

Medicinal Plant Marketing in Bangladesh

Grahame Dixie
Syed Ali Imam
Md. Jahangir Hussain

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PREFACE

The South Asia Enterprise Development Facility (SEDF) and Intercooperation (IC) recently entered into a partnership to contribute to the development of a sustainable and dynamic medicinal plant sector in Bangladesh. This study on 'Medicinal Plant Marketing in Bangladesh' is a result of this partnership.

The medicinal plant sector is growing rapidly and efforts need to be taken to understand the needs and prospects of the producers, processors and consumers alike. This study offers a practical insight into this dynamic sector that provides an opportunity for farmers to grow profitable crops and also to create jobs in marketing, distribution and processing in the industrial sector. SEDF and Intercooperation see the medicinal plant sector as a niche area and are pleased to contribute to its development through their association together.

The South Asia Enterprise Development Facility (SEDF) is a multi-donor facility managed by the International Finance Corporation (IFC) of the World Bank Group. SEDF focuses on the need of the small and medium enterprises (SMEs) in Bangladesh, Bhutan, Nepal and North-East India. The overall objectives of the facility are to stimulate growth by increasing the number, profitability and growth rates of SMEs. An aspect of this is to work in selected sub-sectors, such as agribusiness, by improving the competitiveness of SMEs. The donors to SEDF include the European Commission (EC), DFID (UK), CIDA (Canada), NORAD (Norway), Asian Development Bank (ADB) and the International Finance Corporation (IFC).

Intercooperation is a Swiss development foundation that manages the green sector programmes of the Swiss Government throughout Bangladesh, India and Pakistan. Its focus in Bangladesh is on 'Agroforestry on Private Land' and its interventions include the Village & Farm Forestry Project (VFFP) that promotes the provision of quality planting material through a network of 1,700 nurseries in Rajshahi Division and in the South West of the country. IC currently works with over 1,000 groups of small farmers – facilitating their organisational development and promoting agroforestry as a tool for reducing rural poverty.

Anil Sinha
General Manager
SEDF

Neil Parker
Delegate
Intercooperation

December 2003

SUMMARY

A consultancy was commissioned by the Southasia Enterprise Development Facility of the World Bank (SEDF) and the Swiss-financed foundation - Intercooperation (IC) – to examine the potential of the medicinal plant sector in Bangladesh in order to guide investment decisions of those two organisations. The team was led by Mr. Grahame Dixie of Accord Associates and covered a five-week period during September/October 2003.

The total size of the medicinal plant market at wholesale prices was estimated at some \$14 million p.a. – corresponding to 17,000 tonnes of product. Local supply accounts for about 70% by volume and 40% by value.

Findings

Medicinal plants raw material supply chain

- Demand has been increasing and is set to accelerate.
- The industry is modernising, both by its own efforts & with the entry of corporates.
- Raw material demand is likely to increase by Tk 300 m. over next 5 years.
- Most of this growth (+50%) is expected to occur with the major processing companies.
- Imports are increasing, local wild harvest is unsustainable & quality poor.
- Companies are considering using imported herbal extracts & /or developing their own production to improve their raw material supply.
- Beparis and pikers are reliant on traditional techniques & knowledge.

Herbal medicine industry

- Changes in legislation and new entrants will stimulate innovation, dynamism and competition in the medicinal plant sector.
- Almost all welcome the opportunity to use international Pharmacopoeia.
- The industry would like to see herbal medicine as an important and examined part of the training of MBBs Doctors as well as new Unani and Ayurvedic colleges.
- The industry is confident of the efficacy of its products especially for stomach ailments, male and female sexual health and as a tonic.
- The operation, layout & hygiene of many factories are of a low standard.
- The trade has complained that not all products actually contain the specified amounts of medicinal plants.

Estimated Size of the Market Opportunity

The estimated size of the market opportunity for the supply of medicinal plants as raw materials for the medicinal herb sector over the next five years for selected plants is presented below.

Medicinal Plants	US \$M	Interventions required
Amloki	1.35	Cultivar selection & processing
Haritaki	1.00	Cultivar selection & processing
Arshwagandha	0.74	Commercialised production
Bahera	0.47	Cultivar selection & processing
Peepul	0.34	Cultivar selection & commercialisation
Others:		
Cheerota	2.00	Field trials
Mutha	0.60	Field & distillation trials
Agar	0.40	New production technology

Conclusions

Unless improvements are made in the supply chain, *at best*, Bangladeshi producers will not be able to benefit from the continued growth in demand for raw medicinal plants, and, *at worst*, it could further lose market share from its existing 40% by value.

The key changes that are necessary are:

- Improved quality,
- Commercialisation of production,
- Market orientated production,
- Closer linkages between producers and processors.

Suggested next steps

Rural-based production

- Development of short listed crops, e.g. Haritaki, Amloki, Bahera, Dhaiful
- Identification, multiplication and dissemination of elite planting material
- Promote Primary Processing, e.g. Musabbar, mint oil
- Commercialise production, e.g. Arshwagandha, Kalomegh
- Conduct field trails: to test possibility of production in Bangladesh, e.g. Cheerota, Isubgul

Post harvest handling

Upgrade the function and operation of medicinal plant beparis and their collectors/pikers through:

- Improved primary processing e.g. drying, grading, storage and plant identification
- Creating closer links between the industrial sector and inter-district beparis to promote existing crops, e.g. *Aloe vera*, Neem and Mutha

Processing sector

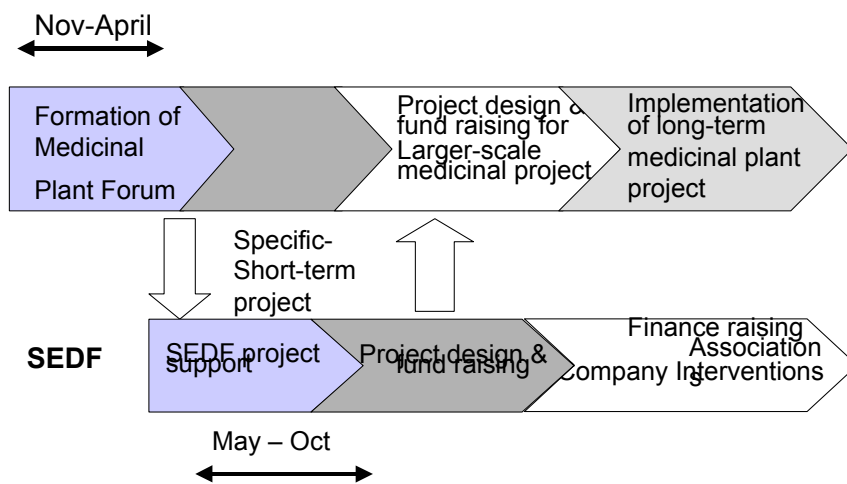
- Assistance with modernisation of factories, improving layout and hygiene issues.
- Facilitating closer linkages between factories and beparis, so new products and improved availability can be secured.
- Exploring possibilities of bulk buying by locally based processors associations.

In return for support and promotion of the medicinal plant industry by Government and the international aid sector, the industry will develop systems which ensure adherence to the specified plant ingredients in products.

Interaction between IC and SEDF

It is envisaged that a clear focus will emerge as to the industry's priorities for support out of the Medicinal Plant Forum. It is recommended, in particular, to implement a short-term intervention over a period of about 6 months in 2004 that could produce clear positive results.

The longer-term aim would be for SEDF to draw up a larger-scale medicinal plant project and raise international funding for its implementation.



Interaction between IC & VFFP

The greatest scope for quick and positive benefits under IC's Village & Farm Forestry Project (VFFP) in Rajshahi Division would be through building on existing initiatives, for example:

- The diversification of markets and products for the *Aloe vera* producers near Natore.
- Market linkages between the Mutha producers and the medicinal plant processing sector.
- The commercialisation of Arshwagandha production in Chapai Nawabganj.
- The propagation and sale of elite cultivars of Haritaki, Amloki and Bahera.

In the longer term, interventions such as introducing Japanese mint oil production and processing in Bogra would be a more speculative intervention.

ACKNOWLEDGEMENTS

The consultant would like to place on record his thanks to the other team members for their enthusiasm and commitment and especially to Syed Ali Imam and Dr. Jahangir Hossain, whose knowledge and insight added immeasurably to the quality of the findings. Intercooperation's staff, both in the field and at their Dhaka headquarters, have provided excellent support. Our deepest appreciation goes to the processors, wholesalers, traders and herbal doctors who gave so generously of their time and knowledge. Without them this work would have been impossible.

Grahame Dixie

Note

Kindly address any comments on, and corrections to, this document to icdhaka@citech-bd.com

GLOSSARY

AP	Ayurvedic Pharmacy
BCSIR	Bangladesh Council of Scientific and Industrial Research
BFRI	Bangladesh Forest Research Institute
IC	Intercooperation
PRAN	Programme for Rural Advancement Nationally – a large food processor
SDC	Swiss Agency for Development & Cooperation
SEDF	SouthAsia Enterprise Development Facility
VFFP	Village & Farm Forestry Project
Collector	The person who collects medicinal plants/ plant parts from wild or from farmers
Piker	The person who buys medicinal plant/ plant parts from collectors or from farmers and sells to Beparies
Bepari	The person who buys medicinal plants/ plant parts mainly from pikars and sometimes from collectors or farmers and sells to wholesalers/ processors.
Ayurvedic	A branch of medical science/ practice which deals exclusively with herbal plants/ plant parts as active ingredients in the preparation of medicines. In Ayurvedic medicines, fermentation process is being practiced.
Unani	A branch of medical science/ practice, which deals with both medicinal plants/ plant parts as well as some essential chemicals in the preparation of medicines. In Unani medicines, no fermentation process are being practiced, rather some chemicals as preservative are being used.
Kabiraj	Herbal medical practitioner deals with Ayurvedic medicines.
Hakim	Herbal medical practitioner deals with Unani medicines

The Local and Latin names of the medicinal plants are presented in Annex 1.

1. Introduction

SEDF and Intercooperation commissioned a study on the market potential of medicinal plants in Bangladesh. The Terms of Reference were:

- Estimate the value of the formal herbal sector in terms of raw material (imported and locally produced, at the farm-gate and wholesale level), factory output, and retail level. Comment on the growth in market size.
- Map the marketing chain from Bangladeshi producers to the factory and show how imported product is channelled into the factories. The market chain from factory gate to consumer will also be identified.
- Identify the important players in the herbal medicine market and establish the important:
 - local production locations
 - sources of imports
 - importers/wholesalers
 - processors
 - retail outlets
- Identify the 30 most important herbal products used by the local industry. Estimate their volume and value at the farm-gate and at the factory gate levels. Identify their primary sources and comment on any significant issues in terms of quality.
- Of the 30 most important herbal products, identify those with the potential for increased production in Bangladesh.
- Establish the needs, constraints and opportunities for development from the different actors in the medicinal plant sector. In particular, identify possible opportunities for SEDF interventions. Also, it is important to evaluate the real issues that face the small farmers and market intermediaries and try to specify potential actions that could address these issues.
- Suggest technology, techniques and market linkages that would modernise the medicinal plant sector in Bangladesh and lead to improved rural incomes.
- Comment on any pending international legislation that could affect the development of the industry.
- Suggest ways that the industry can work together to their own mutual benefit.
- Comment on any Government or donor interventions.

Approach and Methodology

Preliminary work on this medicinal market study was carried out in April 2003 when a listing of some 400 species of medicinal plants was drawn up. These species were named in terms of their Latin, Sanskrit, Hindi and Bengali names and, where possible, their English names. The parts used in herbal medicines were also listed by species. Using this listing, the volume and value of the medicinal and aromatic plant market in

Bangladesh was estimated based on the findings of a study entitled “Conservation & Utilisation of Medicinal & Aromatic Plants 1997” (Kamrul Ahsan et al). These were entered onto an Excel spreadsheet to provide some basic benchmarking.

The key potential species for more detailed investigation were identified through discussions with the regional expert, Dr. Pawan Sharma, and the local consultant, Dr. Jahangir Hussain. During this input in April 2003 the outline work programme for September/October 2003 field programme was planned.

The field programme for the medicinal plant market study started in late September. The work was carried out by a team of five and lasted three and a half weeks. The team comprised Grahame Dixie, International Marketing Consultant of Accord Associates, Syed Ali Imam of Intercooperation and Dr. Md. Jahangir Hussain, an agroforestry specialist and with research assistance from Mr. Salauddin Ahmed and Ms Stamina Halder.

In total the team carried out over 65 interviews, of which 25 were with processors, 17 with wholesalers, importers and retail shops, 19 with beparis, and 5 with hakims and kabirajs. Examples of the questionnaires can be found in Appendix 1. All interview notes were typed up within 48 hours of the interview and the tabular data pasted into Excel spreadsheets for analysis.

The study approach was highly commercial and aimed to establish from the trade the value of the Bangladeshi market for medicinal plants (volumes x unit type prices). The overall aim of the work was to:

- establish the value of the Bangladeshi medicinal plant market
- identify major medicinal plant products with potential for production in Bangladesh based on their suitability for production under Bangladeshi climatic conditions, coupled with expanding demand, shortage of supply and/or export
- understand the supply chain and its important players, so as to facilitate future possible interventions
- generate project ideas, which could lead, particularly, to improved rural incomes for small scale producers, as well as benefits in terms of health and in the value-added chain.

In particular, the study focussed on Unani and Ayurvedic medicine processing sectors, and the important sector where Bangladeshis buy individual herbs for purposes of self-treatment. The homeopathic and herbal practitioner sectors (both hakims and kabirajs) were investigated in less detail.

Wherever possible, data was verified against at least two other sources in order to increase the accuracy and confidence in the results generated.

Throughout the report local plant names are used. Annex 1 provides a listing of local names and their Latin and English equivalents. Annex 2 provides product profiles for a short list of 25 important medicinal plants. This sets out their therapeutic values, the area of supply, the ratio between locally produced and imported product, typical prices at different points in the marketing chain, a listing of potential buyers, as well as future prospects for the crop and the product specifications. A contact list of some 100 players in the medicinal plant sector is found in Appendix 2. This provides a foundation for building up a database of companies, organisations and individuals, who are important players in the sector.

The following report can be conveniently divided into 4 parts. The remainder of the report is divided into four chapters.

Chapter 2 describes the current situation in the medicinal plant sector. This covers the size of the different sectors, the value of medicinal plants as raw materials, the existing marketing chain, primary production locations, price points in the production and distribution of medicinal plants, the importance of the medicinal plant sector to the Bangladeshi economy and, finally, focuses on the most important species used by the Ayurvedic, Unani and self-treatment sectors and ties these species into the ailments that they treat.

Chapter 3 considers the important influences, which will impact on the future of the medicinal plant sector. This, in particular, concentrates on government policy, commercial factors and the supply chain.

Section 4 projects forward the size of the various sectors in five years' time, estimating the value and the industry's expanded requirement for raw materials. Analysis is carried out to show which species, in the industry's opinion, will be required in future because of increased demand, shortage of supply or prospects for import substitution.

Section 5 the final section, starts by considering a shortlist of species for promotion. It goes on to draft some potential short-term interventions, outlines the components of a possible longer-term project, and indicates how SEDF and InterCooperation could co-operate in the future.

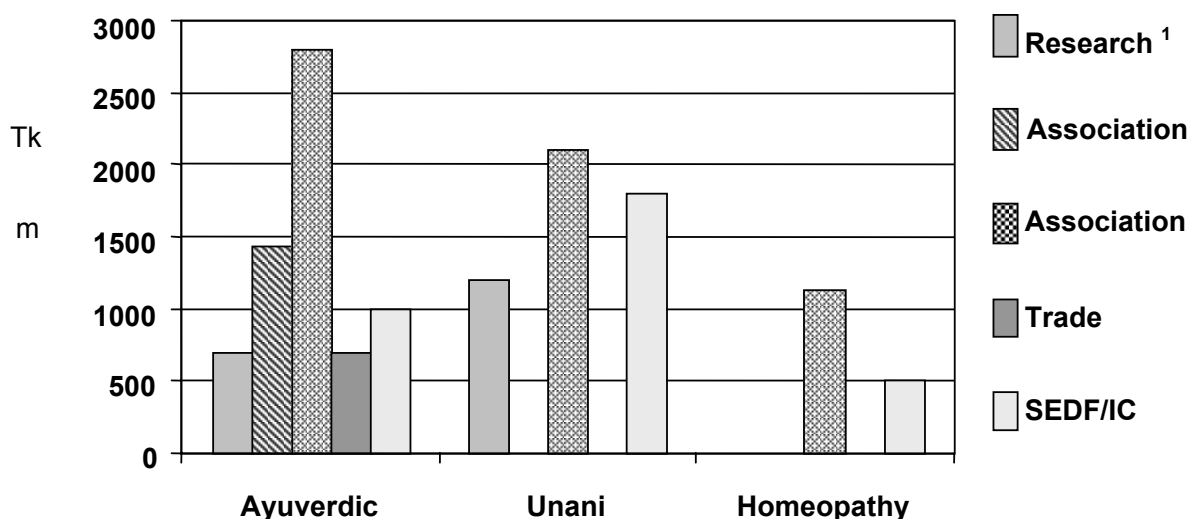
In the Executive Summary the main findings of the study are summarised and key areas for future interventions are set out.

2. Existing Situation

2.1 Estimated Size of the Herbal Medicine Sector and its demand for Medicinal Plants as Raw Material

The estimated size of the herbal medicine market for the Ayuverdic, Unani and homeopathic sectors in terms of trade prices are presented in graph 1. Estimates were provided by private sector companies, as well as by the leaders of various processors associations. The graph demonstrates a truism of the study that individual companies tended to scale down their reports of sales for fear of the tax authorities while trade associations tended to exaggerate sales figures, probably in order to emphasise the importance of the industry sector they support.

Graph 1: Estimated Size of the Market for Processed Herbal Medicines at Trade Prices in Tk Millions

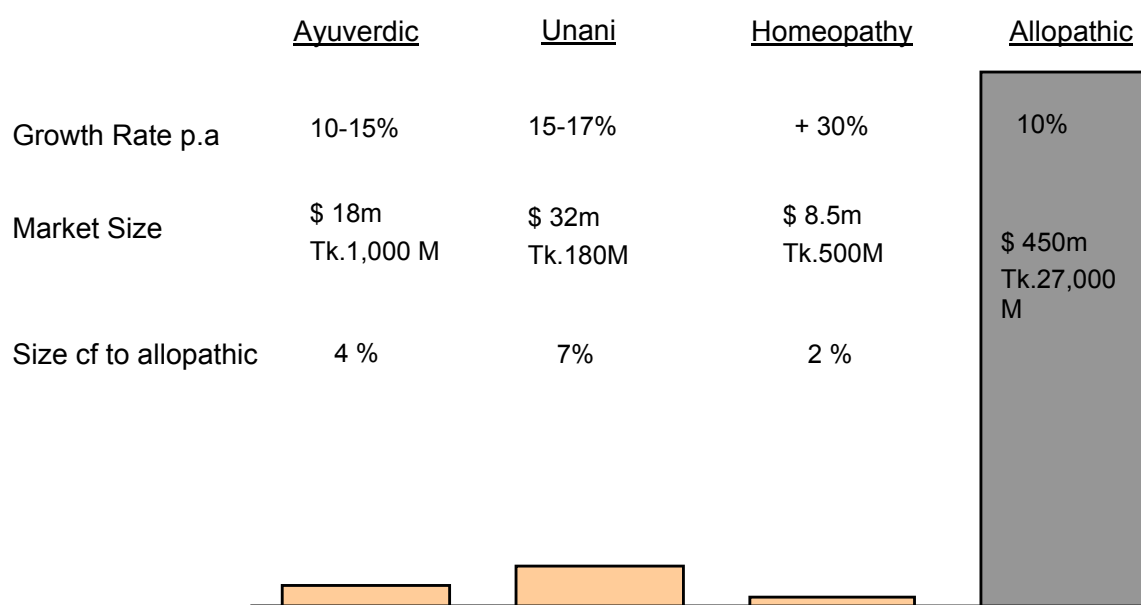


This SEDF/IC study estimated the turnover figures at trade prices for the Ayuverdic sector at around Taka (Tk) at 1,000 million and Unani at around Tk 1800 million, with homeopathy standing at around Tk 500 million. The study's estimates of turnover were built upon the turnover figures for the top 20 processing companies, as supplied by themselves and/or by their fellow processors. In both sectors there are estimated to be about 200 smaller scale processing factories. Typical turnover figures for these small to medium scale companies were extrapolated across the sector from the study's interview results from processors of this size. It has been assumed that all the companies registered with the drug administration authorities are active economically. It has not been possible to verify this assumption. Further and better information might reduce the total turnover of each sector, but is unlikely to change the total figure by more than 10-15%.

¹ BCSIR & BFRI

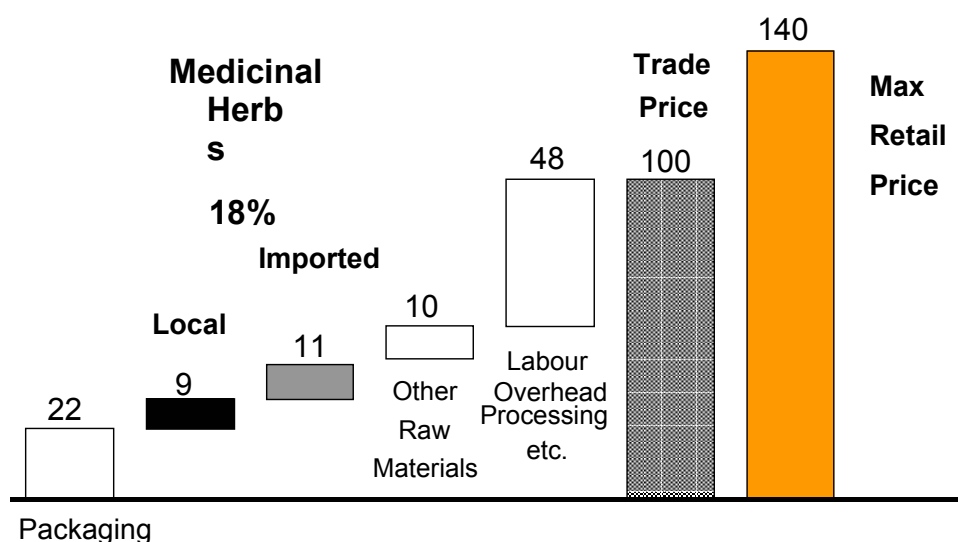
Graph 2 places the herbal medicine sector in the context of the allopathic sector. In total, the formally processed herbal medicine sector is worth approximately 13% of the allopathic market. The Bangladeshi herbal medicine market is valued at Tk 3,300 million (approximately \$60 million) at trade prices and has been growing at rates considerably higher than the 10% growth rate recorded for the allopathic market. The fast growth in the Unani sector is believed to be fuelled by the larger number of trained Hakims, its simpler and faster production process and the easier treatment courses than Ayuverdic medicine. Homeopathy is the smallest sector, but is reported to be growing rapidly because of the low treatment costs. However, because of the specialist nature of the herbs used and the existing low volumes of raw material required, the homeopathic sector is not considered further in this study.

Graph 2: Market Size and Annual Growth Rates of the Herbal Medicine Sectors in Comparison with the Allopathic Sector at Trade Prices



Industry turnover figures can be used for estimating raw material requirements. Graph 3 serves to demonstrate the typical cost breakdown for herbal medicines. This waterfall graph provides the average cost breakdown of 13 fast selling Ayuverdic medicinal products. Packaging, including bottles, labels, caps and containers, is typically the highest unit cost. The total cost of raw medicinal plants amounts to around 18% of the trade price. Other raw materials, such as sugars, chemicals, etc., may add another 10%. Most processors when asked as to the cost of raw herbal materials as a percentage of trade prices normally provide a figure between 25% and 30%. This appears to be because they generally combine the medicinal plant costs with these other raw material costs. Maximum retail prices (MRP) are around 40% above trade prices.

Graph 3: Cost Breakdown of Typical Ayurvedic Product Expressed as a % of the Trade Price (av. 13 products)



The table below sets out the percentages used in this study to estimate medicinal plant buying requirements of the Ayurvedic and Unani sectors. These are set against international benchmarking. Typically, Bangladeshi figures are slightly lower than international figures, reflecting lower labour costs and lower margins. The Bangladeshi benchmarks are based on confidential costings provided by individual Unani and Ayurvedic processors and verified by analysis of the ratio of medicinal plant purchases as against companies' sales turnover.

International Benchmark	10 – 15%, 20% maximum, of trade prices
Ayurvedic	18%
Unani	14%

Table 1 estimates the total value of medicinal plants, at the wholesale level, as required by the four major medicinal plant sectors in Bangladesh. In total around Tk 800 million (\$14 million) are spent annually on some 17,500 tonnes of, mainly dry, medicinal plant material. On average around 40% by value and 70% by volume is Bangladeshi-grown plant material. The Unani sector accounts for around 30% of this demand, the Ayurvedic sector 22%, the herbal practitioners around 12%, with self treatment (typically of single herb species) being the largest individual sector accounting for around 35% of the total demand. In terms of value, the self-treatment sector is heavily dependent on imported product, i.e. over 70%; while Ayurvedic is on average around 55% dependent on imports and Unani only 50%. However, the interview programme revealed very great differences between companies in terms of the proportions they spent on imported and local product. In the Ayurvedic sector one company only spent 9% on imported products, while another 95%. In the Unani sector the range was less extreme, ranging from 14% to 75%.

Table 1 Estimated Total Value of Medicinal Plants as Raw Material

Sector	<i>Local</i>		<i>Imported</i>		<i>Total</i>	
	<i>TK. M</i>	<i>\$ m</i>	<i>TK. m</i>	<i>\$ m</i>	<i>TK. m</i>	<i>\$ m</i>
Unani	127	2.2	127	2.2		
Ayurvedic	82	1.4	100	1.75		
Herbal Doctors	45	0.8	54	0.95		
Self Treatment	76	1.3	200	3.5		
SUB TOTALS	330	5.8	481	8.4		
Tonnes	12,500		5,000			
TOTAL VALUE					810	14
TOTAL QUANTITY					17,500 tonnes	

Table 2 serves to divide the demand for raw materials between the different levels of formality of the businesses involved. Large companies, i.e. the top 20 herbal medicine processing companies, account for around 25% of raw material demand, of which some 950 tonnes would be imported and 4,500 tonnes from Bangladeshi producers. The 400 smaller processing companies will account for about 30% of the demand. In total the informal sector, i.e. herbal practitioners and, largely single herb, self treatment would amount to about 45% of the demand.

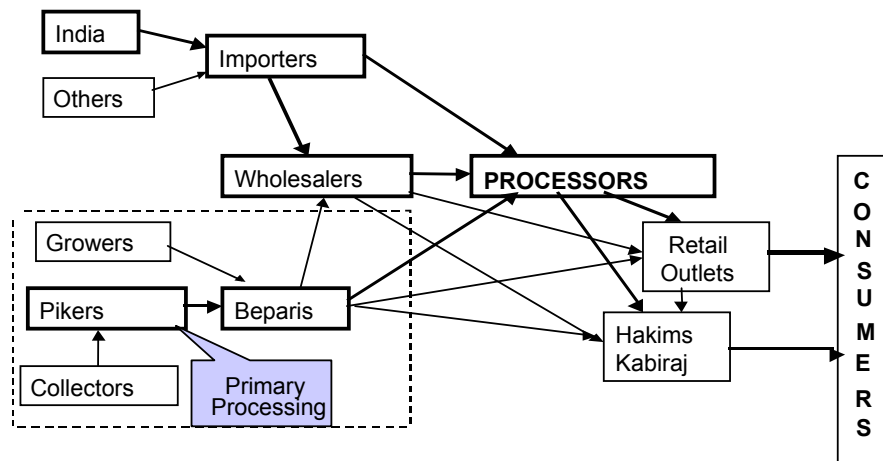
Table 2 Medicinal Plants utilised by company size and sector

	<i>Local</i>		<i>Imported</i>	
	<i>Tk m</i>	<i>\$ m</i>	<i>Tonnes</i>	<i>Tonnes</i>
Large Companies	195	3.25	3,450	1,520
Small Companies	240	4.20	4,250	1,800
FORMAL	436	7.45	7,700	3,320
Practitioner	100	1.70	1,550	650
Self Treatment	275	4.80	3,250	1,000
INFORMAL	375	6.50	5,400	1,950

2.2 Medicinal Plant Supply Chain

Figure 1 sets out a diagram of the distribution chain showing how imported and local raw medicinal herbs are channelled through the various sectors of the herbal medicine industry.

Figure 1: Herbal Medicines Supply Chain



Importation

The majority of imported medicinal herbs are sourced from India, although the origin of production of some of the individual products may be elsewhere, e.g. Nepal, Pakistan. There are estimated to be around 20 importers dealing with medicinal plants (amongst other products) – mainly based in Dhaka. They are in the main based in Dhaka. They supply to medicinal plant wholesalers generally located in Moulivbazar, Dhaka and also make direct sales to some of the major processors. Medicinal plant wholesalers mainly trade in imported product (i.e. about 70% in terms of volume and 90% in terms of value). The larger wholesalers in particular sell to processors and claim that, although overall sales have been increasing in the last 7 to 8 years, it is the sales to the processing sector that have been the most dynamic. Of the total 5,000 tonnes of imported medicinal plants, wholesalers account for around 3,000 tonnes; the remaining 2,000 tonnes will either be direct sales by importers to processors or be accounted for by imported spice products such as ada, join, methi and mouri. Wholesalers and processors sell product to retail outlets and to herbal practitioners. The most important market for herbal medicines are rural consumers. This is partly because Bangladesh has a largely rural population, but is also believed to reflect the urban consumer's preference for allopathic medicines because of their more immediate effect.

Local Supply

Interviews with 12 inter-district beparis have been used to establish an outline of the supply chain for Bangladeshi medicinal plants (Figure 2) from the more important areas (the Chittagong Hill Tracts and north central Bangladesh - Modhupur, Tangail and Mymensingh).

These beparis claim that around 90% of all Bangladesh's medicinal plants are wild harvested. A typical inter-district bepari will spend around Tk 550,000 on medicinal

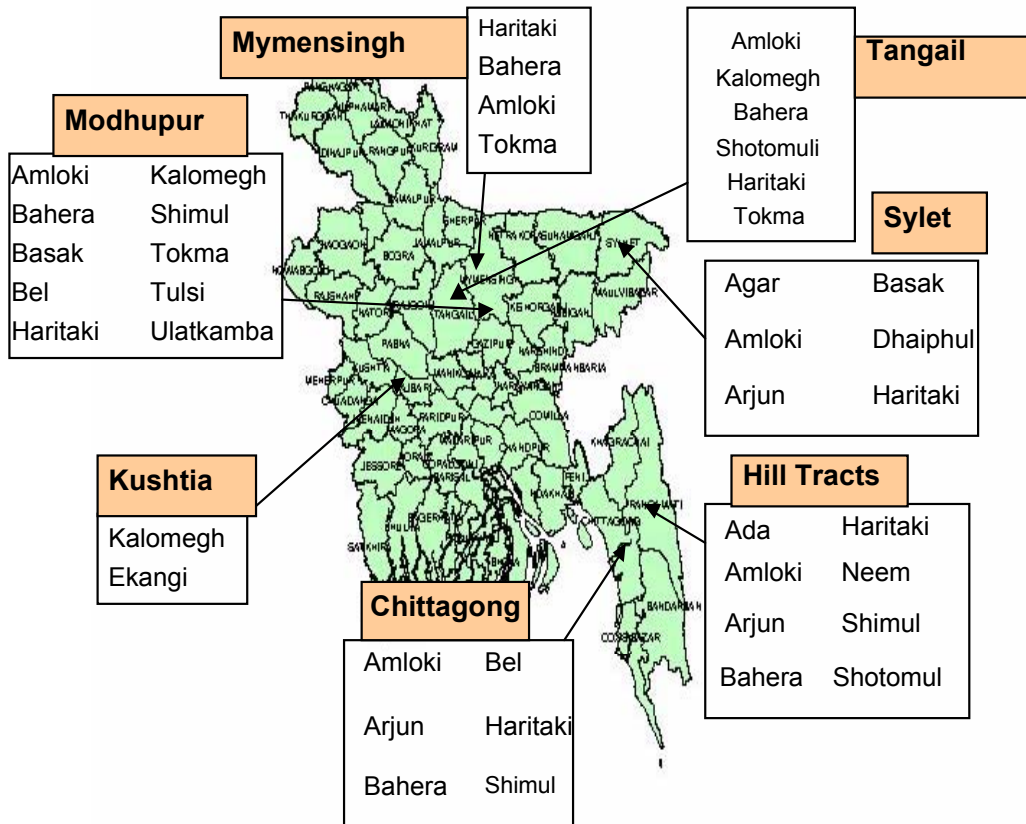
plants p-a and sell on for around Tk 700,000 – equivalent to about 36 tonnes of products. This he will have secured directly from around 11 farmers/collectors and a further 17 collectors/pikers, who in turn will each have probably 3 or 4 individuals collecting on their behalf. The bepari provides cash advances and specifies the plants required. Primary processing, i.e. drying, cutting, grading and storage, is mainly carried out by the farmers, collectors and local pikers, with the bepari concentrating on transport and distribution. The latter will sell to wholesalers and retailers and directly to a number of processors and possibly some herbal practitioners.

Figure 2: Detail of the Supply Chain from Bangladeshi Suppliers



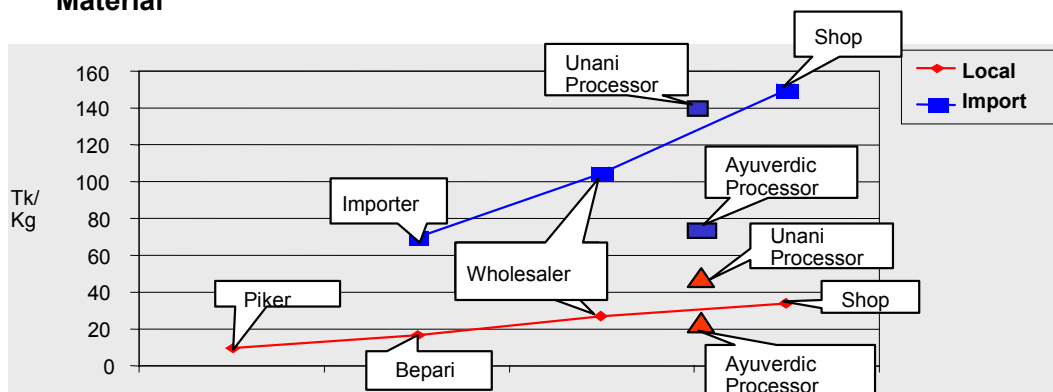
The major areas for sourcing medicinal plants obtained locally are presented in Figure 3. In Bangladesh are presented in Figure 3. In addition commercial cultivation of certain species has been recorded in Rajshahi Division - Aloe vera near Natore, Mutha in Thakurgoan, Chai in Pargacha and Arshwagandha in Chapai Nawabganj.

Figure 3: The Major Medicinal Plant Production Zones in Bangladesh



The average price points for both locally produced and imported medicinal plant material are presented in graph 4. Imported medicinal plants are between 3 and 4 times more expensive per kilo than locally produced product. The typical unit costs of raw medicinal plant material are cheaper for Ayurvedic processors than for Unani.

Graph 4: Average Price Points, Locally Produced & Imported Medicinal Plant Material



2.3 Medicinal plants and the Bangladesh Economy

It is estimated that some 12,500 tonnes of dried medicinal plant material produced in Bangladesh is sold. These products are worth some Tk 255 million (\$4.5 million) to the rural economy and around Tk.330M (\$5.8M) at the factory rate/wholesale. The 5,000 tonnes of imported medicinal plants cost around Tk 480 million (\$8 million).

It is believed that there are around 350 inter-district beparis who are serviced by 6,000 to 10,000 local collectors, pikers and growers. In total there are said to be around 200 Unani and 200 Ayuverdic registered factories, plus some 70 homeopathic factories. Collectively they will employ 2,000 to 4,000 people. In addition, there are said to be 5,000 qualified and 80,000 unqualified herbal practitioners in the country.

2.4 Important Medicinal Plant Species

Collectively, some 650 different species are used by the herbal medicine sector. As graph 5 shows, even by applying the 80:20 ratio, whereby 80% of the value is represented by 20% of the species, this would still represent an unmanageable 120 medicinal plant species on which to focus. Our analysis has shown that the top 4% of species, i.e. 25 species, represent over 60% of the raw material costs. (i.e. 80:20² effect). This is set out in graph 5 below. This ratio has been verified through detailed analysis of processors' medicinal plant buying and by applying formulae to the work carried out by Kamrul Ahsan et al in their work on the "Conservation and Utilisation of Medicinal and Aromatic Plants in Bangladesh 1997".

Graph 5: 80:20² Effect: Species Focus

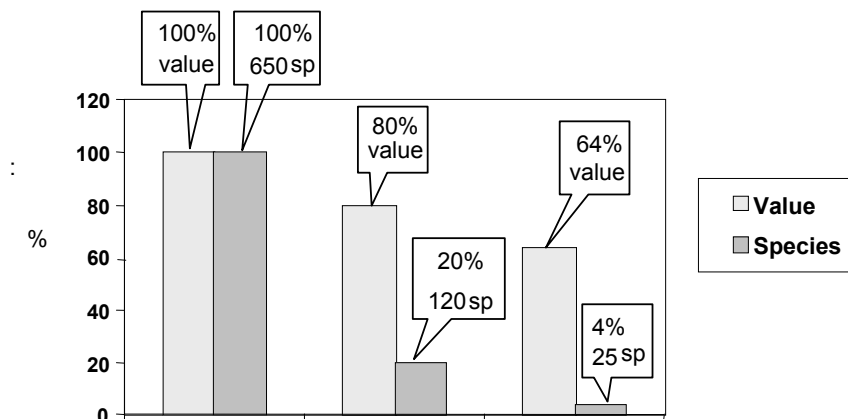


Table 3 sets out the Bangladeshi demand for 29 species of significant medicinal plants in terms of the Unani, Ayuverdic, herbal practitioner and self-treatment markets. Only three products are worth over \$1 million: two of these (Cheerota and Isubgul) are imported and used almost exclusively for self-treatment. The third, Amloki, is used by all markets. All products are traded in low volumes - i.e. below 1,000 tones p.a. with the exception of Amloki and fresh Aloe vera.

The relatively small demand for individual species requires that any promotion precisely targets those species that have substantial growing demand. Considerable danger exists of promotion leading to oversupply of niche products.































Table 3: Medicinal Plant Demand by Major Product and Market Sector in TK, US \$ and Tonnes

Medicinal Plants		Ayurvedic			Unani			Herbal Doctors			Self Treatment			Total		
Local Name	Latin Name	Tk'000	\$	MT	Tk'000	\$	MT	Tk'000	\$	MT	Tk'000	\$	MT	Tk'000	\$	MT
Cheerota	<i>Swertia chirata</i>	381	7	1				95	1,672		100	1,754,386	200	100,476	1,762,746	201
Isubgul	<i>Plantago ovata</i>										100,000	1,754,386	800	100,000	1,754,386	800
Amloki	<i>Embllica officinalis</i>	17,103	300,059	342	17,332	304,078	347	8,609	151,034	172	25,000	438,596	500	68,045	1,193,767	1,361
Ada	<i>Zingiber officinalis</i>	6,951	121,948	126	17,830	312,805	324	6,195	108,688	113				30,976	543,441	563
Arshwagandha	<i>Withania somnifera</i>	14,867	260,820	124	8,566	150,287	71	5,858	102,777	49				29,291	513,883	244
Join	<i>Trychospermum ammi</i>	3,205	56,231	92	14,904	261,473	426	4,527	79,426	129				22,636	397,130	647
Bel shoot	<i>Aegel marmelos</i>	12	205		10,587	185,745	331	2,650	46,487	83	3,309	58,058	20	16,558	290,495	434
Peepul	<i>Piper longum</i>	5,154	90,420	52	5,871	103,008	49	2,756	48,357	25				13,782	241,786	126
Mutha	<i>Cyperus rotundus</i>	4,952	86,872	165	5,022	88,097	167	2,493	43,742	83				12,466	218,711	416
Basak	<i>Adhatoda vasica</i>	1,867	32,756	41	7,528	132,076	167	2,349	41,208	52				11,744	206,040	261
Arjun	<i>Terminalia arjunalis</i>	5,749	100,861	192	2,178	38,207	73	1,982	34,767	66				9,909	173,836	330
Methi	<i>Trigonella foenum</i>	16	273		960	16,836		244	4,277		12,150	213,158	270	13,369	234,544	270
Haritaki	<i>Terminalia chebula</i>	3,882	68,105	243	3,600	63,152	225	1,870	32,814	117			250	9,352	164,072	835
Bahera	<i>Terminalia bellerica</i>	4,765	83,596	318	2,002	35,115	133	1,692	29,678	113			250	8,458	148,389	814
Tokma	<i>Hyptis suaveolens</i>										12,000	210,526	300	12,000	210,526	300
Tulsi	<i>Ocimum sanctum</i>	8	136		5,503	96,549	183	1,378	24,171	46				6,889	120,857	230
Ghirta Kumari	<i>Aloe vera</i>	8	136					2	34		10,000	175,439	1,000	10,010	175,609	1,000
Ulat-Kambol	<i>Abroma augusta</i>	4	68		3,466	60,816		868	15,221		2,000	35,088	100	6,338	111,192	100
Dhaiful	<i>Woodfordia fruticosa</i>	3,676	64,488	167	756	13,263	34	1,108	19,438	50				5,540	97,189	252
Kaløjira	<i>Nigella sativa</i>				215	3,779	30	54	945	7	7,000	122,807	200	7,269	127,531	237
Kalomegh	<i>Andrographis paniculata</i>	148	2,593	5	1,845	32,366	61	498	8,740	17	3,000	52,632	200	5,491	96,331	283
Mouri	<i>Foeniculum vulgare</i>				3,369	59,098	61	842	14,774	15				4,211	73,872	77
Ekangi	<i>Zingiber zerumbet</i>	4	68		764	13,400	25	192	3,367	6	4,500	78,947	150	5,460	95,783	182
Shimul	<i>Salmalia malabarica</i>	2,466	43,265	35	623	10,926		772	13,548	9				3,861	67,739	44
Shoto-muli	<i>Asparagus racemosus</i>	2,559	44,903	73	286	5,016		711	12,480	18	249	4,374	50	3,806	66,773	141
Pudina	<i>Mentha arvensis</i>	1,276	22,383	27	756	13,263	16	508	8,911	11				2,540	44,557	53
Neem	<i>Azadirachta indica</i>	338	5,937	17	1,206	21,165	60	386	6,776	19				1,931	33,878	97
Bhui kumra	<i>Ipomea digitata</i>	1,634	28,662	136				408	7,165	34				2,042	35,827	170
Sarpagandha	<i>Rauvolfia serpentina</i>	1,556		35				389	6824	9				1,945	34121	43
Sub-Total of main sp.		82,580	1448773	2191	115,170	2020519	2786	49437	867323	1244	279,209	4,898,397	4290	526,396	9235012	10510
Average Values		38	661		41	725		39	697		65	1142		50	879	
Estimated Total Size including minor crops and imported items		206,450	3621932	5477	174,499	3061393	4220	98874	1734646	2488	279,209	4,898,397	4290	759,033	13316368	16476
Major Companies		82,580	1448773	2191	104,700	1836836	2532	59324						246,605	3285608	4723
Major Companies and major items		49,548	869264	1315	62,820	1102101	1519	35594						147,963	1971365	2834

Spices such as Ada, Join, Methi and Mouri amount to over 1,500 tonnes but form a small proportion of the overall demand for spices.

The top 10 species in terms of value for the three major sectors are presented in Table 4 which also indicates which of these are partly or almost wholly imported. Of the 20 different products listed nearly 60% are partly or largely imported. Bangladesh has fallen in importance, as a supplier of medicinal raw materials, , mainly because of the declining availability of wild harvested material and the fact that imports have been increasingly substituted for local production.

Table 4: Top 10 Species, by value and sector

<i>Ayurvedic</i>	<i>Unani</i>	<i>Self Treatment</i>
Amloki 	Ada 	Cheerota 
Arshwagandha 	Amloki 	Isubgul 
Ada 	Join 	Amloki 
Arjun 	Bel shoot 	Methi 
Peepul 	Arshwagandha 	Haritaki 
Mutha 	Basak 	Tokma 
Bahera 	Peepul 	<i>Aloe vera</i> 
Haritaki 	Tulsi 	Kalomegh 
Dhaiful 	Mutha 	Ekangi 
Join 	Haritaki 	Ulat kambol 

Key:  Local production  Mainly Imported  Partly Imported

2.5 Herbal Medicines

The important ailments, for which patients seek herbal solutions are presented in Table 5. Herbal practitioners reported that, in general, the demand for herbal treatments was increasing and that herbal medicines are particularly effective for issues involving stomach, nutrition and male and female sexual health. In the longer term, some of the more far-sighted practitioners were starting to observe an increase in the ailments associated with ageing, such as enlarged prostate and diabetes.

Table 5: Important Ailments and their Treatment by Herbal Medicines

Ailments	Treatment	Effectiveness	Demand
Stomach (Dysentery, diarrhoea)	Amloki, Haritaki, Bahera, Join, Bel, Gulmorich, Thankuni, Kurchi	✓ ✓ ✓	↗ ↗
General weakness (Malnutrition)	Arshwagandha, Berela, Lajjabati, Anatamul	✓ ✓ ✓	↗ ↗
Female sexual health	Ashok, Ulat kambaol, Lotus, Shimul phul,	✓ ✓ ✓	↗ ↗
Male sexual health	Shimul mul, Talmuli,	✓ ✓ ✓	↗ ↗ ↗
Cough & Cold	Tulsi, Peepul, Basok,, Ada shoot, Tut, Joisthi madhu	✓ ✓	→
Heart (Hypertension, Stress)	Arjun, Bahera, Sarpagandha, Gulmorich, Peepul	✓	↗ ↗
Rheumatism	Surunjan shirin	✓	↗ ↗
Urinary Tract Infection (UTI)	Shet chandan, Red lotus, Kababchini,	✓ ✓	↗
Insufficient lactation	Black cumin, Bhuikumra, Shotomul	✓ ✓ ✓	↗
Cardiac Ailment	Juice of Nishindapata	✓	↗ ↗
Diabetes	Gurmur, Jam seed, Methi, Neem, Goggul	✓ ✓	↗ ↗
Asthma	Tut, ada, Josthi madhu, Basak, Kalojira	✓ ✓	↗
Liver disease	Macu, Kakmachi	✓	↗
Gastric	Pudina, Amloki, Ada	✓	↗
Jaundice	Kakmachi, Kashni, Bangi seed, Cucumber seed	✓	↗ ↗

3. Future Influences

3.1 Future Influence of Government Policy

Promotion

The government of Bangladesh has an active policy of promoting the use of herbal medicines. It is achieving this through media campaigns, including advertising, and is setting about purposefully to create interest, awareness and emphasis on herbal medicines as an effective substitute for allopathic treatments.

Amendment in Drug Policy

It is reported that the Drug Policy Implementation Committee, Chaired by the Secretary, Ministry of Health and Family Planning, proposed a number of amendments in the Drug policy – particularly under the sub-section referring to the manufacture of herbal medicines. The following sub-clauses have been proposed to be added in Clause 83:

- B.4. “For Ayuverdic drugs, standards shall be those standards which are specified in any approved Ayuverdic or Herbal Formulary/Pharmacopoeia/ Compendium/PDR or any other authoritative books of any country including India, UK, USA, Italy, France, Australia, Africa, China, Korea, Germany, Sweden and other countries which are developed in herbal medicine. The local manufacturers of Ayuverdic drugs can produce locally any existing Herbal products from any developed country in any dosage form like tablet, capsule, liquid or semi-solid, cream, ointment, with authentic product reference.”
- C.1.f The control over the advertisement of registered Ayurvedic drugs may be liberalised.
- C.1.h The Ayurvedic drug manufacturing companies have to be entrusted exclusively with the responsibilities of manufacturing agro and local component based drugs frequently used for the relief and treatment of common ailments and sufferings of the mass people at the primary health care level.

The government has directed a number of agencies to work in the herbal medicine sector. Drug Administration is responsible for the certification and supervision of herbal medicine processors. The National Herbarium is charged with the responsibility of surveying medicinal plant production and the conservation of endangered species. The Bangladesh Council for Scientific & Industrial Research (BCSIR) is responsible for technology development, while the Bangladesh Forest Research Institute (BFRI) undertakes research. The National Ayuverdic and Unani Board is responsible for issues of education.

Hospitals

The government is appointing qualified herbal doctors to operate in public hospitals.

Conclusions

Government policy is to actively promote the use of herbal medicines and it is in the process of liberalising the market and allocating specific functions for its agencies. There may, however, be a lack of co-ordination and integration between the activities of different agencies and, in particular, in developing and promoting the uptake of the commercial growing of medicinal crops.

3.2 Future Influences of Commercial Factors

Modernisation

A significant proportion of herbal medicine processing companies and, particularly, the larger and more successful operations, are in the process of undergoing modernisation, e.g. Hamdard, Kundeshwari, AP, Pharmagen, Puratan Mourasha.

The modernisation is often characterised by the emergence of a new generation of managers, the uptake of more commercial practice and a greater insistence on quality, hygiene, production efficiency and a more focussed approach to marketing. Within the existing herbal sector, there are examples of best practices in terms of raw materials supply and storage, quality control, hygiene, modern processing and production systems, creative marketing practices and effective mobilisation of sales forces. Wider uptake of such modernisation would benefit the industry.

Corporates

A number of major allopathic companies have entered, or are entering, the herbal medicine sector including Square, ACME, Jayson & Mystic. These corporations have been responsible for promoting the liberalising of the Drug Act and are particularly keen to apply science, modern marketing techniques and to open the avenues of marketing herbal products through MBBS doctors.

Consumers

The consumer of herbal medicines is, at the moment, mainly found in the rural areas. The herbal industry considers that the urban consumer prefers the allopathic treatments which are quick and focus on symptoms rather than the longer-term and holistic herbal approach. In view of the new marketing policies being promoted by both the modernising herbal medicine companies and the new corporates, it is expected that the urban herbal medicine market will be developed and sales will accelerate.

Conclusions

The rate of expansion in the herbal market should accelerate and, in particular, the larger and better organised companies should benefit.

3.3 Future Influences on the Supply Chain

Quality

Processors are concerned about the quality of the raw materials - particularly, those of local origin. Their primary concerns are about primary processing (drying, grading, storage), correct species identification and active ingredient content. Processors are also looking for value for money.

Wild Harvest

About 90% of Bangladesh's supply (i.e over 11,000 tonnes) is estimated to come from wild harvest. This is a declining and unsustainable resource due to continuous reduction in forest areas and the increasing commercialised use of land.

Imports

Imports have been increasing - partly due to the long-term decline of Bangladesh's wild harvest. In addition, certain required species cannot be grown under Bangladeshi agro-climatic conditions.

Extracts

A debate is under way throughout the herbal medicine sector in the Indian sub-continent as to whether raw material herbs can be substituted by herbal extracts of known active ingredients (a.i.). In particular, a number of the more science-based companies, including those that are modernising and the allopathic corporations, are considering substituting imported herbal extracts for raw medicinal plants for.

Cultivation

Within Bangladesh there is increased interest in commercialising the production of suitable medicinal plants. Examples of successes include *Aloe vera* production near Natore and Chai (Piper Chaba) in Pargacha both of Rajshahi Division. These developments have mainly been the result of private initiative by individual farmers but are piecemeal and largely unsystematic.

Conclusions

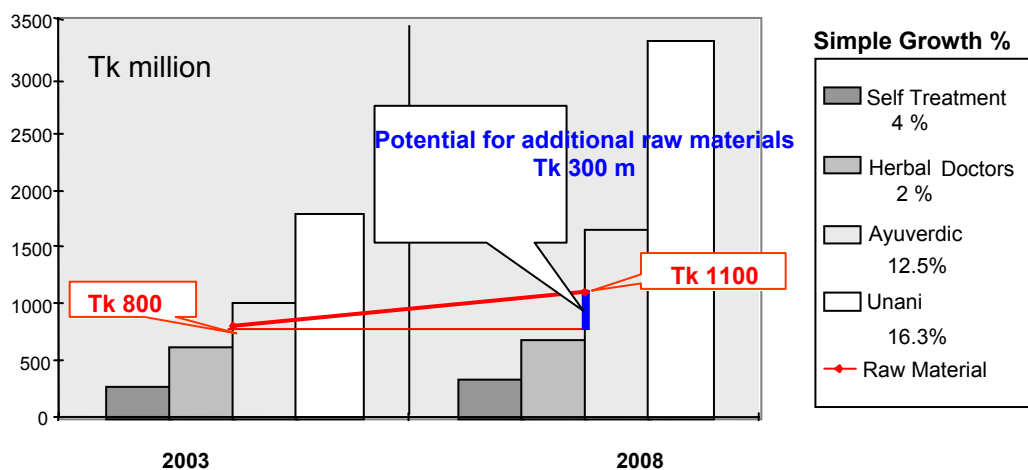
If Bangladesh is to compete against imported raw materials and to compensate for the inevitable long term decline in wild harvests, commercialisation of the production of suitable medicinal plant species and primary processing will need to be developed.

4. Future Demand for Medicinal Plant Materials

4.1 Future Demand for Medicinal Plant Materials

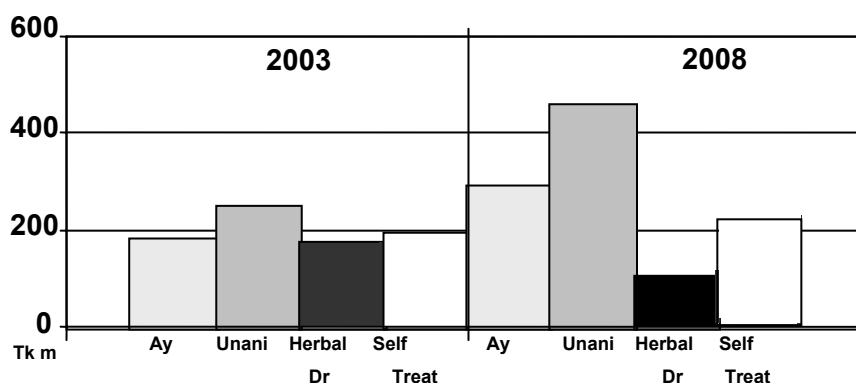
Projections of the future size of the herbal market in 5 years' time based on the assumption that the existing simple growth rate for self-treatment, herbal practitioners and the Ayurvedic and Unani sectors will continue are presented in graph 6. The total value of the herbal medicinal market, at trade prices, is expected to increase from around Tk 3,700 million in 2003 to Tk 5,850 million in 2008. These growth rate assumptions are conservative. As a result of the effects of the government's active promotion, market liberalisation and the dynamism of the corporates, these growth rates should be exceeded. Graph 6 also demonstrates that the demand for medicinal raw materials per year is expected to increase from around Tk 800 million to Tk 1,100 million - an increase of Tk 300 million.

Graph 6: Value of herbal medicines & medicinal plant materials requirements 2003-2008



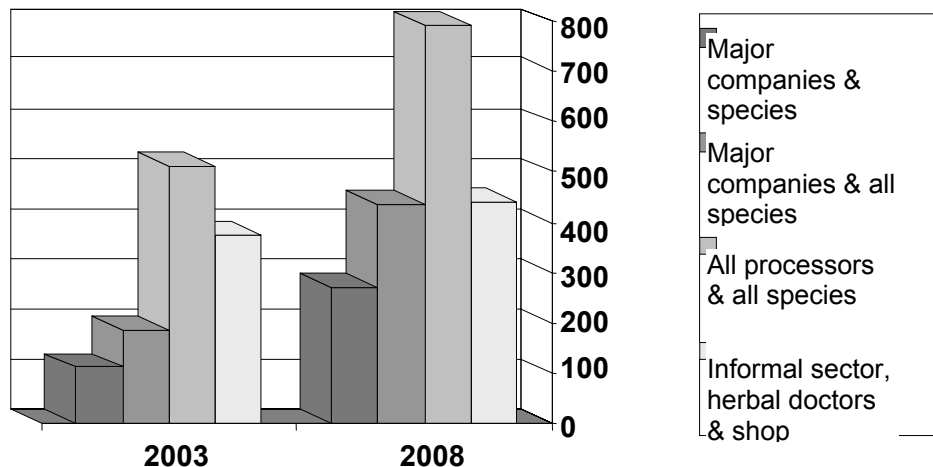
The bulk of this increased demand for raw material is likely to take place in the formal Ayurvedic and Unani sectors as demonstrated in graph 7. Currently, Bangladesh holds around 40% by value of the medicinal herb market, worth Tk 340 million. Given Bangladesh's reliance on an unsustainable wild harvest and its lack of a specific integrated programme to develop commercialised medicinal plant production, in 5 years' time it may only continue to supply Tk 340 million of raw material. In this scenario its market would drop from 40% to 30%. Conversely, with an active programme to commercialise the production, improve quality and to take back market share from products that are currently being imported, Bangladesh could expect to take 60% of the market and supply Tk 660 million of product per year – an increase of Tk 320 million (over \$5 million) of increased rural income per year.

Graph 7: Demand for Raw Medicinal Plants by Sector, 2003 & 2008



Given the continued and expected accelerated growth in demand for branded Unani and Ayurvedic products, and the increasing power and effectiveness of the larger companies, it is expected that the fastest growth in the demand for raw medicinal plants will occur amongst the larger companies (graph 8). In particular, about half the total increase in demand for raw materials will occur amongst the larger processing companies (both Unani and Ayurvedic) and specifically for the top 25 medicinal plant species. Within this particular sector, annual growth rates are expected of around 28%.

Graph 8: Raw medicinal plant requirements in terms of major companies, major species, all processors and the informal sector²



² Information on expected growth obtained from interview with traders and processors. No time-series data is available

4.2 Species Prioritisation by the Trade

As part of the interviewing process, processors, wholesalers and importers were asked to list which species they considered having an expanding demand, were in short supply or that they considered would have opportunities for substituting existing imported product. The results of these interviews are summarised in Table 6 below. The results show a clear focus on a limited number of species. Amloki, Haritaki and Bahera are major species with multiple markets, expanding demand and for which local supply is augmented by imports.

Table 6: Trade Opinion on Production Prioritisation

Expanding Demand	Short Supply	Import Substitution	Overall Assessment
Amloki	Arshwagandha	Haritaki	Amloki
Haritaki	Amloki	Amloki	Haritaki
Bahera	Bahera	Bahera	Bahera
Arshwagandha	Dhaiful	Ada	Arshwagandha
Shoto muli	Haritaki	Peepul	Shotomooli
Kalomegh	Peepul	Arshwagandha	Peepul

5. Possible Interventions

5.1 Possible Product Interventions

Species with good development potential in Bangladesh are listed in Table 7. These have been chosen on the basis of the size of the existing market, the potential expansion of the market, the existing supply situation, the possibility of import substitution and, in two cases, export possibilities. The Table lists the existing total value of the market, the value of the product supplied by Bangladesh, the projected annual growth in demand of each product (based on the division between the various markets) and the long term prospects for local supply. The full calculations are set out in Annex 3. In particular, specific interventions by product are developed. The process is market led.

Amloki, **Haritaki** and **Bahera** are all major products each currently worth \$900,000 and above, sold into multiple markets, (Unani, Ayurvedic and self-treatment) and have been identified by the trade as having good import substitution opportunities.

The most important is **Amloki**. Currently Bangladeshi Amloki obtains wholesale prices which are between a half and one third of the price of imported Indian Amloki. The local product probably only holds around 30% of the market. The Indian product is larger sized and generally has had the seeds removed. The market research revealed that larger sized Amloki was being grown in Bangladesh, specifically in parts of the Chittagong Hill Tracts. The opportunities here are likely to revolve around the identification of the elite Bangladeshi cultivars, their propagation and dissemination of the planting material, and the training of beparis/collectors in improved drying and de-seeding as primary processing practices. The market is expected to increase by nearly \$1.35 m over the next 5 years.

Local **Haritaki** supplies around 40% of the market and obtains prices of about 60% of the Indian imported product. Potential opportunities increasing cultivation, particularly of better quality varieties, and especially to improving drying and the colour of the dried product. The projected growth in demand exceeds \$1m.

The supply of **Bahera** is mainly from local sources. Currently, supply and demand are relatively well matched. In the longer term, demand will continue to grow. Although there is scope for increasing production, care must be taken not to glut the market. Market size is expected to grow by nearly \$500,000.

Arshwagandha is 95% imported but acceptable samples of local product were observed and the product appears to grow well in some parts of Rajshahi division (e.g. Chapai Nawabganj). Outline commercialised production techniques, including elite varieties, have been developed in India. The value of the market for Arshwagandha is likely to grow by over \$700,000.

Shoto-muli was identified by the trade as a product for development in Bangladesh. Around 90% of supply is imported. Imported Shoto-muli, which is sourced mainly from Nepal, has larger, fleshier roots, which are preferred by the trade. Most of the local shoto-muli is used in local drinks. However, the value of this particular product is relatively small (likely to increase by \$85,000), but if warranted a development programme would need to focus on producing Shoto-muli with fleshier roots.

Peepul is 90% imported with the imported product selling at twice the price of local peepul. The local variety is inferior because of the small size of the fruit. The prospects here are to identify, propagate, disseminate elite varieties to produce larger sized peepul which can outcompete the imported product. Market opportunity is calculated as expanding by over \$340,000 during the next five years.

Dhaiful is a key ingredient in The Ayuverdic fermentation process. 80% of product is imported, although satisfactory product is available, albeit in small quantities, from Sylhet and Chittagong Hill Tracts. Possibilities exist for expanded local supply and production, amounting to some \$140,000 over the next 5 years.

Tokma was identified by the trade as currently being in short supply - about 80% of product being supplied from local production. Good prospects were identified for this crop, worth some \$80,000.

Mutha is used equally by the Ayuverdic and Unani sectors and is 100% locally supplied. Most processors were unaware of the scale of local production and indicate that usage could be increased through better market linkages. The market is projected to increase by \$100,000.

The supply of **Kalomegh** has increased in recent years with prices falling. The trade however felt that the product demand would increase and that supply and utilisation would benefit from improved linkages and assistance with the commercialisation of production. Projections suggest a growth in demand of some \$50,000.

Cheerota is 100% imported from India and trades at Tk 300 per kg and above. Some anecdotal evidence was gathered that this product can be grown in Bangladesh. The most likely production locations would be in the drier northern areas. The total market is worth over \$1.7 million.

Isulgul is another hugely valuable 100% imported item. It is considered unlikely that it can be commercially grown in Bangladesh, but the value of the product suggests that some field trials are warranted. The market is worth over \$ 1.7 m.

Ekangi is a product whose production in Bangladesh has recently increased as a response to extremely high prices (i.e. Tk 130/kg). Prices have, however, fallen to around Tk 30/kg. The product is currently being exported, even though the product is considered inferior to Indian product, as it is not as white in colour. Improved processing is expected to improve quality. The market is projected to expand by \$20,000.

Aloe vera is primarily grown around Natore and sold via a well organised distribution process using inter-district beparis and wholesalers in Dhaka, and is primarily sold (by street sellers from buckets) as a sherbet drink mixed with smaller quantities of other medicinal plants, such as Ulat kambol and Shoto-muli. Sales have been steadily growing at around 25% per year. The trade considers that, unless additional markets are stimulated, the sale of crude *Aloe vera* sherbet is unlikely to increase by more than another 50% over the next 3-4 years (i.e. 500 tons). At that point supply is likely to exceed demand and prices to fall precipitously. The *Aloe vera* market needs to be diversified. A potential exists promoting diversified markets. The possibilities here are to promote the processing and packaging of an *Aloe vera* sherbet for sale to the emerging urban middle class as a hygienic and more sophisticated product. Such products are widely available in Japan, North America and Europe, but without the other herb combinations used in Bangladesh. Trade interviews identified that a number of companies were considering developing herbal cosmetics, e.g. Mystic and AP and were all interested in *Aloe vera* as a potential raw material. Market linkages between the existing beparis and these processors would facilitate these opportunities. Musabbar is a product produced by lacerating *Aloe vera* leaves and allowing the exudate to fall onto plastic sheeting below the plant, where it dries to form a rubbery consistency. Currently the market for Musabbar is believed to be relatively small, i.e. 3 or 4 tons – the equivalent of around 30 or 40 tons of raw material. However, with increased availability, demand could grow. It would also be very suitable for production during the dry winter months, when the demand for *Aloe vera* sherbet is at its lowest. The market opportunity is estimated at some \$90,000.

Relatively small demand was identified for the various products of **Neem**. There is believed to be far greater quantities of product available, which could be delivered by better organisation from production zones in Northwest Bangladesh. Improved market linkages could stimulate more commercialisation and economic activity from Bangladesh's Neem production.

Bangladesh currently imports its **Mint oil/Menthol**. The market is believed to be worth some \$300,000-\$400,000 per year. Work at the BCSIR is reported to have shown that *Mentha arvensis*, sometimes referred to as Japanese Mint, can be successfully grown and steam distilled in Bangladesh. Mint is reported to grow particularly well in Bogra. Through a combination of field trials, the introduction of steam distillation, and working with an investment partner, it should be possible to develop Japanese mint oil production in Bangladesh. Experience elsewhere in the sub-continent, e.g. Indian and Pakistan, has demonstrated that once mint oil is available, industrial utilisation increases for products such as mint sweets, mint toothpaste and mint oil based medicines. The total opportunity could be worth \$600,000 a year over the next 5 years.³

Although not primarily a medicinal plant, **Agar** is an important export product from Bangladesh and its primary use is for its aromatic qualities. It is estimated that Bangladesh currently exports about \$17 million worth of Agar. Supply is primarily from Slyhet, Ballak and Moulavibazar. New technologies are available internationally to stimulate production of the aromatic hardwood. These techniques are not well understood or developed in Bangladesh and an opportunity exists for their systematic development and dissemination to the Bangladeshi agar industry.

Certain products could exhibit long-term opportunities once Bangladesh recognises pharmacopoeia other than its own. In the Natore area of Rajshahi Division a product called **Misridana** grows. This is a turmeric-like plant, but the Latin name is currently unknown (informed opinion suggests that it could be *Scoparia dulce*, however others felt that this was a product also called Misridana, but was a tree-like species and not the same as the plant grown in Natore). Locally, Misridana is acknowledged as being an effective treatment to improve male sexual health. Various companies (such as Mystic and ACME) expressed an interest in developing herbal soaps and shampoos. A suitable product grown in Bangladesh is **Rittha** or the "Soap Plant". Lastly, **Brahmi** (*Bacopa monneri*) and **Thankuni** (*Centella asiatica*) are both products, which are said to both relieve mental stress and improve brain function. These products are available in southern Bangladesh with Brahmi particularly available on St. Martin's Island. With ageing and stressed populations both in Bangladesh and worldwide, both products could have good long-term prospects.

³ *Mentha arvensis* is a perennial crop with two or three cuts taken per year, normally when the crop flowers. The oil is wet steam distilled within 24 hour of harvest. Yield is typically 80-100 kgs/Ha/yr with methanol at a 70-80% extraction.

Table 7: Possible Product Interventions

Local Name	Latin Name	Total Value \$ US	Bangla Supply \$ US	Projected Growth % / Yr	Opportunity for local Production ⁴ \$ US	Prospective Market	Interventions and Comments
Amloki	Emblica officinalis	1,100,000	3,300,00	11%	1,347,500	Multiple and expanding markets and import substitution.	Propagation and dissemination of larger fruited cultivar (Chittagong), improved drying and de-seeding.
Haritaki	Terminalia chebula	900,000	360,000	11%	1,012,500	Multiple and expanding markets and import substitution.	Opportunities for improved varieties and increased production with improved drying.
Bahera	Terminalia bellerica	900,000	900,000	11%	472,500	Multiple and expanding markets.	Opportunities for improved varieties and increased production with improved drying. Care with expansion, as supply and demand broadly in balance.
Arshwagandha	Withania somnifera	500,000	25,000	11%	737,500	Unani and Ayuverdic demand expanding. Major import substitution opportunity.	Identification of suitable production locations (Chapai Nawabganj). Improved varieties & introduction of commercialised production practices.
Shoto-muli	Asparagus racemosus	60,000	6,000	11%	85,500	Import substitution. Local variety only used in drinks.	Introduction of improved variety, but total market size relatively small.
Peepul	Piper longum	240,000	25,000	11%	341,000	Import substitution & expanding demand in Ayuverdic and Unani sectors.	Opportunity for improved larger fruited variety, with production in northern Bangladesh.
Dhaiful	Woodfordia fruticosa	100,000	20,000	12%	140,000	Key ingredient for fermentation in Ayuverdic medicines. Import substitution.	Promotion of production in suitable locations, e.g. Sylhet & Hill Tracts.
Tokma	Hyptis suaveolens	200,000	160,000	4%	80,000	Increasing demand – shortage of supply.	Possibilities for commercialised production and improved processing, and organising production in existing areas.

⁴ Figure calculated as the expansion of the markets, over and above the proportion already supplied by Bangladeshi suppliers

Local Name	Latin Name	Total Value \$ US	Bangla Supply \$ US	Projected Growth % / Yr	Opportunity for local Production ⁴ \$ US	Prospective Market	Interventions and Comments
Mutha	Cyperus rotundus	200,000	200,000	11%	105,000	Used in Unani & Ayuverdic sectors.	Possibilities involve linking existing producers to the processing sector.
Cheerota	Swertia chirata	1,700,000	0	4%	?	Major import substitution possibility.	Large market size warrants field trials in northern Bangladesh to establish where the crop could be grown successfully.
Isubgul	Plantago ovata	1,700,000	0	4%	?	Major import substitution possibility.	Large market size warrants field trials in northern Bangladesh to establish where the crop could be grown successfully. Opportunities may be quite limited.
Ekangi	Zingiber zerumbet	100,000	100000	4%	20000	Export possibilities. Local production has expanded, prices have fallen & exports are being made.	Opportunities are to improve processing to produce a white product and to develop export markets.
Ghirta Kumari	Aloe vera	175,000	175000	11%	91875	Existing sherbet market with prospects for processing, cosmetics and Massaber.	Sherbet market needs promotion to ensure continued growth and encourage local processor to produce packaged sherbet. Linkages to companies aiming to produce herbal cosmetics. Development of Massaber production, especially during the winter months for sales to Unani processors.
Neem	Azadirachta indica	30,000	30000	10%	15000	Product under-utilised by processing sector.	To organise NW production and create linkages with processing sector.
Mint Oil	Mentha arvensis	300,000	0	20%	600000	Initially import substitution. BCSIR carried out development trials.	Opportunities are for field trials, possibly Bogra and linkages with potential investor.
Agar	Aquilaria agallocha	1,700,000	1,700,000	5%	425000	Export potential.	To assist Agar growers and exporters in developing improved technology for Agar production.

5.2 Potential Project Interventions

Immediately after the presentation of the Medicinal Plant Study's findings on October 23rd 2003 and again on October 26th, discussions were held with the private sector, government representatives, international aid agencies, universities and research institutions, as well as with SEDF and SDC. The purpose of these discussions was to flesh out possible ways forward and the potential roles for different players.

Medicinal Plant Forum

Although there are a number of different associations, agencies, NGOs, universities and international aid institutions, interested or operating in the medicinal plant sector, there appears to be very little communication between the different strata of the medicinal plant sector. For example, university institutions are often unaware of what the commercial sector requires while the processing sector is often relatively disconnected from the production potential and resources in the field. Until this Study was undertaken, there was only anecdotal information of the size of the market and the demand by the different sectors.

It emerged from the discussions that, in order to overcome these weaknesses in communication between sectors, a Medicinal Plant Forum needs to be established. The purpose of the forum would be to enable players to exchange ideas, understand each other's roles, reduce duplication of activities and, above all, be able to chart out priorities and develop an action plan for the development of the medicinal plant sector.

As pointed out by Dr. Kamaluddin Siddiqui, Principal Secretary to the Prime Minister, the emergence of such a Medicinal Plant Forum would be extremely timely because of the government strategy for promotion of herbal medicines and the need for the disparate elements of the sector to understand each other's roles and to respond to the true needs of the industry.

The need for the forum to have subgroups was raised by IUCN – given the very different nature of the various sub-sectors within the medicinal plant sector.

SEDF saw their potential future functions being conveniently divided into three. Out of the discussions of the Medicinal Plant Forum, SEDF would be interested in supporting a six-month project, particularly focussed on working with the business sector, and which could show relatively quick and positive results. The second element of their support would be to help in the drafting of a larger medicinal plant project and with the fund-raising from international aid sources. The third element of their potential interventions would be, under the umbrella of such a project, to work in three potential areas. Firstly, through working with individual companies in the medicinal plant processing sector, with turnovers of above US\$ 160,000. Secondly, through working with associations, e.g. medicinal plant processing associations, supplier associations, etc. Their assistance could be in raising finance for medicinal plant production or processing, or by providing technical assistance on a cost sharing basis to companies. And, finally, in lobbying for changes in government policy to support the medicinal plant sector, e.g. changes in sales tax law.

SDC was aware of the dangers of over-stimulating production, given the relatively small size of demand for individual products. In particular, they were interested in interventions, such as product promotion and improved linkages between producers and processors, which would increase the sales and prices of existing products.

Short Term Interventions

Set out below are three generic interventions which can be carried out over a relatively short period of time, possibly under an SEDF Technical Assistance programme, to push forward the development of the medicinal plant sector.

Creating the information base for commercialised medicinal plant production

The study has indicated that there are a number of products, for which long-term market opportunities have been identified. These products need to be divided into two.

On the one hand, those that have the possibility of being profitable grown on arable land and, on the other, those that are likely to be suitable for improved production in homesteads, field edges and small portions of land. The key elements in the short term are the identification of suitable agro-climatic locations, the selection of improved planting material and the development of agronomic practices, based largely on existing experience in the Indian subcontinent. Potential products include Arshwagandha, Dhaiful, Peepul, Kalomegh, Tokma, *Mentha arvensis* (Japanese Mint Oil), Sarpargandha, and Cheerota and Isubgul. For homestead planting the species would include Amloki, Haritaki, Bahera and Shoto-muli. The initial work would mainly involve identifying sources of elite plant material, gathering best production practices from the Indian sub-continent and establishing suitable production locations in Bangladesh, based on a combination of areas where the product is currently being sourced from and the appropriate agro-climatic conditions.

Market Linkages

Interventions under this sub-heading aim at increasing the trade of products already being produced by opening new or improved linkages between producers and users. *Aloe vera* production in Natore has been steadily expanding. The vast majority of this product is used in sherbets sold out of buckets by street sellers. Prospects include promoting the existing sherbet market through press and media and encouraging formal processors to develop a properly processed and packaged *Aloe vera* sherbet for marketing to the emerging urban middle class. A number of processors are considering developing herbal cosmetic products which may be based on *Aloe vera*. Interventions here involve introductions between *Aloe vera* beparis and processors and the provision of samples and the development of commercial supply. A further possibility is the production of Musabbar – a dried exudate of *Aloe vera* for sale mainly to the Unani sector.

Other improved linkages could include producers of Mutha, Neem, Tokma, Kalomegh and Dhaiful.

Primary and Secondary Processing

There is a clearly identified need for improvement in the primary processing carried out by beparis and their collectors. In addition, as indicated above, closer linkages between beparis and processors will facilitate the better supply of the raw materials that the processors require, in the quantity and quality that they demand. Elements in this programme would involve providing training to beparis and their collectors in medicinal plant identification, examples of the quality that the processing sector requires, training in appropriate drying techniques (possibly including modern solar drying technologies), and in grading, storage and packing. This training could be provided under the auspices of one or more of the medicinal plant processor associations. Also, by working through

the associations, support and technical assistance can be provided to processors on such issues as factory layout, operation, products, storage and hygiene.

Longer Term Interventions

Listed components below are some of the generalised headings that could form part of a longer-term integrated medicinal plant programme. It is envisaged that the components of this programme would be agreed by the Medicinal Plant Forum, packaged into individual proposals for implementation by various combinations of actors and, in certain cases, attracting additional funding by donors.

Commercialisation of medicinal plant production

The wild harvest of medicinal raw materials in Bangladesh is unsustainable. In the longer term, more commercialised production of these products is necessary. Preliminary preparation work for this commercialisation has been explained under short-term interventions. The longer-term opportunity will comprise the propagation of elite plant material, carrying out field trials (preferably on-farm) to refine “best production practices”, prove the financial viability of individual crops and identify suitable production locations. The important element in this programme will be to determine the active ingredients of field produced products. The dissemination of these practices can be by NGOs, agricultural extension officers, beparis or by agricultural departments within the processing companies.

Linkages

The programme would aim to create a forum where an ongoing dialogue between the industry and rural producers/suppliers can continue so that processors’ changing requirements for medicinal plants are matched by Bangladeshi supply. The preparatory steps and techniques will have been tested under the linkages and the bepari training components discussed under the short term interventions. The long term vision is to create an effective supply chain which can deliver raw materials, working through an upgraded version of the existing supply chain, whereby a network of specialist medicinal plant producers will be developed, and linked to the processors through a more professional and modern inter-district bepari network. The processing sector will take a more proactive approach to stimulating local supply rather than being dependent on imported raw materials.

Processing

Under the short-term programme interventions, pilot actions were suggested for both primary and secondary processing to improve quality and standards of production. It is envisaged that using the lessons learned from this process a larger scale process would be rolled out.

Product Standards

A mechanism would need to be designed whereby the products that the industry produce are monitored to ensure that they contain the specified amounts of medicinal plants.

Interventions specifically focused on Rajshahi Division

Rajshahi Division is not an especially important area for the production of medicinal plants, primarily because these are wild harvested out of forest areas in the Hill Tracts

and around Modhupur. Agro-climatically, the area has lower rainfall figures than much of Bangladesh and much of the land is not prone to flooding. A preliminary resource audit in the field has suggested that large areas of Mutha are grown, that Ashwagandha grows well in Chapai Nawabganj and a major production zone for *Aloe vera* exist near Nator. The Rajshahi Division also produces Shoto-muli, Misridana and a range of other medicinal plants.

The report has argued earlier that unless the *Aloe vera* market is stimulated, production could easily exceed supply, resulting in a fall in farmers' prices. Potential activities could be to promote the existing market for *Aloe vera* sherbet. This would involve an immediate promotion campaign timed to coincide with the start of the period of strongest demand, i.e. early summer 2004.

Companies like Mystic, ACME and AP are considering herbal cosmetic products, e.g. skin treatments, shampoos, etc., and are interested in local sources of *Aloe vera*. The existing traders need to be alerted to these opportunities and primed to visit the companies, supply samples and in the long term develop an effective supply chain. Some interest was identified in Musabbar, the dried exudate of *Aloe vera*. It is believed that the primary processing involves lacerating the leaves of *Aloe vera* and allowing the sap to seep out and fall on to plastic sheeting beneath the plant, where the product dries into a rubbery clear gel. The market opportunity is relatively small and can be easily oversupplied, but Musabbar could provide a diversified product opportunity for production during the dry winter months, when demand for the raw leaf is low, as sales of sherbet are at their lowest.

The development of the sherbet market has proved that there is a demand for an Aloe drink in Bangladesh. *Aloe vera* drink is a product recognised in a number of different markets, including the United States of America, Japan and Europe. In Bangladesh the sherbet also includes products like Ulat Kambol and Shoto-muli, both for their flavour and pharmacological properties. There is a good probability that *Aloe vera* sherbet can be developed into a properly processed and packaged drink. The opportunity is for VFFP to sell the concept and support of the product development to a major processor. A natural potential partner would be PRAN. It has a food-processing factory very near to Natore, experience producing fruit drinks and an effective sales network. In the longer term, the producers in Natore could also grow the other medicinal plant ingredients which are used in sherbet, such as Ulat Kambol and Shoto-muli.

Arshwagandha appears to grow well at Chapai Nawabganj. This product is currently 95% imported. The report on medicinal plant production in the Rajshahi Division provides an outline on how commercialised production could be undertaken and suggests potential elite varieties. It is understood that 18 months are required to produce satisfactory roots.

Amloki, Bahera and Haritaki are all products with large market opportunities and the possibility of improved cultivars leading to improved prices. In particular, a superior cultivar of Amloki is available in the Chittagong Hill Tracts. This variety needs to be secured and provided to the nurseries in the VFFP project for propagation and sale. Peepul and Shoto-muli also require the introductions of elite varieties to further their development.

Anecdotal information suggests that mint grows particularly well in Bogra. The BCSIR claims that it has planting material of Japanese mint and has proved that it can grow satisfactorily in Bangladesh. Preliminary market research indicates that around \$300,000 per year are spent on importing mint oil and methanol. Experience in India

and Pakistan has shown that this crop can be a profitable small farmer crop, which is multiple harvested and steam-distilled by locally based processors. Capital investment is not overly expensive. Initially mint oil has the potential for substituting for imports, but experience elsewhere has shown that generally when mint oil becomes easily available for industrial usage, demand for its use in the production of, for example sweets, medicines and toothpastes, rapidly develops. The opportunity here will involve proving that *Mentha arvensis* can grow satisfactorily in Bogra, that the mint oil content is of a satisfactory quality and that the crop can be financially viable. These field trials can be carried out on a small basis, using runners from BCSIR's existing mint oil plants and a small scale mint oil distillation plant. Potential investors need to be identified. Mr. Zahirul Islam of Takua Enterprises has already expressed an interest. Mr. Ahsan Ullah of Alpha Aromatics Ltd., who already produces citronella and lemon grass oils in Bangladesh, would be another potential partner.

Mutha (*Cyperus rotundus*) is being produced by a number of farmers in the Thakurgoan area, but exclusively for mat production. It may prove possible to diversify their output by creating linkages between these producers, possibly via suitable inter-district beparis, and the medicinal processing sector. Shoto-muli (*Asparagus racemosus*) is also being produced within the project area, however, the quality of the product at present is considered to be inferior to that of imported product from Nepal. The true reasons are unknown. Anecdotal opinion has indicated that this may be due to harvesting too early, inferior varieties or in the primary processing of the product. Companies such as AP identified the possibility of increased purchases if locally produced product was more available.

Although the market research did not identify a strong demand for Chai (*Piper chaba*), often when processors understand that a product is available they will be more inclined to use this as a raw material. Increased sales may be possible through market linkages.

Next Steps

The first step is to establish a Medicinal Plant Forum. This is likely to require some kind of secretariat and to involve a core of active participants with an outer network of interested parties. An important element of the Forum will be to keep all the parties informed as to developments, ideas, interventions and activities. An effective secretariat will need to disseminate the minutes of any meetings of the forum not only to the active participants but also to interested parties.

The Forum should be encouraged to identify and prioritise potential short-term interventions, as well as create a longer-term vision for the medicinal plant sector. Once a shortlist of potential short-term interventions has been identified,

A study could be organised to recommend which of the short-term interventions are likely to be the most cost-effective and those that could produce relatively rapid and effective results and that would meet the longer term programme's need to pilot ideas and create effective networks.

During the second half of 2004, the Forum would have developed a coherent strategy for the longer-term development of medicinal plants.

ANNEXES

Annex 1

Species List

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
Ada	<i>Zingiber officinalis</i>	Zingibaraceae	Ginger	Sunthi	Adarak	rhizome
Agar	<i>Aquilaria agallocha</i>	Thymalaceae	Eaglewood	Agaru	Agar	secretion
Akanda	<i>Calotropis gigantea</i>	Asclepiadaceae	Calotropis	Arka	Akwan	bark, leaves, flower
Alkushi	<i>Mucuna pruriens</i>	Leguminosae	Cowhage planet	Kapikachchu	Kounch beej	seed
Amloki	<i>Emblica officinalis</i>	Euphorbiaceae	Emblic myrobalans	Amalaki	Amla	fruit
Anantamul	<i>Hemidesmus indicus</i>	Asclepiadaceae		Ananta	Anantmul	root
Arjun	<i>Terminalia arjuna</i>	Combretaceae	Arjuna myrobalan	Arjuna	Arjuna	bark
Arshwagandha	<i>Withania somnifera</i>	Solanaceae	Winter cherry	Asvagandha	Ashwagandhaa	root, leaves,, fruits, and seeds
Ashok	<i>Saraca indica</i>	Leguminosae	Ashok tree	Ashoka	Ashoka	bark
Babla	<i>Acacia nilotica</i>	Leguminosae	Indian gumtree	Babbula	Kikar	bark
Bach	<i>Acorus calamus</i>	Araceae	Sweet fig	Vacha	Vach	whole herb
Bahera	<i>Terminalia bellerica</i>	Combretaceae				fruit
Bamul hati	<i>Cleodeandrum indicum</i>	Verbenaceae		Bhargi	Bharangi	
Bander lathi, Sonalu	<i>Cassia fistula</i>	Leguminosae	Indian Labournam	Suvarnaka	Amaltas	fruit pulp, root,bark, seed, leaf
Basak	<i>Adhatoda vasica</i>	Acanthaceae	Vasak	Vasak	Arusa	leaf, whole herb
Bel	<i>Aegle marmelos</i>	Rutaceae	Bael	Bilva	Bael	bark, fruit
Berela	<i>Sida cordifolia</i>	Malvaeceae	Cordifolis	Bala	Kharati	leaves, roots, seeds
Bhang	<i>Cannabis indica</i>	Cannabinaceae	Indian hemp	Vijaya	Bhang	
Bhringaraj	<i>Wedelia calendulacea</i>			Bhrngara	Bhrungaraaja	leaf, root
Bhui-kumra	<i>Ipomea digitata/ mauritiana</i>	Convolvulaceae		Zupha		root
Bij tarak	<i>Argyreia speciosa</i>	Convolvulaceae	Elephant creeper	Samudra palaka	Samudra sokh	root, leaf
Binya	<i>Andropogon squarrous</i>	Gramineae				
Biskatali	<i>Polygonum hydropiper</i>					juice of the plant
Bokful	<i>Sesbania grandiflora</i>	Leguminosae	Agati	Agasti	Basna	?
Bokul	<i>Mimusops elengi</i>	Sapotaceae	Indian medler	Bakula	Bakul	bark,flower,fruits, seeds,leaves
Bon-jomani	<i>Seseli indicum</i>					

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
Boro-elach	<i>Ammonium</i>					seed
Brahmi sak	<i>Bacopa monniera</i>	Scrophulariaceae	India pennywort	Brahmi	Brahmi	whole herb
Breehoti	<i>Solanum indicum</i>	Solanaceae	Indian night shade	Brihati	Barikatari	fruit
Bromhojosthi	<i>Cloedendrum siphonanthus</i>					
Cassia angustifolia	<i>Shonapata</i>					leaves
Chai/Chuijal	<i>Piper chaba</i>	Piperaceae		Chavika	Chavya	climber stem
Chailta	<i>Dillenia indica</i>	Delleniaceae	Elephant apple	Bhabya	Chalta	fruit
Chalkumra	<i>Gynocardia odorata</i>					seed
Chatim	<i>Alstonia scholaris</i>	Apocynaceae	Dita	Saptaparni	Saptaparni	bark, root
Cheerota	<i>Swertia chirata</i>					stem
Choto Elach	<i>Elettaria cardamomum</i>	Zingiberaceae	Small cardamom	Ela	Elaichi	seed
Dahar	<i>Pongamia pinnata</i>					seed
Dalim	<i>Punica granatum</i>			Dadima		exocarp
Daruchini	<i>Cinnamomum zeylanicum</i>	Lauraceae	Cinnamon	Twak	Balchini	
Daruharidra-juce/ Rasoth	<i>Berberis aristata</i>	Berberidaceae	Indian barberis	Daruharidra	Daruhaldi	fruit, root bark, stem
Debdaru	<i>Polyalthia longifolia</i>					bark,
Dhaiphul	<i>Woodfordia fruticosa</i>	Lythraceae	Fulsee flower	Dhataki	Dhaiphool	flower, leaves
Dhaniya	<i>Coriandrum sativum</i>	Umbelliferae	Coriander	Dhnyaka	Dhaniya	fruit and leaves
Draksha	<i>Vitis vinifera</i>	Vitaceae				
Donti	<i>Baliospermum montanum</i>	Euphorbiaceae	Wild croton	Danti	Danti	
Dumur	<i>Ficus glomerata</i>					bark, leaves, fruit sap
Dhutura	<i>Datura strammium</i>	Solanaceae	Thorn apple	Dhaturswet	Dhatura	fruit
Ekangi	<i>Zingiber zerumbet</i>					
Ganian	<i>Premna intergrifolia</i>					bark
Gethela	<i>Randia dumetorum</i>	Rubiaceae	emeticut	Madana	Main phal	
Ghirta Kumari	<i>Aloe vera</i>		Indian pennywort			leaf juice
Ghora neem	<i>Melia azaderach</i>		Neem			Bark
Gokhur	<i>Tribulus terrestris</i>	Zygophyllaceae	Caltrops	Gokshura	Gokhru choota	
Golap jam	<i>Syzygium jambos</i>	Myrtracae	Black plum	Jambu	Jamun	leaves, fruits, seeds

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
Gom	<i>Triticum vulgare</i>		Wheat			Seed
Gulanha	<i>Tinospora cordifolia</i>	Menispermaceae		Guruchi	Giloy	stem, leaf
Gulanha	<i>Tinospora tomentosa</i>	Menispermaceae				Whole
Gulmorich	<i>Piper nigrum</i>	Piperaceae	Black pepper	maricha	Kalimirch	Seed
<i>Glycyrrhiza glabra</i>	Josthi-madhu	Leguminosae	Liquorice	Yastimadhu	Mulathi	whole
Gui babla	<i>Acacia farnesiana</i>	Leguminosae	Cassie Flower	Irmeda	Irimed	bark, Leaves
Hafarmai	<i>Vallis heyrei</i>					
Halud	<i>Curcuma longa</i>	Zingiberaceae	Turmeric	Haridra	Haldi	rhizome
Haritaki	<i>Terminalia chebula</i>	Combretaceae	Myrobalan	Abhaya	Haritaki	fruit
Hatishur	<i>Heliotropium indicum</i>	Boraginaceae	Heliotropic	Hastisunda	Hastisura	Leaves
Hijjal	<i>Barringtonia acutangula</i>	Lecythidaceae		Dhatrighala	Hijjal	leaf, root and seed
Hora	<i>Terminalia citrina</i>	Combretaceae				Seed
Ikku/Akh	<i>Saccharum spontaneum</i>		Sugar cane			juice of stem
Indrojob	<i>Wrightia tinctoria</i>	Apocynaceae		Siyah kutaj	Mitha indarjaw	
Isbugul	<i>Plantago ovata</i>	Plantaginaceae	Psiliumhusk	Ishapgola	Isabgole	seed
Iswarmul	<i>Aristolochia indica</i>	Aristolochiaceae	Indian birth root	Isharmool	Isharmool	root
Jaba	<i>Hibiscus rosa-sinensis</i>					flowers, bark
Jaiphal	<i>Myristica fragrans</i>	Myristicaceae	Nutmeg	Jatiphal	Jaiphal	fruit
Jangli Halud	<i>Curcuma aromatica</i>	Zingiberaceae	Wild turmeric	vanharidra	Amba haldi	rhizome
Jatamansi	<i>Nardostachys jatamansi</i>	Valerianaceae	Muok root	Jatamansi	Jatamansi	
Jatneem	<i>Azadirachta indica</i>	Maliaceae	Neem	Nimba	Nim	bark, leaves, fruits
Jira	<i>Cuminum cyminum</i>	Umbelliferae	Cumin seed	Jirak	Jerra	fruit
Jowan, Juran	<i>Carum copticum</i>			Yamani, Ajowan		whole plant
Kababchini	<i>Piper cubeba</i>	Piperaceae	Cubeba	Kababchini	Kababchini	Fruit, Oil
Kadam	<i>Anthocephalus cadamba</i>	Rubiaceae	Cadamba	Kadamba	Kadamba	bark, leaf, fruit
Kagaji -lebu	<i>Citrus aurantifolia</i>	Rutaceae	Lemon	Nimbuka	Kagaji nimbu	fruit, juice
Kala koro	<i>Albizia lebeck</i>	Leguminosae		Shris	Siris	
Kalajam	<i>Eugenia jambolanum</i>	Myrtaceae	Blacknusli			seed
Kali-jeera	<i>Nigella sativa</i>	Renunculaceae	Small fenel	Krishnajaraka	Kalonj	seed
Kalkasunde	<i>Cassia occidentalis</i>	Leguminosae	Round poded cassia	Kasmarda	Kasaundi	leaves and seeds

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
Kalomegh	<i>Andrographis paniculata</i>	Acanthaceae	The creat	Kalmegh	Kalmegh	leaves
Karpur	<i>Cinnamomum camphora</i>	Lauraceae	Comphor	Karpur	Kapoor	
Kat badam	<i>Terminalia catappa</i>	Combretaceae				bark, fruit
Keshuttya, Kesraj	<i>Eclipta alba</i>	Compositae		Bhringaraja	Bhangra	roots and leaves
Khetpapra	<i>Oldenlandia corymbosa</i>					
Kotki	<i>Picrorhiza kurroa</i>	Scrophulariaceae	Hellbore	Katuki	Kutki	
Kathbel	<i>Feronia limonia</i>	Rutaceae	Wood apple	Kapittha	Kaith	fruit, gum, leavas, bark
Kuchila	<i>Strychnos nuxvomica</i>	Loganiaceae	Nuxvomica	Vishramushit	Kuchla	
Kumari-lata	<i>Smilax zeylanica</i>					whole
Kunch, rati	<i>Abrus precatorius</i>	Leguminosae	Bead tree	Gunja	Chirmiti	root,seed, leaf
Kungi lata	<i>Abutilon indicum</i>	Malvaceae	Indian mellow	Atibala	Kanghi	
Kur	<i>Sanssurea lappa</i>	Compositae	Costus	Kushtha	Kuth	
Lalmarich	<i>Capsicum annum</i>	Solanaceae	Red chilly	Maricha (rakta)	Lalmirch	fruit
Lebu	<i>Citrus media</i>	Rutaceae	Adams apple	Matulunga	Bijaura	
Lodhra	<i>Symplocos racemosa</i>	Symplocaeeae	Lodhra	Lodhra	Lodhra	bark
Malkungi	<i>Celastrus paniculatus</i>	Celastraceae	Shiff tree	Jyotishmati	Kalkagni	
Masani	<i>Teramnus labialis</i>	Leguminosae		Marshparni	Mashoni	
Mauri	<i>Anisum sativa</i>	Liliaceae				
Mehedi	<i>Lawsonia alba</i>	Lythraceae	Henna	Mendika	Mehndi	leaves
Methi	<i>Trigonella foenum graecum</i>	Leguminosae	Fenugreek	Methica	Methi	seed
Monjistha	<i>Rubia tinctorum</i>					whole
Mouri	<i>Foeniculum vulgare</i>	Umbelliferae	Fennel seed	Shatpuspha	Saunf	whole
Mutha	<i>Cyperus rotundus</i>	Cyperaceae	Nutgrass	Musta	Motha	rhizome
Nagdona	<i>Artemisia vulgaris</i>	Compositae		Magadamni		leaves, flowertops
Nageswar	<i>Mesua ferrea</i>	Guttiferae	Cobras saffron	Nagkeshar	Nagkeshar	flower
Nagormootha	<i>Cyperus scariosus</i>					
Narikel	<i>Cocos nucifera</i>	Palmae	Coconut	Narikel	Nariyal	root, flower, oil, ash
Nata karamcha	<i>Caesalpinia crista</i>	Leguminosae	Bondu	Kuberakshi	Katkaranj	

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
Nayantara	<i>Vinea rosea</i>					whole plant
Nilkalmi	<i>Ipomea hederacea</i>	Convolvulaceae	Kaladana	Siyahbeej	Kaladana	seed
Oi kachu	<i>Amorphophalus companulatus</i>	Araceae		Suran	Jamikand	corm
Padma-kastho	<i>Prunus cerasoides</i>	Rosaceae	Himalayan cherry	Padmaka	Padmakast	
Pakur	<i>Ficus religiosa</i>	Moraceae	Sacred fig	Aswattha	Pipal	bark, root, leaf, fruits.
Palang	<i>Rumex vesicarius</i>					fruit
Parul	<i>Stereospermum suaveolens</i>	Bignoniaceae	Trumpet	Patla	Padal	bark
Peepul	<i>Piper longum</i>	Piperaceae	Long piper	Pippali	Pipala	leaf , root
Pepe	<i>Carica papaya</i>	Caricaceae	Papaya	Papita	Papaya	latex, fruit
Peyera	<i>Psidium guajava</i>	Myrtaceae	Guava	Mansala	Amrud	bark
Phuti begun	<i>Solanum nigrum</i>	Solanaceae	Black night shade	Kakmachi	Makoi	fruit, leaf, stem
Phutka	<i>Caridiospermum halicacabum</i>					
Piaj	<i>Allium cepa</i>	Liliaceae	Onion	Palandu	Piyaj	rhizome
Pitali	<i>Trewia nudiflora</i>					fruit, bark, leaf, root
Polash	<i>Butea monosperma</i>	Leguminosae	Buteo	Palash	Dhak	gum, seeds
Potol	<i>Trichosanthes dioica</i>	Cucurbitaceae	Wild snake guard	Patola	Parval	leaf
Pudina	<i>Mentha arvensis</i>		Mint			leaves
Punarnava	<i>Boerhaavia diffusa</i>	Nyctaginaceae	Spreading hogwood	Punarnava rakta	Punarnava	whole plant
Raina	<i>Aphanamixis polystrachya</i>	Meliaceae		Rohitak	Rohitak	bark
Rasna	<i>Vanda roxburghii</i>	Orchidaceae				whole herb
Rasun	<i>Allium sativum</i>	Liliaceae	Garlic	Lasuna	Lahsun	rhizome
Randhuni/ Bonjamini	<i>Apium graveolens</i>	Umbelliferae	Celery, Black cumin seed	Ajmoda	Ajmuda	
Renuke	<i>Piper aurantiacum</i>					
Rheuchini	<i>Rheum emodi</i>	Polygonaceae		Revand chini	Revandachini	
Roktocheeta	<i>Plumbago rosea</i>					
Rudrakiya	<i>Elacocarpus ganitrus</i>	Elacocarpaceae		Rudraksha	Rudraksha	fruit
Sada koro	<i>Albizia procera</i>	Leguminosae				bark
Salpani	<i>Desmodium gangeticum</i>	Leguminosae	Ticktree	Shalparni	Sarivan	leaves
Sarpgandha	<i>Rauwolfia serpentina</i>	Apocynaceae		Sarpgandha	Sarpgandha	root
Shal/Gajari	<i>Shorea robusta</i>	Dipterocarpaceae	Yellow resin	Shal	Shal	secretion
Sharnalata	<i>Cuscuta reflexa</i>	Convolvulaceae	Doddar	Amaravela	Akasbel	rhizome

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
Shaymalota	<i>Ichnocarpus frutescense</i>					root
Sharisa	<i>Brassica campestris</i>		Musterd			whole plant, seed
Shial kanta	<i>Argemone mexicana</i>	Papveraceae	Yellow thistle	Srigula Kantaka	Shial kanta	juce, seed
Shoto-mooli	<i>Asparagus racemosus</i>	Liliaceae	Asparagus	Shatamuli	Shatavri	root
Sij	<i>Euphorbia tirucalli</i>	Euphorbiaceae	Milk hedge	Snuhi	Sehund	
Simul	<i>Bombax ceiba/S. malabaricum</i>	Bombacaceae	Silk cotton tree	Shalmali	Semal	bark, root, fruit,gum
Somraji	<i>Bamboo manna</i>					
Somraji	<i>Vernonia anthelmintica</i>					
Sona	<i>Oroxylon indicum</i>					bark
Sonamukhi	<i>Cassia angustifolia</i>	Leguminosae	Sonai	Sonamukhi	Lonamukhi	leaf
Suganghda bach	<i>Alpinia galanga</i>					rhizome
Supari	<i>Areca catechu</i>	Palmae	Betel nut	Poogi	Supari	fruit
Talmakhna	<i>Asteracantha longifolia</i>	Acanthaceae		Kokilaksa	Talmakhana	roots, seeds
Tejpata	<i>Cinnamomun tamala</i>	Lauraceae	Tamala	Tamal patra	Tejpata	leaf
Teraj/Chakunda	<i>Cassia tora</i>	Leguminosae	Foetidcassia	Chakramarda	Chakunda	leaf, seed
Tetul	<i>Tamarindus indica</i>	Leguminosae	Tamarind	Tinditik	Imli	bark
Teuri	<i>Operculina turpethium</i>					
Thankuni	<i>Centella asiatica</i>		Indian pennywort	Mandukaparni		leaves
Tokma/Ganja Tulsi	<i>Hyptis suaveolens</i>					whole plant, seed
Top-chini	<i>Smilax glabra</i>					
Trachyspermum ammi	<i>Join</i>		Bishop's Weed			seed
Tulsi	<i>Ocimum sanctum</i>	Lamiaceae	Basil	Tulsi	Tulsi	Leaves, Seeds, Roots
Ulat chandal	<i>Gloriosa superba</i>	Superbily Lillaceae	Kalihari	Superha	Languli	tuber
Ultat kambal	<i>Abroma augusta</i>	Sterculiaceae	Abroma	Pitch karmas	Ulatkambal	root, bark, leaf
Veranda/Reri	<i>Ricinus communis</i>	Euphorbiaceae	Castor oil tree	Eranda	Erandi	root, seed, leaves
	<i>Abies webbiana</i>	Pinaceae		Talispatra	Talispatra	leaf
	<i>Acacia senegal</i>	Leguminosae	Catechu tree	Swetkhadira	Khairswet	
	<i>Aconitum ferox</i>	Ranunculaceae	Aconite	Vatsnav	Bish	
	<i>Aconitum heterophyllum</i>	Ranunculaceae	Indian Attees	Ativisha	Atis	
	<i>Adiantum</i>	Polypodiaceae	Maiden hair	Hanspadi	Hanspadi	

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
	<i>lunulatum</i>					
	<i>Aglaia roxburghiana</i>	Meliaceae		Priyangu	Priyangu	
	<i>Alhagi mauronm</i>					
	<i>Alhagi pseudalhagi</i>	Leguminosae		Durlaybha	Jawasa	
	<i>Alpinia officinarum</i>	Zingiberaceae	Galanga	Kulinjana	Kulinjan	
	<i>Alternanthera sp.</i>					
	<i>Anacyclus pyrethrum</i>	Compositae	Pellitory rools	Akarkaram	Akarkara	
	<i>Anamirta cocculus</i>	Menispermaceae	Levant berries	Kakmari	Kakmari	
	<i>Ananosma dichotoma</i>					
	<i>Arethum sowa</i>	Umbelliferae	Dill	Satapushpi	Soya	
	<i>Aristolochia bracteata</i>	Aristolochiaceae		Dhumrapatra	Kiramar	
	<i>Artimesia maritima</i>	Compositae	Santonica, Worm seed	Kitamari	Kirmala	
	<i>Artimesia siversiana</i>	Compositae		Daman	Dauna	
	<i>Asparagus adscendens</i>	Asparagaceae	Asparagus	Musali	Musli	tuberous root
	<i>Balanites aegyptiaca</i>	Simaroubaceae	Zacum oil plant	Ingudi	Hingot	
	<i>Bambusa bambos</i>	Gramineae	Bamboo camphor	Vanslochan	Banslochan	
	<i>Berberis aristata</i>	Berberidacea	Ext. barberies	Rasanjana	Rasot	
	<i>Barberia prionitis</i>	Acanthaceae	Yellow naildye	Sahchar	Katsaraiya	
	<i>Bauhinia racemosa</i>	Leguminosae	Common mountain ebony	Swetkanchan	Kanchnar	
	<i>Bauhinia variegata</i>	Leguminosae	Common mountain ebony	Kanchanar	Kachnar	
	<i>Beleria prionitis</i>					
	<i>Berginia ligulata</i>	Saxifragaceae		Pashanbheda	Pashanbhed	
	<i>Boswellia</i>		Shallaki			
	<i>Buchanania lanzan</i>	Anacardiaceae		Piyalaka	Chironji	
	<i>Caesalpinia sappan</i>	Leguminosae	Sappan wood	Patang	Patang	
	<i>Callicarpa</i>			Pringu		
	<i>Calotropis procera</i>					
	<i>Canthium parvilorum</i>	Rubiaceae		Gangeruki	Gangeran	
	<i>Carum carvi</i>	Umbellifeae	Caraway seeds	Sayajira	Syahajira	
	<i>Cassia absus</i>	Leguminosae		Vanya kulatha	Chaksu	
	<i>Cassia auriculata</i>	Leguminosae	Tanners cassia	Avertiki	Tarwar	Bark, Root, Leaves, Fruits, Seeds
	<i>Cedrus deodara</i>	Pinaceae	Deodar	Devdaru	Deodar	
	<i>Cichorium endivia</i>	Compositae	Chicory, Endive	Kasani	Kasni	

Local Name	Latin	Family	English	Sanskrit	Hindi	Parts Used
	<i>Citrullus colocynthis</i>	Cucurbitaceae	Colocynth	Indraveina	Indrayan	
	<i>Citrus limon</i>					
	<i>Citrus medica</i>	Retaceae	Lemon	Jambir	Bijora nimbu	
	<i>Cleom icosandra</i>	Capparidaceae		Arkakanta	Hurhur	
	<i>Clerodendrun serratum</i>	Verbenaceae	Windkiller	Vatghni	Arni	
	<i>Coccolus lack</i>	Menispermaceae	Lac	Laksha	Laksa	
	<i>Colchicum luteum</i>	Liliaceae	Colchicum	Surinjan Pashabheda	Suranjan	
	<i>Colus aromaticus</i>			Mandukaparni		
	<i>Commiphora mukul</i>	Burseraceae	Gum Gugul	Guggulu	Guggulu	
	<i>Commiphora myrrha</i>	Burseraceae	Myrrha	Bole	Bole	
	<i>Cordia myxa (obiqua)</i>			Sheshmataka		
	<i>Crinum latifali</i>	Amaryllidaceae		Sukhdarshan	Sudarshas	
	<i>Crocus sativus</i>	Iridaceae	Saffron	Kunkuma	Keshar	
	<i>Curculigo orchioides</i>	Anaryllidaceae	Blacknusli	Siyahmusli	Muslikali	
	<i>Cydonia vulgaris</i>					
	<i>Delphinium denudatum</i>	Ranunculaceae		Nirvishi	Jadwar	
	<i>Delphinium zalil</i>	Ranunculaceae	Goldthread	Trayanti	Trayaman	
	<i>Dendrobium macraes</i>					
	<i>Desmostachya bipinnata</i>					
	<i>Diospyros peregrina</i>	Ebenaceae	Ebary	Tinduk	Tendu	
	<i>Dolichos biflorus</i>					
	<i>Embllica ribes</i>	Euphorbiaceae	Bidanga	Vidanga	Vaividang	
	<i>Epherdra geradiana</i>	Gnetraceae	Ephadra	Somlata	Somlata	
	<i>Erythrina variegata</i>	Leguminosae	Indian coral tree	Paribhadra	Farhad	
	<i>Eugenia caryophyllus</i>	Myrtaceae				
	<i>Eulophia campestris</i>	Orchidaceae	Salep	Amrita	Salam misri	
	<i>Euphorbia antiquorum</i>	Euphorbiaceae		Vajrakantaka	Tridhara	
	<i>Evolvulus alsinoides</i>	Convolvulceae		Sankhpushpi	Sankhahuli	whole plant, leaves, oil
	<i>Ficus racemosa</i>	Moraceae	Figtree	Udamber	Gular	
	<i>Myristica fragrans</i>	Myristicaceae	Mace	Jatipatri	Javitri	

Product Profile**ADA**

Local Name: Ada

Latin Name: *Zingiber officinalis*

English Name: Ginger

Plant Habit

Herb

Portion of Medicinal Importance

Rhizome

Uses

Ada possesses stimulant, aromatic and carminative properties when taken internally and when chewed it acts as a sialagogue. Externally applied it is ruberant. It is of much value in tonic dyspepsia, especially if it is accompanied with much flatulence; and as an adjunct to purgative medicines to correct griping.

Main Supply Area

Chittagong Hill Tracts, Madhupur, Rangpur and Nilphamary.

Estimated Market

Ayurvedic 126 tons, Unani 324 tons, Herbal Doctor 113 tons, Total 563 tons (yearly).

Proportion Imported/Locally Produced

Imported 70% and Local 30%.

Value Chain

Farmer Tk 45 /kg, Bepari 55 Tk/kg, Wholesaler 60 Tk/Kg

China Ada shoot 70 Tk/kg.

Major Buyers

Processor: Hamdard Laboratories, Dhaka; Dhakti Aushadhalaya, AP, Square Pharmaceuticals, Jaysongroup, Neptune Pharmaceuticals, A.H.Jana Kallayan Pharmaceuticals, Dhaka; New Life & Co., Dhaka; Kundeshori, Chittagong; Mozaher Aushadhalaya, Chittagong; Sri-Durga Aushadhalaya, Chittagong; Adlab Pharmaceuticals, Bogra; BG Laboratories Bogra; Fair Laboratories, Bogra; Peptone Lab. Rangpur; Midland lab, Rangpur; Puraton Mouvasha, Rangpur; Mystic east Limited

Wholesaler: Upaher Store, Dhaka, Subabhai store, Dhaka, Bablu store, Dhaka, Nasir and Brothers, Dhaka; Najrul Islam store Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Importer: Taqwa Enterprise, Dhaka, M/S Islam Brothers, Dhaka.

Future Prospects

Ada is a major item. In the past it has been exported from Bangladesh but now it is being imported. There is a good prospect to grow Ada and to make value addition for the farmers through improved processing.

Quality Specifications

Properly cut into pieces, well dried and proper storage

AMLOKI

Local Name: Amloki

Latin Name: *Embllica officinalis*

English Name: Emblic Myrobalans

Plant Habit

Deciduous Tree

Portion of Medicinal Importance

Fruit, Bark, Root

Uses

Root bark is reported to be used in ulcerative stomatitis. Bark for gonorrhoea, jaundice and diarrhoea. Fruits are reported to be good for dyspepsia, colic, flatulence, peptic ulcers, leprosy, inflammations, diabetes, cough, asthma, cough, skin diseases, dysentery, intermittent fevers and greyness of hair.

Main Supply Area

Sylhet, Mymensingh, Madhupur, Chittagong Hill Tract.

Estimated Market

Ayurvedic 342 tons, Unani 347 tons, Herbal Doctor 172 tons, Self consumption 500 tons, Total 1361

Proportion Imported/Locally produced

Imported 70 % and local 30%

Value Chain

Farmer 12 Tk/kg, Bepari 18 Tk/kg, Wholesaler 23 Tk/kg

Imported-40-60 Tk/kg (Sales)

Major Buyers

Processor: Hamdard Laboratories, Dhaka, Shakti Aushadhalaya, AP, Square Pharmaceutical, Jayson group, Neptune Pharmaceuticals, A.H. Jana Kallayan Pharma, Dhaka, New Life & Co., Dhaka; Kundeshori, Chittagong; Mozaher Aushadhalaya, Chittagong; Sri-Durga Aushadhalaya, Chittagong; Adlab Pharmaceuticals, Bogra; BG Laboratories Bogra; Fair Laboratories, Bogra,

Peptone Lab. Rangpur; Midland lab, Rangpur; Puraton Mouvasha, Rangpur;

Wholesaler: Upaher Store, Dhaka, Subabhai store, Dhaka, Bablu store, Dhaka, Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Future Prospects

Amloki is a very important herbal item used in various types of medicine. There is a short supply in the local market and the product is being imported.

Quality Specifications

Local products are generally of low quality, poorly dried, less attractive. However, some good varieties have been reported in Chittagong Hill Tract and there is a need for varietal improvement.

ARJUN

Local Name: Arjun

Latin Name: *Terminalia arjuna*

English Name: Myrobalam, White merubha, Arjuna

Plant Habit

Large evergreen tree

Portion of Medicinal Importance

Bark & leaves

Uses

Bark of tree is used as cardiac tonic and used in manufacturing herbal medicine in Ayurvedic and Unani industries.

Main Supply Area

Chittagong Hill Tracts, Tangail, Sylhet, Mymensingh and Gazipur

Estimated Market

Ayurvedic 192 tons, Unani 73 tons, Herbal Doctor 66 tons, Total 331 tons(yearly)

Proportion Imported/Locally produced

100% locally produced.

Value Chain

Farmer 14 Tk/kg, Bepari 22 Tk/kg, Wholesaler 24Tk/kg .

Major Buyers

Processor: New Life & Co., Dhaka; Mozaher Aushadhalaya, Chittagong; BG Laboratories Bogra; Peptone Lab. Rangpur; Midland lab, Rangpur;

Wholesaler: Upaher Store, Dhaka; Subabhai store, Dhaka; Bablu store, Dhaka; Nasir and Brothers, Dhaka; Najrul Islam store Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Importer: Taqwa Enterprise, Dhaka, M/S Islam Brothers and Dhaka.

Future Prospects

There is a demand for Arjun bark in herbal industries. It is in short supply. Removing bark on a sustained basis could yield regular income for the farmer.

Quality Specifications

Thick bark cut into pieces, clean, well dried, no adulteration with other bark materials.

ARSHWAGANDHA

Local Name: Arshwagandha
Latin Name: *Withania somnifera*
English Name: Winter Cherry

Plant Habit

An erect evergreen shrub

Portion of Medicinal Importance

Roots, leaves, fruits and seeds

Uses

Arshwagandha is considered the Indian ginseng and is said to increase a sense of well-being and improve sexual performance. Tuberous roots are effective in treating Leocoderma, constipation, insomnia, tissue-building, nervous breakdown and also used as an aphrodisiac. The leaves are used for fever, painful swelling and ophthalmitis.

Main Supply Area:

Chapai Nawabganj.

Estimated Market:

Ayurvedic 125 tons, Unani 70 tons, Herbal Doctor 50 tons, Total 250 tons (yearly).

Proportion Imported/Locally Produced:

Imported 95% and Local 5%.

Value Chain:

Farmer Tk70-80 /kg, Wholesaler 120 Tk/Kg

Major Buyers:

Processor: Used by all major processors, but more particularly, Ayurvedic processors.

Wholesaler: Upaher Store, Dhaka, Subabhai store, Dhaka, Bablu store, Dhaka, Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Pitamber Shaha, Chittagong

Importer: Taqwa Enterprise, Dhaka; M/S Islam Brothers, Dhaka.

Future Prospects:

Arshwagandha is a major product particularly in the Ayurvedic sector, accounting for about half utilisation. Prospects are for increased demand and particularly, for import substitution.

Quality Specifications:

Dried, cream coloured and more than half centimetre in width roots are desired.

BASAK

Local Name: Basak

Latin Name: *Adhatoda vasica*

English name: Malabarnut, Vasak

Plant Habit

Large shrub

Portion of Medicinal Importance

Leaves & stems

Uses

Basak is a reputed remedy for all sorts of cough and colds, bronchitis and other respiratory disorders due to its expectorant properties.

Main Supply Area

Chittagong Hill Tracts, Tangail, Madupur, Mymensingh, Gazipur, Sylhet

Estimated Market

Ayurvedic 41 tons, Unani 167 tons, Herbal Doctors 52, Total 260 tons

Proportion Imported/Locally produced

100% local produced.

Value Chain

Fresh leaf: Farmer 8 Tk/kg, Bepari 12 Tk/kg, Wholesaler 18 Tk/kg,

Dry leaf: Farmer 30 Tk/kg, Bepari 40 Tk/kg, Wholesaler 50 Tk/kg.

Major Buyers

Processor: AP, Square Pharmaceutucals, New Life & Co., Dhaka; Mozaher Aushadhalaya, Chittagong; Fair Laboratories, Bogra; BN laboratories, Rangpur.

Wholesaler: Satter store, Sylhet; Lokinath Poshari Chittagong; Abdul Gafur, Sylhet. Mozahar store, Sylhet,;Upaher Store, Dhaka; Bablu store, Dhaka; Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka;

Future Prospects

The product is in short supply and the demand is increasing. Some processors felt there was an expanding market for Basak. The plant serves as a boundary fence. It coppices well and the branches and twigs are used as fuel.

Quality Specifications

Fresh and clean leaves are used. No mixing or adulteration with other leaves.

BAHERA

Local: Bahera

Latin Name: *Terminalia bellerica*

English name: Myrobalam, bastard.

Plant Habit

Large deciduous tree

Portion of Medicinal Importance

Fruits & bark

Uses

Fruit of Bahera is bitter, astringent, tonic and laxative.

Main Supply Area

Chittagong, Chittagong Hill Tracts, Madhupur, Tangail, Sylhet, Mymensing.

Estimated Market

Ayurvedic 318 tons, Unani 133 tons, Herbal Doctors 113 tons, Self-consumption 250 tons, Total 814 tons (yearly).

Proportion Imported/Locally produced

100% locally produced.

Value Chain

Farmer 6 Tk/kg, Bepari 8-10 Tk/kg, Wholesaler 12-14 Tk/kg.

Major Buyers

Processor: Hamdard Laboratories, Dhaka, Shakti Aushadhalaya, AP, Square Pharmacetucals, Jayson group, Jana Kalyan, Neptune Pharmaceuticals, A.H. Jana Kallayan Pharmaceuticals, Dhaka; New Life & Co., Dhaka; Kundeshori, Chittagong; Mozaher Aushadhalaya, Chittagong; Sri-Durga Aushadhalaya, Chittagong; Adlab Pharmaceuticals, Bogra; BG Laboratories Bogra; Fair Laboratories, Bogra;

Peptone Lab., Rangpur; Midland lab, Rangpur; Puraton Mouvasha, Rangpur;

Wholesaler: Upaher Store, Dhaka; Subabhai store, Dhaka; Bablu store, Dhaka; Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Future Prospects

There is an expanding market for the product. Since the product is being imported, through improved production, quality and varietal development, imports can be substituted to a some extent.

Quality Specifications

Well-dried, clean, good colour, fleshy fruits are desired

BEL

Local name : Bel

Latin Name: *Aegle marmelos*

English name: Bael fruit tree

Plant Habit

Tree

Portion of Medicinal Importance

Fruits, leaves & roots

Uses

Digestive, tonic and chronic dysentery.

Main supply area

Tangail, Chittagang, Hill tracts, Sylhet, Mymensingh, Madhupur, Gazipur

Estimated Market

Unani 331 tons, Herbal Doctor 83 tons, Self-consumption 20 tons, Total 434 tons (yearly).

Proportion Imported/Locally produced

100% locally produced.

Value Chain

Farmer 20 Tk/kg, Bepari 30 Tk/kg, Wholesaler 32 Tk/kg.

Major Buyers

Processor: A..H. Jana Kallayan Pharmaceuticals, Dhaka; Fair Laboratories, Bogra;

Peptone Lab. Rangpur; Modern Herbal, Dhaka; Acme Laboratories, Dhaka.

Wholesaler: Upaher Store, Dhaka; Subabhai store, Dhaka; Bablu store, Dhaka; Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Future Prospects

Bel is used as fruit and grown in the homestead all over the country. There is a growing demand for young bel shoots in local shop's processing units.

Quality Specifications

Immature fruits cut into pieces and well-dried, free from fungal infection

BERELA

Local name: Berela

Latin Name: *Sida cordifolia*

English name: Country mallow

Plant Habit

A herbaceous woody perennial, softly tomentose shrub

Portion of Medicinal Importance

Seeds, barks, roots, leaves & flowers.

Uses

Ophthalmic, astringent, stomachic, cooling, tonic.

Main Supply Area

Thakurgoan, Rangpur, Dinajpur, Chittagong, Chittagong Hill tract

Estimated Market

Not Known

Proportion Imported/Locally produced

100% locally produced

Value Chain

Farmer 15 Tk/kg, Bepari 18 Tk/kg, Wholesaler 20 Tk./kg

Major Buyers

Processor: Puraton Mouvasha, Rangpur;

Wholesaler: Upaher Store, Dhaka; Subabhai store, Dhaka; Bablu store, Dhaka.

Future Prospects

Berela is grown naturally and appears in patches. All parts of the plant are used. This can easily be grown, providing extra income to the resource users.

Quality Specifications

Properly cut into pieces, well dried, not mixed with other plants.

BHUI-KUMRA

Local name: Bhui-kumra

Latin Name: *Ipomoea digitata/ paniculata*

English name: Giant potato

Plant Habit

Perennial climber with tuberous roots

Portion of Medicinal Importance

Roots & resins

Uses

Tonic, alterative, aphrodisiac, demulcent, lactagogue and purgative.

Main Supply Area

Chittagong, Chittagong Hill tracts, Rangpur, Dinajpur

Estimated Market

Ayurvedic 136 tons, Herbal Doctor 34 tons, Total 170 tons (yearly).

Proportion Imported/Locally produced

Imported 80% and local 20%

Value Chain

Farmer- 6 Tk/kg, Bepari- 8 Tk/kg, Wholesaler- 10 Tk/kg.

Major Buyers

Processor: Nil

Wholesaler: Nasir and Brothers, Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Future Prospects

Bhui-kumra is presently being imported. There is a good demand of Bhui-Kumara at the local level. This plant can be grown along the fence of the homestead boundary.

Quality Specifications

Sweet variety preferred, fleshy, well-dried products.

CHEEROTA

Local name: Cheerota

Latin Name: *Swertia chirata*

English name: Chirata, Indian gentian

Plant Habit

Annual shrub

Portion of Medicinal Importance

Whole plant

Uses

Bitter and tonic. Anti-malarial, stomachic, laxative, anthelmintic and antidiarrhoeal.

Main Supply Area

Imported from India

Estimated Market

Ayurvedic 1 tons, Self-consumption 200 tons, Total 201 tons (yearly).

Proportion Imported/Locally produced

Imported 100%

Value Chain

Buying Price 300 Tk/kg and Selling Price 320 Tk/kg

Major Buyers

Processor: BN laboratory, Rangpur

Wholesaler: Upaher Store, Dhaka; Subabhai store, Dhaka; Bablu store, Dhaka; Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Importer: Taqwa enterprise, Dhaka; M/S Islam Brothers, Dhaka.

Future Prospects

Demand in the country is very high. Reported that it can grow in some part of Bangladesh. Field trials are needed.

Quality Specifications

Well dried, dust free and pure

DHAIPHUL

Local name: Dhaiphul

Latin Name: Woodfordia fruticosa

English name: Fire flame

Plant Habit

Woody perennial shrub

Portion of Medicinal Importance

Flowers

Uses

Dhaiphul are widely used as it helps in fermentation of all Ayurvedic products.

Main Supply Area

Sylhet and Chittagong Hill Tracts

Estimated Market

Ayurvedic 167 tons, Unani 34 tons, Herbal Doctor 50 tons, Total 251 tons (yearly).

Proportion Imported/Locally Produced

Imported 80% and local 20%

Value Chain

Farmer 28 Tk/kg, Bepari 35 Tk/kg, Wholesale 40 Tk/kg

Major Buyers

Processor: Mozaher Aushadhalaya, Chittagong; Midland lab, Rangpur; Puraton Mouvasha, Rangpur; Kundeshari, Chittagong.

Wholesaler: Upaher Store, Dhaka; Subabhai store, Dhaka; Bablu store, Dhaka; Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Satter store, Sylhet;

Future Prospects

Dhaiful is an essential item used in herbal industry. Some areas having comparative advantage of growing Dhaiful should be identified. Improved collection is needed.

Quality Specifications

Well dried, dust free and pure

EKANGI

Local name: Ekangi

Latin Name: *Zingiber zerumbet*

Plant Habit

Herb

Portion of Medicinal Importance

Roots

Uses

Used as fish bait, aromatic; reported to be sex stimulant.

Main Supply Area

Kushtia, Pabna, Chuadanga

Estimated Market

Unani 25 tons, Herbal Doctor 6 tons, Self consumption 150 tons, Total 181 tons (yearly).

Proportion Imported/Locally Produced

Imported 10% and Local 90%

Value Chain

Farmer 20 Tk/kg, Bepari 25 Tk/kg, Wholesaler 27 Tk/kg.

Major Buyers

Processor: BG Laboratories Bogra;

Wholesaler: Upaher Store, Dhaka, Bablu store, Dhaka, Pitamber Shaha, Chittagong; Rahaman Brothers Dhaka, Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Importer: Taqwa Enterprise, Dhaka; M/S Islam Brothers, Dhaka.

Future Prospects

According to the wholesalers of Moulavibazar, it was an import item two years ago but it is now being exported but not in large quantity. Ekangi is used mainly for fish bites and has enhanced export potential.

Quality Specifications

Properly cut into pieces, well dried, no insect infestation and proper storage.

GRITHAKUMARE

Local name: Grithakumare

Latin Name: *Aloe vera*

English name: Indian aloe, Barbodos aloe, Jafrabadaloe

Plant Habit

A rosettes herb with bulbs.

Portion of Medicinal Importance

Leaves (dried juice), pulp & roots

Uses

Aphrodisiac, purgative & tonic. It is used in haemophilia, skin & urine disorders, liver & spleen enlargement, chronic ulcers.

Main Supply Area

Natore, Manikganj

Estimated Market

Self consumption 1000 tons, Total 1000 tons (yearly)

Proportion Imported/Locally Produced

100% local

Value Chain

Farmer 4 Tk/kg, Bepari 6 Tk/kg, wholesaler 10 Tk/kg

Major Buyers

Processor: Nil

Wholesaler: Upaher Store, Dhaka; Subabhai store, Dhaka; Bablu store, Dhaka; Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Future Prospects

Fresh leaves need to be transported within the shortest possible time. The demand for fresh Aloe vera leaves is increasing all the time and it would continue like this. Processing of Aloe vera to produce Musabber could have good potential. This may need further varietal improvement.

Quality Specifications

Long, thick leaves, clean & free from disease and spots.

HARITAKI

Local name: Haritaki

Latin Name: *Terminalia chebula*.

English name: Chebulic Myrobalam

Plant Habit

Large deciduous tree

Portion of Medicinal Importance

Fruits

Uses

Fruit is astringent, digestive, antiseptic, alterative, laxative, diuretic and carminative.

Main Supply Area

Chittagong, Chittagong Hill Tracts, Tangail, Dhaka, Madhupur, Sylhet

Estimated Market

Ayurvedic 243 tons, Unani 225 tons, Herbal Doctor 117 tons, Self consumption 250 tons, Total 835 tons(yearly).

Proportion Imported/Locally Produced

Imported 60% and Local 40%

Value Chain

Farmer 7 Tk/kg, Bepari 10 Tk/kg, Wholesaler 12 Tk/kg.

Imported-20Tk/kg

Major Buyers

Processor: Hamdard Laboratories, Dhaka, Shakti Aushadhalaya, AP, Square Pharmacetucal, Jayson group, Jana Kalyan, Neptune Pharmaceuticals , A.H. Jana Kallayan Pharma, Dhaka, New Life & Co., Dhaka; Kundeshori, Chittagong; Mozaher Aushadhalaya, Chittagong; Sri-Durga Aushadhalaya, Chittagong; Adlab Pharmaceuticals, Bogra; BG Laboratories Bogra; Fair Laboratories, Bogra,

Peptone Lab. Rangpur; Midland lab, Rangpur; Puraton Mouvasha, Rangpur;

Wholesaler: Upaher Store, Dhaka, Subabhai store, Dhaka, Bablu store, Dhaka, Nasir and Brothers, Dhaka; Najrul Islam store, Dhaka; Pitamber Shaha, Chittagong; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet;

Future Prospects

As a major herbal item, there is a need to increase production and to do proper processing. The local Haritaki are not well dried and do not possess good colour compared to the imported ones.

Quality Specifications

Uniform, big size, well dried & good colour.

KALOMEGH

Local name: Kalomegh

Latin Name: *Andrographis paniculata*

English name: Creat, Chiretta

Plant Habit

Annual herb

Portion of Medicinal Importance

Whole plant

Uses

Laxative, tonic and anthelmintic, useful in constipation, colic, dysentery and dyspepsia, strangulation of intestine, in spleen complaints and debility.

Main Supply Area

Grown in the homesteads throughout the country. Major supply comes from Tangail, Madhupur, Gazipur, Kushtia

Estimated Market

Ayurvedic 5 tons, Unani 61 tons, Herbal Doctor 17 tons, Self consumption 200 tons, Total 283 tons(yearly).

Proportion Imported/Locally produced

100% Locally Produced.

Value Chain

Farmer 10Tk/kg, Bepari 18 Tk/kg, Wholesaler 25 Tk/kg, Retailer, Company, kabiraz, people .

Major Buyers

Processor: A..H. Jana Kallayan Pharmaceuticals, Dhaka; PM laboratory.

Wholesaler: Upaher Store, Dhaka; Bablu store, Pitamber Shaha, Chittagong; Bonik, Chittagong; Abdul Gafur, Sylhet;

Importer: Taqwa Enterprise, Dhaka; M/S Islam Brothers, Dhaka.

Future Prospects

Kalomegh is presently cultivated but due to oversupply the price occasionally comes down. There is a need to make necessary linkage with the industries and the growers.

Quality Specifications

Properly dried, free from impurities, properly stored.

MOURI

Local name: Mouri

Latin Name: *Foeniculum vulgare*

English Name: Fennel

Plant Habit

A stout, glabrous aromatic biennial or perennial herb

Portion of Medicinal Importance

Fruits, leaves, roots & oil from fruits

Uses

Seeds are stimulant, aromatic, appetizer, diuretic, emmenagogue, carminative, spasmolytic, galactagogue and stomachic.

Main Supply Area

Imported from India and in small extent in Northern part of Bangladesh.

Estimated Market

Unani 61 tons, Herbal Doctor 15 tons, Total 76 tons (yearly).

Proportion Imported/Locally Produced

Imported 80% and Local 20%

Value Chain

Buying Price 45 Tk/kg and Selling Price 55 Tk/kg

Major Buyers

Processor: Nill

Wholesaler: Upaher Store, Satter store, Sylhet;

Importer: Taqwa Enterprise, Dhaka, M/S Islam Brothers, Dhaka.

Future Prospects

It is demandable and can be cultivated in Bangladesh.

Quality Specifications

Well matured, clean, well dried and pure.

MUTHA

Local name: Cyperus rotundus

Latin name: *Cyperus rotundus*

English name: Nut-grass

Plant Habit

A perennial herb with dark green glabrous culms.

Portion of Medicinal Importance

Tuber or bulbous roots

Uses

Home remedy for indigestion, diarrhoea, and other intestinal problem of children. An infusion of soup of tubers is useful in diarrhoea, dysentery, dyspepsia, vomiting, cholera, and fever.

Main Supply Area

Thakurgoan, Chittagong Hill Tracts

Estimated Market

Ayurvedic 165 tons, Unani 167 tons, Herbal Doctor 83 tons, Total 415 tons(yearly).

Proportion Imported/Locally Produced

100% locally produced.

Value Chain

Buying price 5 Tk/kg and Selling price 8 Tk/kg

Major Buyers

Processor: Adlab Pharmaceuticals, Bogra;

Wholesaler: Pitamber Shaha, Chittagong; Bonik, Chittagong;

Future Prospects

Mutha is grown as a grass for making mat. The farmers generally sell the Mutha grass but not the rhizomes. Linkage with the processing industries would help them to secure additional income and the industries could collect the items at a reasonable price.

Quality Specifications

Tuber roots to be well-dried, clean and free from foreign matter

NEEM

Local name: Neem

Latin name: *Azadirachta indica*

English name: Nim, Margosa

Plant Habit

Large evergreen tree

Portion of Medicinal Importance

Leaves, flowers, barks, seeds & oil from seeds.

Uses

Neem is used in Ayurvedic medicine for leprosy and skin diseases, fever; for purification of blood. Decoction of leaves is antiseptic, used in ulcers and eczema. Bark and young fruit are bitter tonic, alterative, astringent, anthelmintic and antiperiodic.

Main Supply Area

Nawabganj, Barind area, Chittagong Hill tracts

Estimated Market

Ayurvedic 17 tons, Unani 60 tons, Herbal Doctor 19 tons, Total 96 tons(yearly).

Proportion Imported/Locally Produced

100% Locally Produced.

Value Chain

Farmer 30 Tk/kg, Bepari 40 Tk/kg, Wholesaler 50 Tk/kg .

Major Buyers

Processor: Modern Herbal, Dhaka; Acme laboratories, Dhaka.

Wholesaler: Satter store, Sylhet; Abdul Gafur, Sylhet.

Future Prospects

All parts of neem are usable. There is a good prospect for neem tree products in the country. There is a local demand for neem oil and neem cake. Certain part of the country (Barind area) has been reported to produce good number of neem trees.

Quality Specifications

All parts well processed, clean and pure

PUDINA

Local name: Pudina

Latin name: *Mentha spicata /arvensis*

English name: Mackerel Mint, Spearmint

Plant Habit

Small annual herb

Portion of Medicinal Importance

Whole herb

Uses

Herb is considered to be a stimulant, carminative and antispasmodic. Leaves are used in fever and bronchitis and decoction used as a lotion in aphthae.

Main Supply Area

Grown all over Bangladesh.

Estimated Market

Ayurvedic 27 tons, Unani 26 tons, Herbal Doctor 11 tons, Total 54 tons(yearly).

Proportion Imported/Locally produced: Imported

100% locally produced.

Value Chain

Difficult to measure.48Tk/kg sales price (wholesaler) which may vary.

Major

Processor: Nil

Wholesaler: Nil

Importer: Taqwa Enterprise, Dhaka; M/S Islam Brothers, Dhaka.

Future Prospects

Industrial use through mint oil production.

Quality Specifications

Fresh and clean.

PEEPUL

Local name: Peepul

Latin name : *Piper longum*

English name : Indian long pepper.

Plant Habit

A slender aromatic climber with perennial woody roots

Portion of Medicinal Importance

Fruits & roots

Uses

Capable of improving intellect and memory power and also in regaining health by dispelling diseases. It is acrid, digestive, appetizer, aphrodisiac and tonic.

Main Supply Area

Local variety, small fruits are found in the northern region of the country.

Estimated Market

Ayurvedic 52 tons, Unani 49 tons, Herbal Doctor 25 tons, Self Total 126 tons(yearly).

Proportion Imported/Locally produced

Imported 90% and local 10%

Value Chain

Farmer: 30 Tk/kg, Bepari: 45 Tk/kg, Wholesaler: 50 Tk/kg .Imported ones sales -90-110Tk/kg.

Major Buyers

Processor: Fair Laboratories, Bogra, PM laboratory: Adlab phermacetucal,

Midland lab, Rangpur; Acme laboratory, Dhaka: Feni laboratory, Feni.

Sri-Durga Aushadhalaya, Chittagong; Adlab Pharmaceuticals, Bogra; Midland lab, Rangpur; Puraton Mouvasha, Rangpur;

Wholesaler: Upaher Store, Dhaka, Bablu store, Dhaka, Nasir and Brothers, Dhaka; Najrul Islam store Dhaka; Bonik, Chittagong; Suvon Traders, Bogra; Satter store, Sylhet; Lokinath pasheri Bitan, Chittagong. Makhonlal Bonik, Chittagong.

Future Prospects

Demand of Peepul is high but the local variety is not of good quality. Presently there is a short supply. Varietal improvement leading to the production of long fruits would be of immense importance since it is being imported. Peepul is used in the manufacturing of herbal medicine.

Quality Specifications

Big and uniform sized, Free from fungal infection.

SARPAGANDHA

Local name: Sarpagandha

Latin name: *Rauwolfia serpenita*

English name: Rauwolfia, serpentine

Plant Habit

Perennial shrub

Portion of Medicinal Importance

Leaves & roots

Uses

Root is bitter tonic, hypnotic, sedative, specific for insanity, reduces blood pressure. It is a remedy in painful affection of bowels. Sarpagandha has been employed for centuries for the relief of various central nervous system disorders.

Main Supply Area

Though in the past it was abundant, now very scarce. Some naturally occurring plants have been reported in Pabna & Tangail

Estimated Market

Ayurvedic 35 tons, Herbal Doctor 9 tons, Total 44 tons (yearly).

Proportion Imported/Locally Produced

Imported 90% and local 10%

Value Chain

Buying Price 120 Tk/kg and Selling Price 150 Tk/kg

Major Buyers

Processor: PM laboratory, Bogra.

Wholesaler: Shati Store, Dhaka, Lokinath pasheri Bitan, Chittagong.

Future Prospects

There is a good local demand for Sarpagandha. There is a scarcity of this herbal plant leading a price increase. Some pocket areas have been reported by the suppliers. It is important to identify suitable area for the production of this valuable species.

Quality Specifications

Well dried, clean, no adulteration with other roots.

SHIMUL

Local name: Shimul

Latin name: *Bombax ceiba/B. malabaricum*

English name: Silk cotton tree.

Plant Habit

A lofty deciduous tree

Portion of Medicinal Importance

Leaves, stems, roots, fruits, flowers, barks and gum

Uses

Various parts of Simul are used in bleeding gums, toothache and carries, sores in mouth, pain in leg, fever, enlarged spleen, atrophy, emaciation, rheumatism, spermatorrhoea, haematuria, cholera, pneumonia, pleurisy, intercosal neuralgia and leprosy. Young tap roots are astringent and used in dysentery.

Main Supply Area

Rangpur, Faridpur and Chittagong Hill tracts

Estimated Market

Ayurvedic 35 tons, herbal Doctor 9 tons, Total 44 tons (yearly).

Proportion Imported/Locally Produced

100% locally produced.

Value Chain

Farmer 15 Tk/kg, Bepari 22 Tk/kg, Wholesaler 25 tk/kg.

Imported-150 Tk/kg(Indian)

Major Buyers

Processor: Midland lab, Rangpur;

Wholesaler: Upaher Store, Dhaka, Ataher Brothers, Dhaka;

Future Prospects

There is an increasing demand for herbal items such as mocharas, roots of Simul. The young roots are used for making different types of products.

Quality Specifications

No mixing with other roots, well dried and clean.

SHOTOMULI

Local name: Shotomooli

Latin name: *Asparagus racemosus*

English name: Asparagus

Plant Habit

An extensively scandent, much branched, spinuous under- shrub with tuberous roots.

Portion of Medicinal Importance

Tuberous root

Uses

Shotomuli is capable of improving memory power, intelligence, and physical strength and maintaining youthfulness. It is tonic, aphrodisiac, galactagogue, roborant, diuretic, antidysenteric and demulcent. It increases breast milk, promotes sexual vigor, cures swelling, diseases due to impurities of blood, diarrhoea, piles, eye diseases. It is a good remedy of vaginal disorders like leucorrhoea, uterine disorders, excess of bleeding and colicky pain. It is a reputed drug for peptic and duodenal ulcers.

Main Supply Area

Chittagong Hill tracts, Tangail, Gazipur, Natore

Estimated Market

Ayurvedic 73 tons, Herbal Doctor 18 tons, Total 91 tons (yearly).

Proportion Imported/Locally produced

Imported 90% and Local 10%

Value Chain

Farmer 25Tk/kg, Bepari 35Tk/kg, Wholesaler 40tk/kg.

Sales price of imported product-225-250Tk/kg

Major Buyers

Processor: Sri-Durga Aushadhalaya, Chittagong; Kundeshari, Dhaka.

Wholesaler: Shati Store, Dhaka; Banaji Store, Dhaka.

Future Prospects

Presently Shotomul is grown in certain locations as reported in Natore. The local Shotomul is not fleshy when dried and not preferred by the trade. It is used mainly for Juices. Varietal improvement could help to make import substitution.

Quality specifications

Fresh, clean, healthy , Well dried and fleshy roots. Free from fungal infection.

TOKMA

Local name: Tokma

Latin name: *Hyptis suaveolens*

English Name: *Salvia seeds*

Plant Habit

Shrub

Portion of Medicinal Importance

Seeds

Use Value

Acts as stimulant and antiseptic. Laxative and used in sherbet drinks.

Main Supply Area

Noakhali, Tangail, Bogra, Madhupur, Chittagong Hill tracts

Estimated Market

Self consumption 300 tons, Total 300 tons (yearly).

Proportion Imported/Locally produced

Imported 20% , Local 80%

Value Chain

Farmer 14Tk/kg, Bepari 18Tk/kg, Imported-200Tk/kg

Major Buyers

Wholesaler: Upaher Store, Ataher Brothers, Dhaka;

Future Prospects

Tokma is used in preparing a number of food items, demand is increasing. There is a good prospect for this crop in the country.

Quality Specifications

Clean, well-dried seeds are desirable.

TULSI

Local name: Tulsi

Latin name: *Ocimum sanctum*

English name: Sacred basil, Holy basil

Plant Habit

An erect herbaceous, much branched, softly hairy annual

Portion of Medicinal Importance

Whole plant

Uses

Possesses aromatic, carminative, diaphoretic and stimulant properties. A decoction is taken for coughs and bronchitis, that of leaves for dysentery; it is also used as mouth wash for relieving toothache.

Main Supply Area

Tangail, Mymensingh & Madhupur

Estimated Market

Unani 183 tons, Herbal Doctor 46 tons, Total 229 Tons (yearly).

Proportion Imported/ Locally produced

100% Local.

Value Chain

Farmer 20 Tk/kg, Bepari 25 Tk/kg, Wholesaler 28 Tk/kg.

Major Buyers

Processor: Feni Dawakhana, Feni; Farmagene laboratory, Bogra; Fair Laboratories, Bogra; BN laboratory, Bogra; A.H. Jana Kallyan Pharmaceuticals, Dhaka.

Wholesaler: Subabhai store, Dhaka; Banaji Store, Dhaka;

Future Prospects

Tulsi is a popular local medicinal plant and also used in the herbal industry mainly in the Unani sector. It is also used for home medication purpose.

Quality Specifications

Fresh and dry parts are used. Clean and pure products are desirable.

ULATKAMBAL

Local name: Ulatkambal

Latin name: *Abroma augusta*

English name: Devil's cotton

Plant Habit

A large, spreading, quick growing hairy shrub.

Portion of Medicinal Importance

Leaves, stems, roots & root barks.

Uses

Root and root barks are uterine tonic. It contract the uterus and used for the treatment of congestive and nervous dysmenorrhoea, ammenorrhoea, sterility and other menstrual disorders. Powdered roots act as an abortifacient and anti-fertility agent. Leaves are useful in treating uterine disorders, diabetes, rheumatic pains of joints.

Main Supply Area

Rangpur, Dinajpur

Estimated Market

Self consumption 100 tons, Total 100 tons(yearly)

Proportion Imported/Locally Produced

100% local.

Value Chain

Farmer 10 Tk/kg, Bepari 15 Ta/kg and Wholesaler 18 Tk/kg.

Major Buyers

Processor: Nil

Wholesaler: Upaher Store, Najrul Islam store Dhaka; Banaji store, Dhaka, Satter store, Sylhet; Lokinath Poshari Bitan, Chittagong.

Future Prospects

It is used in the herbal industries. Also, reported to be exported in the past. There is a good potential for this species as it is used with Aloe vera drinks.

Quality Specifications

Well processed, clean and pure products are desirable.

Projection for the Demand of Individual Important Medicinal Species

			Un-fulfilled	Bangladeshi	Expected	Future			
Local Name	Latin Name	Total Value \$ US'000	Imports \$ US'000	Imports % of all	Exports \$ US'000	Opportunity \$ US'000	Supply \$ US'000	Annual Growth	Opportunity \$ US
Amloki	Emblica officinalis	1,100	770	70	-	770	330	11%	1,348
Haritaki	Terminalia chebula	900	540	60	-	540	360	11%	1,013
Bahera	Terminalia bellerica	900	-	-	-	-	900	11%	473
Arshwagandha	Withania somnifera	500	475	95	-	475	25	11%	738
Shoto-muli	Asparagus racemosus	60	54	90	-	54	6	11%	86
Peepul	Piper longum	240	215	90	-	215	25	11%	341
Dhaiful	Woodfordia fruticosa	100	80	80	-	80	20	12%	140
Tokma	Hyptis suaveolens	200	40	20	-	40	160	4%	80
Mutha	Cyperus rotundus	200	-	-	-	-	200	11%	105
Kalomegh	Andrographis paniculata	100	-	-	-	-	100	11%	53
Cheerota	Swertia chirata	1,700	1,700	100	-	1,700	-	4%	2,040
Isubgul	Plantago ovata	1,700	1,700	100	-	1,700	-	4%	-
Ekangi	Zingiber zerumbet	100	10	10	10	20	100	4%	20
Ghirta Kumari	Aloe vera	175	-	-	-	-	175	11%	92
Neem	Azadirachta indica	30	-	-	-	-	30	10%	15
Mint Oil	Mentha arvensis	300	300	100	-	300	-	20%	600
Agar	Aquilaria agallocha	1,700	-	-	1,700	1,700	1,700	5%	425
TOTALS		10,005	5,884		1,710	7,594	4,131		7,566

Notes: Total Value, estimated the value of each individual product at the wholesale/factory gate level.

The value of the imported product & the % of total supply.

Un-fulfilled opportunity, estimates the current value of Medicinal Plant sales which are not being supplied from Bangladesh.

Bangladeshi Supply represents the value of medicinal plant raw material being supplied by Bangladesh.

Annual growth is based on the proportion of sales of individual products that are sold to the Unani, Ayurvedic, Herbal Practitioners, and Self Treatment and their projected annual growth rates at 16.3%, 12.5%, 2% and 4%.

Future opportunity is estimated as the future size of the market in five years, over and above the existing level of Bangladesh supply (i.e. estimated growth in demand plus existing imports).

Interview Schedules for Processors, Wholesalers Traders

Business Name

Contact Name

Address

Telephone

Fax.

E mail

Brief History of Business, when started, why started, who started, original activities, main changes,

Main Activities now; who do you buy from, who do you sell to, % if possible, what processing/added value (if any) do you carry out

Size & Scale of the Business: turnover/sales, number of people employed, tons of product sold

Future Plans for the Business:

Describe the process of buying, procuring raw materials

Imported Products: Overall how important are imported products in terms of total supply (value, volume) Divide supply between Importers and Wholesalers. Product ordered in advance, do they obtain quotes from different companies, what are their main suppliers (names, contacts), payment terms, under-invoicing etc. What countries do the imported product come from, how much raw material, how much processed, are their local supplies, if so how does it compare

Local Product: Overall how important is Bangladeshi products in terms of total supply (value, volume) Divide supply between Wholesalers, different types of Buparis and direct sales from producers. Are product ordered in advance, do they obtain quotes from different companies, what are their main suppliers (names, contacts), payment terms.. What are the main areas that supply medicinal plants. How much is raw material, how much is processed, are their imported supplies, if so how does it compare, are there any particular areas/products which are especially good for medicinal herbs

Future

What products do you see expanding over the next 3- 5 years?

What products are currently in short supply, that you would like to see additional supplies of?

What products that are currently being imported, do you think could be supplied profitably by local growers/collectors

How do you want new/future suppliers to work with you?

Would you like to be considered to work with the project to link local suppliers to companies like your own?

Product Questionnaire, Top 10 Imported Products

Name Local	Latin	Volume	Buying Price	Selling Price	Sales	Sources	Specifications	Trends

Product Questionnaire, Top 10 Local Products

Name Local	Latin	Volume	Buying Price	Selling Price	Sales	Sources	Specifications	Trends

Product Questionnaire, Top 5 Products In Short Supply

Name Local	Latin	Volume	Buying Price	Selling Price	Sales	Sources	Specifications	Trends

Do you have a requirement for any of the following plants, if so please indicate the volume and price

Aloe vera	Ghirta kumari					Piper chaba	Chai	
Rauvolfia serpentina	Sarpagandha					Asparagus racemosus	Shoto-muli	
Withania somnifera	Arshagandha					Ipomoea digitata	Bhui-kumra	
Acorus calamus	Bach					Sida cordifolia	Berela	
Cyperus rotundus	Nagar mootha					Abroma augusta	Ulat- kambal	
Ocimum sanctum	Tulsi					Emblica officinalis	Amlaki	
Salmalia malabarica	Shimul					Terminalia chebula	Haritaki	
Piper longum	peepul					Terminalia bellerica	Bahera	
						Aegle marmelos	Bel-shoot	

Herbal Doctors, Shops & Street Sellers Bepari,

(explain project, why it should be of benefit to Bangladeshi Herbal medicine, and specifically him or her)

Business Name

Contact Name

Address

Telephone

Fax.

E mail

Brief History of Business, when started, why started, training, original activities, main changes,

Main Activities now; who do you buy from, who do you sell to, making up own medicines, buying in product

Size & Scale of the Business: turnover/sales, number of people employed,

Future Plans for the Business

Describe the process of buying, procuring raw materials, products

What are the main reasons that people use herbal medicine

Problem	Treatment	Effectiveness

Ailments/ medicinal problems that effective herbal medicines are required
Any changes in the types of medical problems

Top Products Sold

Product, supplier	Treatment	Sales, Units/Prices	

Contact List¹

Industry	Title	Contact Person	Position	Company Name	Address	City	Email Address	Telephone No.	Fax
Unani	Mr.	Mahbubur Rahman	Factory Manager	Jayson Natural Products Ltd.	28, Purana Palton	Dhaka-1000	Jayson@citechco.net	9561643/ 9558128/ 8950962-3	880-02-9562482
Unani	Dr.	Aminul Bari	Prod. Manager	A. H Janakalyan pharmaceuticals (WAQF)	67/5, Pineer Road, Kakrail	Dhaka-1000		9352865(Head office)/ 8915743(Factory)	
Unani and Homeo Pathic	Dr.	S.M. Nurul Hoque	Managing Director	New Life & Company (Pvt.) Ltd	101, Nutan Paltan Line, Azimpur	Dhaka-1205	newlife@bangla.net	8625951(Res)/ 8625952(off)/ Mob- 018237289,	880-028622820
Research Organization	Dr.	Ferdousi Begum	Executive Director	DEBTEC(Development of Biotechnology and Environmental Conservation Centre)	House#90, Road# 11/A, Dhanmondi R/A	Dhaka-1209	debtec@aitbd.net , Website: www.debtec.org	880-02-8114827(off)	880-28115155/ 9134312(R)/ Mob: 0171-184166
Processor	Mr.	D.H.Sarker	Marketing Manager	Mystic East Limited	House#15, Road#13/A, Dhanmondi R/A	Dhaka-1209	mysticgp@bonline.org / www.mystic-group.com	880-2-9124546/ 9124110/ 9126530/ 7510411(Res)/ Mobi: 0171-532189	880-29122106
Unani	Mr.	Rafiqul Islam	Director Marketing	Hamdard Laboratories(WAQF) Bangladesh.	Hamdard Bhaban, 291/1, Sonargaon Road,	Dhaka-1205	hamdrdbd@bdmail.net , web:hamdard-bd.com	9665965/ 9555966/ 8625194/ 8627003	880-2-8616958
	Mr.	Khodadat Ahmed	President	Homeopathy- Unani-Aurvedy Association	House# 37, Alamin Road, Kathalbagan, Green Road	Dhaka		9673654(off)/ 8618002(Res)	
Allopathic	Mr.	Kamrul Ehsan	International Marketing Manager	Square pharmaceuticals Ltd.	Corporate Headquarters Square Centre, 48, Mohakhali Commercial area	Dhaka-1212		880-2-8827729- 38/ 8817729-38	880-2-8828768
Processor	Mr.	Hasibur Rahman	Executive Director	ACME Laboratories Ltd.	55, Satmasjid Road	Dhaka-1209	acmeproc@bangla.net	8118692-6	
	Dr.	K. M. Shamimul Hasan	Lecturer	Govt. Unani Ayurvedic Degree College & Hospital	Mirpur-13	Dhaka		8012048(College)/ 8112485(Res)	
Wholesale Market	Mr.	Iqbal Ahmad	Owner	M/S Nasir & Brothers	9, Moulivibazr (Al-Amin Market)	Dhaka-1210		7318679/ Mob: 0171-158415/ 011-838895	

¹ Corrections sent to icdhaka@citech-bd.com will be used to improve further editions of this report

Industry	Title	Contact Person	Position	Company Name	Address	City	Email Address	Telephone No.	Fax
Wholesale Market	Md.	Samsuddin	Owner	M/S Upahar Store	15, Mokim Katara, Moulivibazar	Dhaka-1210	upharstore@hotmail.com	7311884/7315564(off) / 8616310/8628989(Res), Mob.: 0171-528426/ 0171-673457	880-2-7312106
Wholesaler & Importer	Md.	Shahidul Islam (Babul)	Owner	M/S Trade International	37/2, Dhakeshwari Road	Dhaka-1211	sihanif@bdmail.net sibabul@yahoo.com	7313690(off)/ 8617245(Res)	880-2-8631992
Wholesale Market	Md.	Sahabuddin	Owner	Bulbul Store	21/2, Mokim Katra, Moulivibazar	Dhaka		7319864/ Mob.: 0171-206810	
Wholesale Market	Mr.	Subha Mia	Owner	M/S Subha Vai Store	32, Mokim Katara, Moulivibazar	Dhaka-1211		237852(off)/ 9663702(Res)	
Wholesale Market	Md.	Amanullah	Owner	M/S Sornolota Traders	Uthuli bazaar, Shibalo	Manikganj		Mob.: 0171-512909(on req. Mr. Mostofa)	
	Hakim	Hossain Ahmed	Principal	Unnani Tibbia College	Ukilpara	Feni		0331-74245(off), Mob.: 0171-787398	
Wholesaler	Mr.	Mahbubur Rahman	Owner	M/S Rahman Brothers	36, Mukimkatra, Moulivibazar	Dhaka		7317750	
Shop	Mr.	Kazi Abdus Salam	Owner	Shohag Enterprize	66No. Block-D, New Super Market, NewMarket	Dhaka-1205		9660357(on req.)	
Shop	Md.	Kamrul Islam (Badal)	Owner	Talukder Store	54-55, New Super Market, D-Block, North (Groud Floor), NewMarket	Dhaka-1205		9669328	
Shop	Md.	Sirajul Islam	Owner	Sima Enterpirze	59No., New Super Market, D-Block, North (Groud Floor), NewMarket	Dhaka-1205			
Shop	Mr.	Hauron	Owner	M/S. Hauron Enterprise	102No. Karwanbazar Kitchen Market, (1st floor), Tejgaon,	Dhaka-1215		Mob.: 0171-606171/ 9126615, 9125649, 9130229-282	
Shop	Mr.	Kunjatal Pitambor Shah	Owner	Kunjatal Pitambor Shah	266, Nobabpur Road	Dhaka-1100		9556701	
Unani	Dr.	Alamgir Mati	Managing Director	Modern Herbal Research garden	12, Shantinagar, Chourasta	Dhaka		9357052 / 9357693 Mob: 019386617, 018215490	880-2-8315367
	Dr.	Zafrullah Chowdhury	Executive Director	Gonoshahsto Nagar Hospital	House 14E, Rd.6, Dhanmondi	Dhaka	gk@citechco.net	8617208/8617383	

Industry	Title	Contact Person	Position	Company Name	Address	City	Email Address	Telephone No.	Fax
Ayurvedic	Mr.	AFM Fakrul Islam Munshi, Raquib M. Fakrul	Group Chairman, Chairman	Ayurvedic pharmacy (AP)	Flat no. 3/A, House no. 15, Road no. 4, Gulshan-1	Dhaka-1212	munshi@bdmail.net	9888169 / 9885799 / 7315894 / 7316939	880-02-7314126
Ayurvedic	Mr.	N.A.M Solaiman	Executive Director	Shakti Oushodhalaya,	84, Shamibag Road, Dayaganj	Dhaka		7111354 / 7122458	
Ayurvedic	Mr.	Beni Madhab Mukherjee	General Manager	Shadhana Oushodhalaya	71, Dinnathsen Road, Gendaria	Dhaka		7410442	
Ayurvedic	Mr.	Rajib Sinha	Director	Sree Kundeswari	Kundeswari Bhaban, Raozan	Chittagong		031-681670,011703201,M ob-018329082	
Processor	Mr.	SM Abul Kalam		Muzaher Aushudhalaya	120, Kubaniganj	Chittagong		031-682504 (fac) / 031-634518 (Off)	
Processor	Mr.	Amal Chakraborty		Sri Durga Aushudhalaya	358, Nabab Sirajdulla Rd.	Chittagong		031-618654	
Processor	Mr.	Ahmedur Rahman		Synergy Foundation		Chittagong		031-655820/ Mob: 011-763062	
Wholesale (Aloevera)	Mr.	Md. Babul	Owner		Thathari Bazar, Gulisthan	Dhaka			
Wholesale (Aloevera)	Mr.	Syad Mollah	Owner		Shop No. 12, Under Fulbaria Bridge, Thathari Bazar, Gulisthan	Dhaka			
Wholesale (Aloevera)	Mr.	Mannan	Owner		Besides the Babubazar Mazar under the Bridge, Armanitola	Dhaka			
Wholesale (Aloevera)	Mr.	Sharifulla	Owner		15 Puraton Gabtoli, Dead end of Mirpur Mazar road	Dhaka			
Bepari	Mr.	Kiamuddin			Vill. Dashami, P.O. Badarganj, Upazila. Chuadanga	Chuadanga			
Bepari	Mr.	Md. Abu Sayed			Vill. Pachisha Dakkinpara, P.O. Madhupur, Upazila. Madhupur	Tangail			

Industry	Title	Contact Person	Position	Company Name	Address	City	Email Address	Telephone No.	Fax
Bepari	Mr.	Md. Mohiuddin			Vill. Habibpur, P.O. Madhupur, Upazila. Madhupur	Tangail			
Bepari	Mr.	Md. Akhtar Hossain			Vill. Barmi, Upazila. Sreepur	Gazipur			
Processor	Mr.	Salauddin Ahmed	Managing Director	Sanj Bangladesh	House no. 270, Road no. 1, Baitul Aman Housing Society, Adabor-1, Shamoli	Dhaka		8122680	
Processor	Mr.	Aminur Rahman Jafrul	Owner	Bengal Herbs Lab.	836, Ibrahimpur, Kachabazar, Kafrul Thana, Dhaka Cant.	Dhaka-1206		Tel. 9870044, Mob. 0171-969505	
Processor	Dr.	Rahamatullah Alam	Owner	Alam & Co.	2 RK Mission road,	Dhaka-1203		Tel. 9553991, Mob. 011-806976	
	Hakim	Hafiz Azizul Islam	Principal		Tibbia Habibia College, 25, Umesh Datta Road, Bakshi Bazar	Dhaka			
Wholesale & Importer	Hakim	Zahirul Islam	Proprietor	Takua Enterprise	Green view Super Market, 79 Green Road	Dhaka		Tel. 9111950, Mob. 018-223945	8113471
	Prof.	M. Shahabuddin K. Choudhuri	Professor	Dept. of Pharmacy	Jahangir Nagar University, Savar	Dhaka	ayurveda@juniv.edu; mskchoudhuri@yahoo.com	Tel. 9332707	
Unani	Hakim	Saeed Ahmed Siddique	Managing Director	Neptun Pharmaceuticals	Mirpur-1, 7 Darusalam	Dhaka		Tel. 8019067, Mob. 0171-529179	
	Prof.	ABM Faruque	Chairman	Dept. of Pharmacy	University of Dhaka, Ramna	Dhaka		Tel. 8616897, 9661920-59, Ext. 4837, Res. 8610199	
Ayurvedic	Mr.	Md. Habibur Rahman	Proprietor	Masud and Co.	Deobhog (Paka Sharak), Narayangonj	Narayangonj			
Ayurvedic	Kabiraj	Jotirmoy Das	Principal	Sreehatra Shanksrit and Aurveda College	Sylhet Badhagobinda, Giora Mandir, Akhra, Zindabazari	Sylhet-3100			
Ayurvedic	Dr.	Abdul Latif	Proprietor	Mukti Aushudhalaya	Tongi	Dhaka			

Industry	Title	Contact Person	Position	Company Name	Address	City	Email Address	Telephone No.	Fax
Ayurvedic	Mr.	Manik Chandra Pramanik	Owner	Manikaya Aurvedic Aushudhalaya	Nagarbari Road	Bogra			
Ayurvedic	Dr.	Abdur Rob	Principal		AP Bhaban, 8/1, 8/2, Armenian Street, Armanitola	Dhaka-1100		7316931, 7315894, Mob. 0171-125081	
Ayurvedic	Md.	Waliullah Pramanik	Owner	Puraton Mouvasha Islamia Oushadalya	Shalbon, Rangpur	Rangpur			
Ayurvedic	Hakim	Anwarul Islam	Incharge	Tibbia Habibia College Outdoor/Shefa-UI-Mulk-free Unani clinic	25, Umesh Datta Road, Bakshi Bazar, Dhaka-1211	Dhaka		7300972	
Ayurvedic	Hakim	Ferodous Wahid	Lecturer	Tibbia Habibia College Outdoor/Shefa-UI-Mulk-free Unani clinic	25, Umesh Datta Road, Bakshi Bazar, Dhaka-1211	Dhaka		7300972	
	Bepari	Delwer Hossain	Bepari		Vill: Sagordighi, PO: Sagordighi, Thana: Ghatail	Tangail			
	Bepari	Md. Nizam			Vill: Daleshor, PO: Sat Khamair, Thana: Sripur	Gazipur			
	Bepari	Md. Nizamuddin			Vill: Durgarchala, PO: Satkhamair, Thana: Sreepur	Gazipur			
	Bepari	Md. Seqender Ali			Vill: Sagordighi, PO: Sagordighi, Thana: Ghatail	Tangail			
	Bepari	Md. Babul Miah			Vill: Daleshor, PO: Sat Khamair, Thana: Sreepur	Gazipur			
	Bepari	Md. Jamal			Vill: Aurakhali, PO: Kaligang, Thana: Kaligong	Gazipur			
	Bepari	Mr. Samsul Haque			Vill: Dhalashor, PO: Satkhamal, Thana: Sreepur	Gazipur		0171137456	
	Bepari	Md. Jainal			Vill: Aurakhali, PO: Kaligang, Thana: Kaligong	Gazipur			

Industry	Title	Contact Person	Position	Company Name	Address	City	Email Address	Telephone No.	Fax
Retail Shop	Mr.	Hiralal Dutta			373, Baxirhat, Chittagong	Chittagong			
		Dr. Mohammed Yusuf	PSO	BCSIR, Chittagong	Chittagong Cannnt.	Chittagong-4220		031-68174, 68176	
		Dr. Neaz Ahmed Sidique	Divisional Officer	BFRI, Chittagong	Minor Forest Products Division, Chittagong-4000			031-681581	
Wholesaler		Pitambar Shah		Sadhan Dey, Vaskar Madhab Banik (owner/famil representative)	12 Lal Mohan Saha Street, Dhaka	Dhaka		611479, 638859	
Wholesaler (Botanical)		Mr. Burhan		Burhan Perfumery House	56/57 Mitford Road, Haji Yousuf Mansion, Dhaka	Dhaka-1100			
Wholesaler		Md. Atahar Hossain		Atahar Brothers	1 Mokim Katara, Moulavi Bazar	Dhaka		7311766	
Wholesaler		Zahid Hossain		Banaji Store	1 Mokim Katara, Moulavi Bazar	Dhaka		7315950	
Wholesaler		Nazrul Islam	Owner	Nazrul Islam Baniati Store	1, Moulvi Bazar, Dhaka	Dhaka		7310715	
Processor	Mr.	Basudev Sinha	Director	Sree Kundeshwery aushudhalaya ltd.	Kundeshwari Bhabhan, Chittagong-4342	Chittagong	kundbd@colbd.net / kundherbal@yahoo.com	03168670, 011703201, 031633638, Mob-0171725995	
Wholesaler	Mr.	Vascor Madhab Banik	Owner	Pitambar Shah	332, Baxirhat, Chittagong.	Chittagong		611479, 638859	
Processor	Dr.	Iqbal Ahmad	Consultant	Gemcom Food and Agricultural Products Ltd.	House 75, Road 7/A, Dhanmondi	Dhaka		9138242-3	
Processor (Unani)	MD.	Salimullah	Chairman & Managing Director	Jayson Group	28, Purana Paltan	Dhaka 1000	Jayson@citecho.net	9561643/ 9558128 (Head office)	880-02-9562482
Wholesaler cum Retailer	Md.	Abdus Sattar	Owner	Sattar Store	Mohajan Potty, Bonder Bazaar	Sylhet-3100		716054/ 718508	
Wholesaler cum Retailer	MD.	Murad	Owner	Murad Store	Mohajan Potty, Bonder Bazaar	Sylhet-3100			
Wholesaler cum Retailer	Mr.	Abdul Gaphur	Owner	Abdul Gaphur Brother	Mohajan Potty, Bonder Bazaar	Sylhet-3101			

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Unani & Allopathic	Dr.	M.A Mannan	Managing Director	Mansons Pharmaceuticals	49,Green Road	Dhaka-1205		8623110(off),7123100(Fact.)	
Processor	Mr.	Ashrafal Islam		Pharmagem Laboratories	North Bindabon para,Bogra	Bogra		5164688	
Unani	Md.	Jahirul Islam		B.N Laboratories	Guptopara,	Rangpur		0521-67874	
Processor	Hakim	Samsur Rahman(Moti)		P.M Laboratories	Fulbari	BOgra		05166032/ 0171405659(Mob)	
Processor	Md.	Moshiul Alam Raju		Fair Laboratories	Katncerpara	Bogra		0512-66724	
Unani	Mr.	Sujit Kumer Baidya		HamdamLaboratories	142 Anabi R/A.	Sylhet-3100		0821-719007	
Processor	Mr.	Abdur razaque Talukdur		Mid Land Lab. Ltd.	Jel Road Kellabond. Rangpur	Rangpur			
Processor	Md	Waliullah Pramanik		Puraton Mouvasha Islamia	Shalbon	Rangpu		0521 64486	
Unani	M/S	Pepton Lab.		S.K. Sanaullah	House 88,Road1New Sen Para,	Rangpur		0521-65608	
Aurvedic	Md.	Rezaul Karim		Adlab Pharmaceuticles	Sultanganj Para	Bogra		051-63977,0171-016879	
Processor	Md.	Siddque Talukder(Bablu)		B.G Laboratories	Godarpara,	Bogra		051-62485,0171-484223	
Aurvedic	Mr.	AFM Fakhrul Islam Munshi	Group Chairman	AP	Flat3/F,House-15,Road-4 Gulshan-1	Dhaka	munshi@bdmail.net	9885799	
Unani	Mr.	Hakim Md.Yousuf Haroon Bhuiyan	Managing Director	Hamdard I Lab.	Hamdard Bhabhan 291/1 Sonargaon Road	Dhaka		9665965	
	Dr.	M. Moshiuzzaman	Professor	Dept. of Chemistry	Dhaka University	Dhaka		9661900-59,ext.4858	
	Dr.	Nilufar Naher	Professor	Dept. of Chemistry	Dhaka University	Dhaka	nn@bangla.net	9661900-59,ext4871	
Wholesaler	Mr.	Sonjit Banik		Lokinath Pashari Bitan	36,Baksir hat	Chittagong			
Wholesaler	Md.	Abdur Rahman		Shahi Store,	Razabazar	Bogra		65390	
Wholesaler	Mr.	Shopon Kumar Banik		Mrs.Makhonlal Banik	56,Baksir Hat,Chittagong	Chittagong		614145	

Industry	Title	Contact Person	Position	Company Name	Address	City	Email Address	Telephone No.	Fax
Wholesaler	Mr.	Shahidul Islam Shahi		Shovon Store	Chadnibazar	Bogra			
	Bapari	Abdul Mazed			Vill. West Folia, Jiri Primary School	Chittagong			
Shop	Mr.	Pran Gopal Roy		Gorua Bipani	Moulavibazer	Sylhet		86152517	
Shop	Mr.	Mukul Sarker			Vill. Dokullabari, Godali Bazar, U.Z- Islampur, Jamalpur	Jamalpur			
Shop	Haji	Yousuf Mansion		Burhan Perfumery House	56/57, Mitford Road	Dhaka-100			
Shop	Mr.	Hiralal Dutta			373, Baxirhat	Chittagong			
	Hakim	M.A . Shafi		Moha Sakti Aurbedh Kutir	Fate Ali Mazar(East)	Bogra		051-65878	
	Kabiraj	Mona Miah			Vill. Jagannatpur	Sylhet			
Shop	Md.	Abul Kalam		Rupali Perfumery Suppliers	54, Islampur Road	Dhaka			
Shop	Mr.	Anwer Hossain		Sotola Store	375, Baksirhat, Chittagong	Chittagong		11214288	
Essential Oils	Mr.	Ahsan Ullah		Alpha Aromatics Ltd.	15/13 Tajmahal Road (Gr. Floor), Mohammadpur	Dhaka - 1207	aromatic@bdcom.com	8126631 (R) 9141750 (O)	