38.5	37.3
China	34.5	34.2	28.5	25.3	24.3
India	13.9	15.7	19.0	20.1	18.8
Bulgaria	32.8	12.9	15.4	12.0	11.2
Poland	19.7	13.4	12.5	10.0	15.1
Chile	30.5	13.2	9.6	8.6	6.3
Israel	5.3	7.7	12.4	16.2	18.2
Morocco	8.6	10.2	11.8	11.9	13.6
Egypt	9.0	8.5	13.1	9.5	9.8
Turkey	12.8	8.8	9.2	9.1	8.0
Albania	9.2	6.0	6.5	4.9	4.9
Hungary	8.4	5.3	5.0	5.3	5.0
Brazil	4.6	4.9	6.4	5.1	5.5
Fiji	12.5	4.3	2.7	1.3	0.0
Kenya	2.9	2.7	1.5	8.9	8.7
South Africa	2.2	2.3	2.8	6.1	6.9
Argentina	6.2	4.3	3.6	3.5	2.5
Australia	2.6	4.9	3.7	4.0	4.0
Sudan	5.5	2.8	4.2	2.9	1.6
Thailand	2.0	2.5	3.9	4.1	3.5
Croatia	2.3	2.9	3.5	3.3	3.9
Macedonia FYR	3.9	1.7	2.3	1.2	1.5
Korea, Rep of	3.3	2.4	1.4	0.8	1.3
Romania	2.9	1.7	1.8	1.5	1.3
Iran	1.8	1.4	1.9	1.9	1.9
Mexico	0.6	1.0	1.6	2.4	2.0
Switzerland	1.0	1.4	2.2	1.8	1.2
Serbia and Montenegro	2.6	1.3	1.0	0.9	1.4
Madagascar	0.9	1.2	1.5	1.5	1.5
Peru	1.1	1.0	1.4	1.4	1.6
Cameroon	1.7	1.0	1.2	1.3	1.1
Czech Republic	1.5	1.1	1.1	1.2	1.2
Tunisia	1.3	0.9	0.8	1.3	1.5
Togo	1.6	0.5	0.9	1.7	1.1
Congo Rep of	1.9	0.9	0.9	0.6	0.9

Ghana	2.3	0.7	0.3	1.2	0.6
Vanuatu	2.0	1.2	0.6	0.8	0.2
Indonesia	1.2	0.5	0.0	0.9	0.7
Ivory Coast	1.6	0.8	0.2	0.3	0.5
1/ Excluding Intra-EU trade					
Source: EUROSTAT					

Table 10: EU Imports value of Liquorice roots by major country of origin, 1998-2002					
Liquorice roots, fresh or dried	1998	1999	2000	2001	2002
	million US\$				
World total 1/	6.8	3.7	5.0	7.7	5.4
Turkmenistan	2.3	0.3	0.6	0.4	0.0
China	0.8	0.7	1.0	0.8	0.9
Azerbaijan	0.5	0.3	0.3	2.1	0.6
Israel	0.0	0.0	0.4	0.5	1.1
Syria	0.6	0.4	0.6	0.9	0.8
Pakistan	0.2	0.3	0.5	1.4	0.7
Iran	0.7	0.5	0.4	0.5	0.4
Afghanistan	0.6	0.8	0.2	0.1	0.0
Uzbekistan	0.5	0.0	0.5	0.3	0.2
Turkey	0.7	0.2	0.2	0.3	0.2
1/ Excluding Intra-EU trade					
Source: EUROSTAT					

Table 11: EU Imports value of Ginseng roots by major country of origin, 1998-2002					
Ginseng roots, fresh or dried	1998	1999	2000	2001	2002
	million US\$				
World total 1/	11.6	16.8	12.9	10.5	11.7
China	8.9	14.2	9.9	8.8	8.7
Korea, Rep of	1.2	1.5	1.2	0.8	1.2
USA	0.5	0.5	0.9	0.8	1.2
Hong Kong	0.3	0.3	0.4	0.1	0.5
Japan	0.3	0.2	0.4	0.0	0.0
1/ Excluding Intra-EU trade					
Source: EUROSTAT					

Table 12: EU Imports value of Plants and parts of plants, used in perfumery, medicaments or for insecticidal or similar purposes, by major country of origin, 1998-2002					
Plants, parts of plants, seeds and fruit, used in perfumery, medicaments or for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not cut, crushed or powdered (excl. liquorice and ginseng roots)	1998	1999	2000	2001	2002
	million US\$				
World total 1/	298.3	221.4	237.0	235.5	232.0
USA	39.5	34.7	36.5	37.4	36.1
China	24.9	19.3	17.5	15.8	14.1
India	13.9	15.7	19.0	20.2	18.9
Bulgaria	32.8	12.9	15.4	12.0	11.2
Poland	19.7	13.4	12.5	10.0	15.1
Chile	30.5	13.2	9.6	8.6	6.3
Israel	5.2	7.6	12.0	15.7	17.1
Morocco	8.6	10.2	11.8	11.9	13.5
Egypt	9.0	8.5	13.1	9.5	9.8
Turkey	12.2	8.5	9.0	8.8	7.8
Albania	9.2	6.0	6.5	4.9	3.3
Hungary	8.4	5.3	5.0	5.3	5.0
Brazil	4.6	4.9	6.4	5.1	5.4
Fiji	12.5	4.3	2.7	1.3	0.0
Kenya	2.9	2.7	1.4	8.9	8.6
South Africa	2.2	2.3	2.8	6.1	6.9
Argentina	6.2	4.3	3.6	3.5	2.4
Australia	2.6	4.8	3.7	4.0	4.0
Sudan	5.5	2.8	4.2	2.9	1.6
Thailand	2.0	2.5	3.9	4.1	3.3
Croatia	2.3	2.9	3.5	3.3	3.8
Macedonia FYR	3.9	1.7	2.3	1.2	1.6
Romania	2.9	1.7	1.8	1.5	1.3
Mexico	0.6	1.0	1.5	2.4	2.0
Switzerland	0.7	1.4	2.2	1.8	1.1
Serbia and Montenegro	2.6	1.3	1.0	0.9	1.4
Madagascar	0.9	1.2	1.6	1.5	1.6
Peru	1.1	1.0	1.4	1.4	1.6
Iran	1.1	0.9	1.5	1.4	1.4
Cameroon	1.7	1.0	1.2	1.3	1.0
Czech Rep	1.5	1.1	1.1	1.2	1.2

Tunisia	1.3	0.9	0.8	1.3	1.5
Togo	1.6	0.5	0.9	1.7	1.1
Congo, Rep of	1.9	0.9	0.9	0.6	0.9
Ghana	2.3	0.7	0.3	1.2	0.6
Vanuatu	2.0	1.2	0.6	0.8	0.2
Korea, Rep of	2.1	0.9	1.2	0.0	0.1
Indonesia	1.2	0.5	0.0	0.9	0.7
Ivory Coast	1.6	0.8	0.2	0.3	0.5
1/ Excluding Intra-EU trade					
Source: EUROSTAT					

Table 13: Tariff rates for medicinal plants in selected markets			
<i>Chapter 12 - 1211: Plants and parts of plants (including seeds and fruits), of a kind used primarily in perfumery, in pharmacy or for insecticidal, fungicidal or similar purposes, fresh or dried, whether or not cut, crushed or powdered</i>			
Country (2003)	HS Code	Description	Applied MFN rate
			... Percent ... 1/
EU			
	1211.10.00	Liquorice roots	free
	1211.20.00	Ginseng roots	
	1211.30.00	Coca leaf	free
	1211.40.00	Poppy straw	free
		Other:	
	1211.90.30	Tonquin beans	3.0
	1211.90.70	Wild marjoram (branches, stems and leaves)	free
	1211.90.75	Sage (leaves and flowers)	free
	1211.90.98	Other	free
USA			
	1211.10.00	Liquorice roots	free
	1211.20.00	Ginseng roots (cultivated/wild)	free
	1211.30.00	Coca leaf	free
	1211.40.00	Poppy straw	free
		Other:	
	1211.90.20	Mint leaves, crude or manufactured	free
	1211.90.40.20	Herbal teas and herbal infusions (single species, unmixed)	4.8
	1211.90.40.40	Other	4.8
	1211.90.60	Tonka beans	6.6 c./kg
		Substances having anesthetic, prophylactic or theraprutic properties and principally used as medicaments or as ingredients in medicaments:	
	1211.90.90.20	Psyllium seed husks	free

	1211.90.90.31	Other	free
	1211.90.90.40	Basil	free
	1211.90.90.50	Sage	free
		Other:	
	1211.90.90.80	Herbal teas and herbal infusions (single species, unmixed)	free
	1211.90.90.90	Other	free
Japan			
	1211.10.00	Liquorice roots	free
	1211.20.00	Ginseng roots (cultivated/wild)	4.3
	1211.30.00	Coca leaf	free*
	1211.40.00	Poppy straw	3.0
		Other:	
	1211.90.110	Wormseed and similar vegetable products of a kind used for extracting santonin, ephedra (ma-huang) and aloes wood	free
	1211.90.190	Other	free
	1211.90.600	Cannabis plant and poppy straw	3.0*
	1311.90.700	Pyrethrum	12.0
	1211.90.910	Sandal woods	2.5
	1211.90.920	Job's tears	3.0
	1211.90.990	Other	2.5
China			
		Liquorice roots:	
	1211.10.10	Zhang Guo liquorice roots	6.8
	1211.10.90	Other liquorice roots	6.2
		Ginseng roots:	
	1211.20.10	American ginseng	10.7
	1211.20.20	Wild ginseng (other than American ginseng)	22.0
		Other:	
	1211.20.91	Fresh	22.0
	1211.20.99	Other ginseng roots	22.0

		Coca leaf:	
	1211.30.00.10	Of a kind used in pharmaceutical preparations	9.2
	1211.30.00.20	Of a kind used in perfumery	9.2
	1211.30.00.90	Of a kind used in insecticides or fungicides	9.2
		Other:	
		Of a kind used primarily in pharmacy:	
	1211.90.11	Radix angelicae sinensis	6.8
	1211.90.12	Radix pseudoginseng	6.8
	1211.90.13	Radix codonopsis	6.8
	1211.90.14	Rhizoma coptidis	6.4
	1211.90.15	Flos chrisanthemi	6.4
	1211.90.16	Cordyceps sinensis	6.4
	1211.90.17	Bulbs Fritillariae thunbergii	6.4
	1211.90.18	Rhizoma ligustici	6.4
	1211.90.19	Rhizoma pinelliae	6.4
	1211.90.21	Radix paeoniae lactiflorae	6.4
	1211.90.22	Rhizoma gastrodiae	6.4
	1211.90.23	Radix astragali	6.4
	1211.90.24	Rhubarb	6.4
	1211.90.25	Rhizoma atractylodis macrocephalae	6.4
	1211.90.26	Radix rehmanniae	6.4
	1211.90.27	Flos sophorae	6.4
China			
	1211.90.28	Cortex eucommiae	6.4
	1211.90.29	Poria	6.4
	1211.90.31	Fructus lycii	6.4
	1211.90.32	Bantaroi seeds	6.4
	1211.90.33	Aloes woods	3.0
	1211.90.34	Adenophora axilliarflora	6.4
		Other:	
	1211.90.39.10	Chinese ephedra powder	6.4
	1211.90.39.20	Chinese ephedra	6.4
	1211.90.39.30	Hemp	6.4
	1211.90.39.40	Poppy pod	6.4

	1211.90.39.90	Other plants	6.4
		Of a kind used in primarily in perfumery:	
	1211.90.50.10	Chinese ephedra powder	8.0
	1211.90.50.20	Chinese ephedra	8.0
	1211.90.50.90	Other plants	8.0
		Other:	
	1211.90.91.00	Derris root and pyrethrum	3.6
		Other:	
	1211.90.99.10	Chinese ephedra powder	9.2
	1211.90.99.20	Chinese ephedra	9.2
	1211.90.99.90	Other plants	9.2
India			
	1211.10.00	Liquorice roots	30.0
	1211.20.00	Ginseng roots	30.0
	1211.30.00	Coca leaf	15.0*
	1211.40.00	Poppy straw	15.0*
		Other - seeds:	
	1211.90.11	Ambrette seeds	15.0*
	1211.90.12	Nuxvomica, dried ripe seeds	15.0*
	1211.90.13	Psyllium seeds	15.0*
	1211.90.14	Neem seed	15.0*
	1211.90.15	Jojoba seed	15.0*
	1211.90.19	Other	15.0*
		Other - leaves, powder, flowers and pods:	
	1211.90.21	Belladonna leaves	15.0*
	1211.90.22	Senna leaves and pods	15.0*
	1211.90.23	Neem leaves, powder	15.0*
	1211.90.24	Gymnema powder	15.0*
	1211.90.25	Cubeb powder	15.0*
	1211.90.26	Pyrethrum	15.0*
	1211.90.29	Other	15.0*
		Other - bark, husk and rind:	
	1211.90.31	Cascara sagrada bark	15.0*
	1211.90.32	Psyllium husk	15.0*

	1211.90.33	Camboge fruit rind	15.0*
	1211.90.39	Other	15.0*
		Other - roots and rind:	15.0*
	1211.90.41	Belladonna roots	15.0*
	1211.90.42	Galangal rhizomes and roots	15.0*
	1211.90.43	Ipecac dried rhizomes and roots	15.0*
	1211.90.44	Serpentina roots	15.0*
	1211.90.45	Zedovary roots	15.0*
	1211.90.46	Kuth root	15.0*
	1211.90.47	Sarasaparilla roots	15.0*
	1211.90.48	Sweet flag rhizomes	15.0*
	1211.90.49	Other	15.0*
	1211.90.50	Sandalwood chips and dust	15.0*
	1211.90.60	Vinca rosea herbs	15.0*
	1211.90.70	Mint including leaves (all species)	15.0*
	1211.90.80	Agarwood	15.0*
		Other:	15.0*
	1211.90.91	Chirata	15.0*
	1211.90.92	Tukmara	15.0*
	1211.90.93	Unag	15.0*
	1211.90.94	Basil, hyssop, rosemary, sage and savory	15.0*
	1211.90.95	Lovage	15.0*
	1211.90.96	Garcenia	15.0*
	1211.90.97	Other	15.0*
China, Hong Kong SAR			
	1211.10.00	Liquorice roots	free
	1211.20.10	Ginseng roots, cultivated	free
	1211.20.20	Ginseng roots, wild	free
	1211.30.00	Coca leaf	free
	1211.40.00	Poppy straw	free
		Other:	
	1211.90.01	Cassia pods and pulps	free
	1211.90.02	Sandalwoods	free
	1211.90.03	Lingusticum Acurilobum	free

	1211.90.04	Codonopsis Tangshen Oliver	free
	1211.90.05	Astralagus Membranacaus Bunge	free
	1211.90.06	Dioscorea Batalus Decne	free
	1211.90.07	Rehmania Glutinosa Libosh	free
	1211.90.08	Chrysanthemum	free
	1211.90.09	Boxthorn Fruit	free
	1211.90.13	Tienchi	free
	1211.90.14	Cordyceps	free
	1211.90.15	Agar wood	free
	1211.90.16	Flos Daturae Metelis, dried	free
	1211.90.17	Flos Rhododendri Mollis, dried	free
	1211.90.18	Radix Aconiti Brachypodi or Radix Aconiti Szechenyiani, dried	free
	1211.90.19	Radix or Rhizoma Podophylli emodis , or Radix or Rhizoma Dysosmatis, dried	free
	1211.90.20	Radix Sophorae Tonkinesis	free
	1211.90.21	Unprocessed Fructus Crotonis	free
	1211.90.22	Unprocessed Radix Aconiti	free
	1211.90.23	Unprocessed Radix Aconiti Kusnezoffii	free
	1211.90.24	Unprocessed Radix Aconiti Lateralis	free
	1211.90.25	Unprocessed Radix Euphorbiae Fischerianae, Radix Euphorbiae Ebractolatae or Radix Stellerae	free
	1211.90.26	Unprocessed Radix Kansui	free
	1211.90.27	Unprocessed Rhizoma Arisaematis	free
	1211.90.28	Unprocessed Rhizoma Pinelliae	free
	1211.90.29	Unprocessed Rhizoma Typhonii or Radix Axoniti Coreani	free
	1211.90.30	Unprocessed Semen Euphorbiae	free
	1211.90.31	Unprocessed Semen Hyoscyami	free
	1211.90.32	Unprocessed Semen Strychni	free
	1211.90.33	Flos Campis, dried	free
	1211.90.34	Processed Radix Aconiti	free
	1211.90.35	Processed Radix Aconiti Kusnezoffii	free
	1211.90.36	Radix Clematidis, dried	free
	1211.90.37	Radix Gentianae, dried	free
	1211.90.90	Other plants and parts of plants	free

		used as Chinese herbal medicines	
	1211.90.98	Other, of a kind used primarily in pharmacy	free
	1211.90.99	Other	free
Thailand			
	1211.10.00	Liquorice roots	1.0
	1211.20.00	Ginseng roots	31.0 or 3.26 THB/g, whichever is higher
	1211.30.00	Coca leaf	27.0 or 4.20 THB/g, whichever is higher
	1211.40.00	Poppy straw	27.0 or 4.20 THB/g, whichever is higher
		Other:	
	1211.90.10	Pyrethrum	4.6
	1211.90.20	Medicinal plants, parts of plants (including seeds and fruit)	27.0
	1211.90.90	Other	31.0 (Bark - 10.0)
Turkey			
	1211.10.00	Liquorice roots	35.0
	1211.20.00	Ginseng roots	35.0
	1211.30.00	Coca leaf	35.0
	1211.40.00	Poppy straw	35.0
		Other:	
	1211.90.30	Tonquin beans	35.0
	1211.90.70	Wild marjoram (branches, stems and leaves)	35.0
	1211.90.75	Sage (leaves and flowers)	35.0
	1211.90.98	Other	35.0
Bangladesh			

	1211.10.10	Liquorice roots, excluding wrapped or canned	22.5
	1211.10.20	Liquorice roots, wrapped or canned	22.5
	1211.20.10	Ginseng roots, excluding wrapped or canned	22.5
	1211.20.20	Ginseng roots, wrapped or canned	22.5
	1211.30.10	Coca leaf, excluding wrapped or canned	22.5
	1211.30.20	Coca leaf, wrapped or canned	22.5
	1211.40.10	Poppy straw, excluding wrapped or canned	22.5
	1211.40.20	Poppy straw, wrapped or canned	22.5
Bangladesh			
		Other:	
		Used primarily in perfumery:	
	1211.90.11	Excluding wrapped or canned	22.5
	1211.90.12	Wrapped or canned	22.5
		Used primarily in pharmacy:	
	1211.90.21	Excluding wrapped or canned	7.5
	1211.90.22	Wrapped or canned	7.5
		Other:	
	1211.90.91	Excluding wrapped or canned	22.5
	1211.90.92	Wrapped or canned	22.5
Pakistan			
	1211.10.00	Liquorice roots	10.0
	1211.20.00	Ginseng roots	10.0
	1211.30.00	Coca leaf	10.0
	1211.40.00	Poppy straw	10.0
	1211.90.00	Other	10.0
Chile			
	1211.10.00	Liquorice roots	6.0
	1211.20.00	Ginseng roots	6.0
	1211.30.00	Coca leaf	6.0
	1211.40.00	Poppy straw	6.0

		Other:	
	1211.90.10	Jalap	6.0
	1211.90.20	Oregano	6.0
	1211.90.30	Ergot of rye	6.0
	1211.90.41	Musk - rose hips: seeds	6.0
	1211.90.42	Musk - rose hips: shells	6.0
	1211.90.43	Musk - rose hips: flowers and leaves	6.0
	1211.90.49	Other	6.0
	1211.90.50	San Juan herbs	6.0
	1211.90.60	Chamomile	6.0
	1211.90.90	Other	6.0
Singapore			
	1211.10.10	Liquorice roots - cut, crushed or powdered form	free
	1211.10.90	Liquorice roots - other form	free
	1211.20.10	Ginseng roots - cut, crushed or powdered form	free
	1211.20.90	Ginseng roots - other form	free
	1211.30.10	Coca leaf - cut, crushed or powdered form	free
	1211.30.90	Coca leaf - other form	free
	1211.40.00	Poppy straw	free
		Other:	
		Of a kind used in pharmacy	
	1211.90.11	Cannabis - cut, crushed or powdered form	free
	1211.90.12	Cannabis - other form	free
	1211.90.13	Other - cut, crushed or powdered form	free
	1211.90.19	Other	free
		Other:	
	1211.90.91	Pyrethrum - cut, crushed or powdered form	free
	1211.90.92	Pyrethrum - other form	free
	1211.90.93	Cannabis	free
	1211.90.94	Sandal wood	free
	1211.90.95	Gaharu wood chips	free
	1211.90.99	Other	free

1/ ad valorem, unless otherwise specified