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A STUDY ON MARKETING OPPORTUNITIES FOR MEDICINAL, AROMATIC, AND DYE PLANTS IN SOUTH ASIA

Arun Nagpal
Madhav Karki

Canada

IDRC CRDI

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The Medicinal and Aromatic Plants Program in Asia (MAPPA) is a program of strategic research, networking and collaboration to comprehensively address critical research issues related to the sustainable and equitable use of medicinal and aromatic plants in Asia. Mappa is a joint initiative of IDRC, IFAD and the Ford Foundation. Through collaboration and partnerships, and based within a regional approach to theseissues, MAPPA is involved in formulating and implementing a holistic program which will complementand build on other related research and development activities in South Asia. This will be achieved by supporting strategic research, building partnerships among the key stakeholders including donors, and enhancing regional and international networking

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IDRC, CANADA

MEDICINAL AND AROMATIC PLANTS PROGRAM IN ASIA (MAPPA)

(IDRC/ FORD FOUNDATION/IFAD-SUPPORTED RESEARCH NETWORK)

IDRC/IFAD/FAO/Ford Foundation/ MADP PROJECT

A STUDY ON MARKETING OPPORTUNITIES FOR MEDICINAL, AROMATIC, AND DYE PLANTS IN SOUTH ASIA

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October 2004

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International Development Research Centre (IDRC)

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It is sincerely hoped that the report serves a useful purpose in providing useful leads and directions for planning and implementing the marketing and value addition activities of the MADP project.

Arun Nagpal
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EXECUTIVE SUMMARY

The South Asian region is a veritable treasure chest of valuable medicinal, aromatic and dye plants (MADPs) – herbs, shrubs, trees and vines found mostly in fragile ecosystems predominantly inhabited by rural poor and indigenous communities. These MADPs have significant medicinal and commercial value, but are threatened today due to lack of concerted conservation efforts and uncontrolled, exploitative trade practices leading to degradation of natural resources. Appropriate management of MADP resources can help conserve biodiversity and provide critical rural resources to build sustainable livelihoods.

The International Development Research Centre (IDRC), United Nations Food and Agriculture Organization (FAO), International Fund for Agriculture Development (IFAD), and the Ford Foundation are collaborating on a South Asia (India, Nepal, Bhutan, Sri Lanka) wide research initiative covering technological, economic, institutional and policy solutions for organic cultivation, non-destructive harvesting, processing and profitable marketing of MADPs, and equitable sharing of the benefits to strengthen livelihood and health security of the rural poor and their fragile habitats. Through a series of concrete working models on the ground, this project aims at demonstrating sustainable livelihood opportunities for the rural poor, while arresting natural resource degradation and maintaining bio-diversity.

In the interim period before commencement of MADP project activities at the ground level, this Desk Research attempts to build a pool of knowledge which will help chart the course of the project, prioritize its various component activities, establish a monitoring mechanism, and in general, establish a strong foundation for the success of the entire initiative.

MADPs today represent a high potential, high growth global market, which encompasses the pharmaceutical industry as well as health foods and food supplements, and personal care and cosmetic products. Despite being a repository of wealth and opportunity in terms of natural resources as well as knowledge, the South Asian region has not been able to exploit its inherent comparative advantage in this market, and is largely missing out on highly lucrative business opportunities. This in turn has impacted adversely on the livelihood opportunities of small and marginal farmers, and of collectors of MADPs.

This report seeks to analyse the existing situation regarding the demand and supply of MADPs regionally and globally, with a specific emphasis on key markets in Europe, South East Asia and the US. The report has identified a 'first short-list' of prioritised MADP species, which could be focused on in the project. An attempt has also been made to identify species with a comparative regional advantage for which brand-building exercises needs to be initiated in order to develop a long term, sustainable market.

While trade in MADPs is a global phenomenon, only a few countries have contributed significantly to the global trade in MADPs, thereby influencing the direction and expansion of the trade. Country profiles have been compiled in order to assess the dynamics of the MADP trade with respect to some of these leading countries from the MADP project perspective. The Philippines, as an example of a developing country has also been included.

Whle Producing Companies and other similar organizational structures are expected to be set up in each of the identified project sites, the study suggests that it would be advisable to consider setting up an apex body which would coordinate various activities on behalf of all project sites at a macro level – this would include aspects such as brand development, identifying and initiating strategic relationships, policy-related issues, and initiatives at the industrial and governmental levels.

With the increasing interest and tendency towards electronic or e-commerce, particularly in the herbal sector, development of a parallel e-commerce initiative would help to 'market' the MADP products and services more effectively, in addition to optimising the costs of reaching the market, including supply chain costs.

Given the wide variation in international prices of raw materials/commodities, it is recommended that the fundamental objective of any sustainable initiative must be to hedge against such variations by moving progressively up the value chain, offering semi-processed and processed

material, and even finished products wherever possible. Some simple examples of activities towards this end have been outlined. It is suggested that a logical further extension would be into the area of services, for example, eco-tourism, hotel supplies, and spa treatments, which could become major, potential growth areas.

The regulatory environment, particularly in developed countries, is becoming increasingly more stringent, adding considerably to the time, efforts and expense involved in breaking into the market for medicinal products. In view of this, the study suggests that it would be prudent during the initial stages of the project to focus more on the market for food supplements and personal care/cosmetic products such as creams/body lotions, shampoos, mouth wash, scrubs, henna powder etc. A parallel objective would be to simultaneously prepare the ground to address the lucrative and far larger markets for medicinal products, preferably through strategic relationships with already established companies in the US and Europe.

Strategic relationships with organizations engaged in the field of MADPs, as well as in related areas are viewed as a key success factor for the MADP project, particularly from the point of view of leveraging existing relationships, knowledge and expertise already available in the field. While this strategic objective needs to be explored in greater detail, the study has identified some potential strategic partners – corporate entities in the agro-business/exports area, industry associations, specialized buyers of raw materials and extracts, and retail organic food chains. Initial contact has already been established with organizations such as Indian Tobacco Company (ITC Ltd.), Mahindra & Mahindra Ltd. (M&M) and Ayurvedic Drug Manufacturers' Association (ADMA), and while it is obviously too early to develop any definitive or concrete plan of action in this regard, the initial response has been sufficiently positive to conclude that this strategy should be given serious consideration and carried forward.

While the role of middlemen has largely been portrayed as a negative one in MADP- related transactions, these stakeholders do bring some undisputed strengths and advantages to the supply chain. Their involvement on a selective and transparent basis could therefore be woven into the overall project framework.

While there is obviously a huge and lucrative global market for MADPs and related products, it would be wrong to ignore a large domestic market in individual countries: (a) from the point of view of a large percentage of the population which is unable to afford western medicine; and (b) for a growing base of the elite who are increasingly turning to natural forms of medical, beauty, and regeneration treatments. Drawing a leaf from China's handling of a similar scenario, and understanding the strides made by the Chinese Government in effectively combining modern Western systems of medicines with Traditional Chinese Medicine (TCM), the study suggests that the respective governments in South Asia would do well to similarly encourage the sustained parallel development of MADPs in conjunction with allopathic medicine in their own domestic markets, encouraging

integration with traditional medicine whenever possible.

The fundamental guiding factors in the analysis and assessment of available information, and in making recommendations have been as follows:

Leveraging existing assets and relationships:

Resources are always scarce and will continue to be so. The MADP project has ambitious targets to be achieved within a relatively short time span prior to being scaled up into a full-fledged development project. Leveraging the available knowledge base, skill sets and existing relationships between the stakeholders, as well as with other organizations in related areas where synergies could exist, will be a key factor contributing to the success of the project.

A value proposition for everyone:

The project must seek to generate a win-win situation for all concerned – customers, suppliers, as well as intermediaries. Only by doing so can it ensure that players with divergent viewpoints and priorities come together to bring about the success of the overall project.

Co-opting stakeholders in designing solutions:

This has been an integral part of the project philosophy since its inception, which was reflected in the conduct of the stakeholders meeting in January 2003, and in all subsequent project-related activities. The following report and its recommendations reflect this philosophy and approach.

The report engages with broader macro level issues, which will take time to translate into tangible benefits that positively impact on the livelihoods of the target population. However, it simultaneously discusses and recommends simple, yet effective measures for a near-immediate positive impact. These suggested measures would provide the required credibility and impetus to the project, and most importantly, the willingness and the support of the beneficiary population during the course of its implementation at the ground level. The macro and micro level actions implemented in tandem are expected to result in the development of 'Pockets of Excellence' – working models on the ground which will set the pace for success of the MADP project at its current research level, while laying out the foundation for its scaling up to the level of a full fledged development project in the future.

FOREWORD

This report is the outcome of a Desk Research commissioned by the IDRC-based Medicinal and Aromatic Plants Program in Asia (MAPPA) on the marketing opportunities for medicinal, aromatic, and dye plants (MADP) in South Asia. The study forms the preliminary information collection and development of knowledge-base tasks of the IDRC/IFAD/Ford/ FAO/NMPB project on Organic Production of MADP products in South Asia. Mr. Arun Nagpal, Marketing Consultant of the MADP Project conducted the study in close collaboration with the coordinator of MAPPA.

The monograph describes an in-depth analysis of the existing regional and global markets from demand as well as supply perspectives with specific emphasis on key markets such as Europe, China and the US and identifies a short-list of priority medicinal plant species, which could get focused attention for a more focused research, development and up-scaling support. Species are also identified based on their comparative advantages in the markets and where a brand building exercise needs to be initiated in order to build a long term, sustainable market base. Issues are addressed at a broader and macro level, tackling of which will take some time so that potentials can be translated into tangible benefits enhancing the livelihoods of the poor population. The publication also recommends simple and practical measures for immediate implementation and positive impact to provide credibility and an impetus to the development interventions. The involvement of local stakeholders in the market development and expansion work is stressed. The report contends that the macro and micro level actions implemented in tandem are expected to result in the development of Pockets of Excellence, working business models and local success stories based on the action research carried out and pilots developed which can be scaled

up to the level of a full different development projects and programs.

I must thank the lead author Mr. Arun Nagpal for doing a thorough job in painstakingly collating a large volume of the available information on MADP markets and marketing both from the print and grey literatures. Arun has also scanned the web to update the latest knowledge base. We owe a deep sense of gratitude and immense appreciation to all the partners and organizations that have liberally shared the knowledge and information at their disposal. Our sincere thanks are also due to the organizations that have passed on the latest research results and price information they have accumulated over the years. Last but not the least, I thank the MAPPA Editorial Consultant Ms. Radhika Johari and my staff colleague Reena Prasad for their critical help in the completion of this publication. I do hope that the readers will find the publication informative, educative and practical to move forward in the development of the MADP sector in South Asia.

INTRODUCTION

MAPPA & THE MADP PROJECT

MAPPA is a South Asian network for research, development and dissemination. It develops, provides, and promotes appropriate options, methods, strategies and technologies and other sustainable solutions to provide direct benefit to the poor and marginalized people and help conserve critical medicinal plants-related biodiversity wealth for use by future generations. It aims to enhance the quality of life of poor and disadvantaged people in South Asian countries by making favorable impacts on fragile livelihoods and degraded environments. A regional network of researchers, research institutions and funding agencies, MAPPA connects governmental and non-governmental organizations, universities, research institutions, and private sectors under a multi-donor initiative. It also acts as a knowledge broker that provides leadership in strategic research, coordination and support for livelihood-focused research and sustainable conservation activities in medicinal and aromatic plants (MAP). The program covers three principal themes: a) sustainable use & conservation, b) equitable commercialization and c) safe and efficacious traditional knowledge-based primary health care.

The IDRC, FAO, IFAD and Ford Foundation supported MADP project seeks to promote organic cultivation of MADPs in selected project sites within the South Asia region, with the provision of technical inputs on the selection of species, cultivation/collection practices, documentation procedures, and harvesting as well as post-harvesting techniques, including organic certification. It envisages the ultimate establishment of a corporate entity in the form of a Producing Company (PC), which, apart from technical and certification inputs as specified above, will ensure: (a) that farmers get adequately rewarded for their efforts through (cash) remunerative prices for the produce; and

(b) that there is a good market for the same, be it in the form of raw material, intermediate product(s) obtained through value addition, and/or finished product(s). Farmers will also have a stake in the PC and will thus receive a share of the profits generated.

Through a series of concrete working models on the ground, the project thus aims to demonstrate sustainable livelihood opportunities for the rural poor while arresting biodiversity loss and ensuring socio-economic equity natural resource degradation and maintaining biodiversity.

Key objectives of the MADP project include

- Empowering the rural poor and rural communities through participatory involvement, training and equitable benefit distribution in all MADP and related organic production processes and outputs.
- Developing, strengthening and testing the full production chain for organic MADP products from production and collection to value addition, certification, market research and marketing through appropriate SME and NGO structures, supported by requisite information and communication networks.
- Developing, implementing and testing a transparent and traceable quality management program with certification for organic production, responsible collection and other high quality international trade parameters such as WHO, EU regulations and international accreditation, to enable long term marketing advantages.

The project seeks to build on the synergy of available subject knowledge and experience of its sponsors, partners and stakeholders. Aggregated across South Asia, it seeks to forge mutually beneficial and enduring partnerships at the local, state, national and international levels, establishing linkages with related research programs and development projects, and constantly developing and improving upon mechanisms to enhance benefits available to various target groups and to the environment.

Internationally the demand for organic and certified MADPs is growing with more and more people spending considerable amounts of money on "alternative medicine". Likewise, the domestic markets of the participating countries themselves represent a significant and growing demand that cannot be ignored.

RESEARCH

Keeping these objectives in perspective, this Desk Research seeks to present an overview of the global scenario with regard to MADPs, from a product/market as well as from a technical/technological and marketing perspective. Having scanned the global MADP scenario, it attempts to outline the situation on the ground in some key markets and forecast future trends in order to provide pointers for immediate focus by the MADP project, apart from identifying areas requiring more detailed study and attention.

METHODOLOGY

The study is largely desk-based with extensive use of secondary sources: internet-based data and information, books, periodicals and research publications on the subject. It entails a study of current trends and practices in the industry, and an assessment of existing successful practices in the field, procurement patterns, sales and distribution networks. Some field visits and discussions with practitioners on the ground have also been conducted in order to supplement information collated through secondary sources.

LIMITATIONS

It would be pertinent to note that the desk-based research, as the name implies, is essentially a collation and analysis of data and information from a wide variety of primary and secondary sources. While some degree of fieldwork has also been carried out in the process, this has essentially been preliminary in nature, and needs to be supplemented by more focused and extensive field research.

The desk research is thus, not an end in itself, but rather a first phase. Of a very large range of options/alternatives/opportunities available, it is best viewed at as a tool, which identifies the potentially more attractive options, including those most likely to be able to deliver results in the short/medium term. It is these identified options that need to be looked at in greater detail so that a focused, specific, time-bound and action-oriented plan can be drawn up in order to achieve the MADP Design Document and Project objectives. Towards this end, it is strongly recommended that the first step following the study should be a brainstorming session amongst key stakeholders, which will examine the suggestions and recommendations made, and draw up a future-oriented action plan.

Every attempt has been made to ensure that the report, particularly its conclusions and recommendations, are as specific and action-oriented as possible. It is hoped that it will provide useful insights into key geographies, markets, and business segments to be focused upon; priorities to be addressed; area(s) of possible strategic collaborations; and areas requiring closer examination and understanding prior to embarking upon the project in the field.

India is by far the most significant MADP player in the South Asian region, from the consumption, supply as well as trading perspectives; to that extent, this report remains largely India focused. Though every effort has been made to cover the entire Region while examining the existing scenario and likely trends as well as while making recommendations and suggestions for future action, the skewed nature of the average needs to be borne in mind, particularly in the context of wider references made to the Region as a whole.

CHAPTER ONE

MEDICINAL, AROMATIC, AND DYE PLANTS - AN OVERVIEW

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MEDICINAL, AROMATIC, AND DYE PLANTS -

An Overview

MEDICINAL AND AROMATIC PLANTS

The worldwide use of plants or floral parts to enhance physical and spiritual well-being goes back thousands of years. Initially, medicinal plants may have been just elements of a tribe's nourishment, not necessarily consumed for their medicinal effects. Knowledge of their healing power was most likely gained through a process of trial and error and handed down over generations as an integral aspect of tribal tradition.

Every plant contains a large number of different groups of chemical compounds, some of which have been observed to have healing effects. In the course of evolution, methods were discovered for processing medicinal plants and using their active compounds. The use of medicinal plants can be historically divided into at least three different but overlapping philosophies and forms of application, as described below:

Popular or folk medicine:

A non-institutionalised, individual, family or tribal use of medicinal plants passed down from generation to generation, this is the oldest form of medical therapy that has survived in most countries till date.

Alternative medicine:

Already institutionalised to a large extent globally, this forms a link between folk

medicine and modern western medicine. Many of these healing concepts date back to well before the advent of modern medicine. With the rapid and enormous progress of scientifically based modern western medicine, these were, however largely repressed. The last couple of decades have, nontheless, seen a global resurgence of these alternative medicinal systems, some of the best known being Homeopathy, Ayurveda, and Traditional Chinese Medicine (TCM).

Modern Western Medicine:

A system which has been in existence for around 300 years, this seeks to fight, mitigate, or eliminate symptoms of diseases through a calculated allopathic application of agents or combinations of different substances. Unlike traditional medicine, it does not adopt a holistic approach; rather, healing effects are achieved by applying agents opposite to the diseases they are intended to cure. The high doses and compound specific drugs that are used often lead to faster healing. At the same time, however, diseases are often only suppressed and not fully cured - the healing effect is thus generally less sustainable.

In recent years, there has been a growing consensus that no medical system can claim exclusive healing capacity, and that the folk/traditional, alternative, and modern western systems of medicine can complement one another if they are mutually open to each other's methods and principles. This holds especially true in the case of medicinal plants, where it is not uncommon to see one and the same species being used for the treatment of symptoms in the alternative as well as in modern western medicinal systems.

TERMINOLOGY

It would be relevant here to explain some of the terms commonly used in the context of medicinal plants and their by-products.

Phytomedicines:

Plant-based pharmaceutical products with proven medical efficacy, phytomedicines are generally prescription drug products with formal market authorization involving detailed toxicological and clinical trials. According to a study (Kate, Laird 1999), 18% of the world's top 150 prescription drugs are derived from plant sources.

Herbal remedies:

Covering a broad spectrum from basic formulae applied by traditional healers to sophisticated formulations sold alongside other over-the-counter (OTC) medicines in western pharmacies as capsules, pills or liquid tonics, they are also classified as medicines in most European countries.

Herbal Teas and Infusions:

These reflect one of the most basic and popular ways of using medicinal herbs throughout the world. They are imbibed as hot water infusions and sold in the form of tea bags or in granulated form. Many herbal

teas are sold as single item products but combination products are becoming increasingly popular. Unless they attempt to make therapeutic claims they are not considered medicines and are not subject to prior market approval.

Homeopathic Drugs:

They are medicines derived from plant, mineral and animal sources and used in extremely dilute amounts, generally in globule form.

Ayurvedic drugs:

Ayurveda is a South Asian, holistic therapeutic concept, based not only on medical therapy, but including all aspects of the life cycle. In Ayurvedic medicinal plants are hardly ever used for their specific curative agents – in most cases, a number of different drugs with varying effects are administered.

Dietary supplements:

These refer to a range of food supplements of both plant as well as animal origin embracing most non-licensed herbal remedies, and comprising a major component of the OTC medicine market, which does not require prior marketing approval. Health claims are not generally allowed for such products.

Functional foods:

This term can broadly be interpreted to imply any food or beverage which makes some claim to enhance one's physical or mental health and well being, and to achieve demonstrable benefit beyond adequate nutritional effects, to one or more target functions in the body. They are to be distinguished from dietary supplements in that they are not taken in pill or capsule form but are a part of the normal diet.

Nutraceuticals:

Given that most regulators prohibit use of the terms medicines, drugs or pharmaceuticals in the context of unlicensed herbal remedies and dietary supplements, the term nutraceutical is a cross between nutrition and pharmaceutical. Originally coined in the US, this term is becoming increasingly popular in Europe and in other parts of the world, and refers to a wide range of products using both plant and animal based medicinal extracts.

Cosmeceuticals:

These topical cosmetic-pharmaceutical hybrids are intended to enhance the health and beauty of the skin.

Aromatherapy Oils:

These are essential oils used for therapeutic rather than solely fragrance purposes. Correctly used, they promote balance and harmony between mind and body and may support other applications of medicinal plants effectively. Aromatherapy can be used in a variety of ways: massage, bath, shower, inhalation, burner, perfume, lotion etc.

The dividing line between a medicinal and an aromatic plant is very blurred, and many plants are used in both, pharmaceutical as

well as fragrance industries. It is also relevant to note here that a wide variety of inter-relationships exist between each of the above categories/sub sectors, e.g. peppermint is used in the production of herbal teas, fragrance flavours, and as a base for well known branded OTC medicines.

DYE PLANTS

Natural Dyes are a class of colorants extracted from plants and minerals (as well as animal residues). Historically they were used for colouring textiles, with synthetic substitutes being developed from the mid-1880s. In recent years, growing awareness of the ecological and environmental problems related to the use of synthetic dyes has led to a resurgence of interest in natural dyes, which are used in the textiles, food, drugs and cosmetic colorant industries. They are also used for colouring paper, leather and in the production of shoe polishes, plastics and paints.

MADPs: DEVELOPMENT AND FUTURE PROSPECTS

With the global development of the pharmaceutical industry and progress in chemical techniques, crude drugs were largely replaced by pure chemical drugs, resulting in a decline of medicinal plant-based therapy, particularly in the developed world. During the recent past, however, there has been a resurgence in the study and use of medicinal plants. Many traditional plant-based remedies are back in use, finding increasing applications either as a source of direct therapeutic agents or as a raw material base for the development and preparation of chemical compounds.

The inherently high costs associated with allopathic treatment are increasing beyond the reach of the common man in developing countries. At the same time, concern about the adverse effects of chemical drugs, and changing perceptions about the effects of modern medicine and their usage, are increasingly manifesting themselves in the form of increased application of traditional medicines, even in the developed world.

In particular, the last ten years have seen a significant increase in the popularity of plant-based medicines. Herbal remedies are increasingly becoming mainstream consumer products manufactured by multinational corporations amongst others, and sold in supermarket chains and in a variety of other outlets, globally. A parallel development has been the incorporation of herbs into an increasing number of health foods and dietary products. The combined market is now a multibillion dollar industry in which hundreds of medicinal herbs are being sold in an ever increasing variety of forms such as whole dried plants, raw herbs (dried or fresh), selected plant parts, ground powders, fresh liquid extracts, semi-solid extracts, freeze-dried powders, tinctures (infusions of herbs in alcohol) and extracts (greater concentrations of the active material of the plant in a solvent).

Many plant species used for medicinal purposes also find uses in other fields, at

times overlapping with the medicinal application. Thus, anise, oregano, basil, and cress are herbs used largely for cooking rather than for medicinal purposes. Most such herbs however, also have healing powers since they contain essential oils or bitter agents in high concentrations which are not only tasty, but which also aid digestion and support blood circulation.

The cosmetics industry uses a large number of medicinal plants such as witch hazel, calendula and Aloe Vera, to name a few, as ingredients in soaps, lotions, ointments, shampoos and natural colorants amongst other products. Some medicinal herbs, for example, curcuma, saffron, sage, and indigo are sources of natural colouring used for other applications, such as regional cuisines, the textile industry, and religious ceremonies.

There is increasing consumer interest in all things natural. Across sectors, consumers are demanding healthier and more natural products. Increased consumer sophistication and awareness of ingredients, performance and health benefits are thus changing the personal care and cosmetics industry. Moreover, there is a growing trend away from products that superficially enhance beauty but have no biological effect, to "therapeutic" products - cosmeceuticals that might, for example, repair damaged tissues, smooth and moisturize the skin, and provide protection from the sun. This has led to an expansion in the use of new, active ingredients, including natural products with defined constituents and specific biological effects. The increasing popularity of aromatherapy - the use of essential oils obtained from plants, to promote balance and harmony between mind and body - is a good example of the trend towards "therapeutic" products. The worldwide growth of the aromatherapy industry will therefore provide lucrative opportunities for fragrances and essential oils. Next to aromatherapy, spa treatments and traditional recipes of historical significance such as Ayurveda are important segments of the cosmeceutical market. Moreover, lifestyle shopping trends, general public knowledge and extensive research and development (R&D) budgets from mass manufacturers will also positively impact demand for cosmeceuticals.

While natural dyes produce dull shades of colour, which are rarely fast, industrial dye manufacturers have over the years, developed a new substitute product line of organic dyes, which offer the same colour quality with minimal toxic residue. These have contributed to a decline in the natural dyes market world wide, especially in the textile sector. However, the use of dyes as natural colorants for food, drug, and cosmetic applications is likely to see steady growth due to increased sensitivity of consumers towards natural foods and cosmetics.

TO SUM UP

The importance of MADPs has increased progressively over the last two decades, a trend which is likely to continue. Medicinal plants today are seen not only as a source of affordable healthcare in developing nations, but also as an integral component of a variety of medicinal and non-medicinal uses and applications in the developed world as well. Apart from their use in the preparation of a

variety of modern drugs and medicines, there is a growing global trend towards using herbal medicines as part of a movement that advocates the use of natural products. Food supplements, cosmetics, fragrances, traditional cuisines, dyeing and colouring agents are just a few of the applications where medicinal, aromatic and dye plants are finding increasing use by the day. Interest in medicinal plants as a re-emerging health aid has been further enhanced by the rising costs of modern prescription drugs in the maintenance of personal health and well-being. According to the World Health Organization (WHO), over 80% of the world's population relies on traditional systems of medicine, largely plant-based, to meet their primary healthcare needs. With increasing applications and a growing trend towards their universal usage, the production, consumption, and international trade in MADPs can only be expected to continue growing at a brisk pace.

CHAPTER TWO

DEMAND - SUPPLY SCENARIO FOR MADPs:

AN OVERVIEW

CHAPTER TWO

DEMAND - SUPPLY SCENARIO FOR MADPs

An Overview

THE GLOBAL MARKET: AN ASSESSMENT

It is difficult to assess, with a reasonable degree of accuracy, the volume or value of the trade in medicinal, aromatic, and dye plants simply because trade statistics do not identify all the plants individually. Moreover, of those listed, medicinal and other uses are not identified separately. Likewise, nutraceuticals, homeopathic drugs as well as dietary supplements include products of plant as well as animal origin with very little scope of specifically identifying plant-based products. Moreover, products reported as medicinal plants often include gums, spices, and plants where the end use includes the food industry, teas and infusions, cosmetics, and even insecticides. Finally, the situation regarding trade in medicinal plants is rather more complicated because of the levels of secrecy maintained by traders, and the complexity and the disorganized nature of the trade structure/ channel itself.

A starting point in assessing the demand scenario and growth prospects for medicinal plants would therefore focus on gaining an understanding of the global market for the end user industries in which medicinal plants provide important inputs.

IMS data show that audited global pharmaceutical sales reached USD 364.2 billion in 2001, with major markets growing

at 17% (North America) and 10% (Europe). In 2001, North America accounted for the largest share (50%) followed by Europe (24%).

Retail sales of personal care products in the European Union (EU) stood at USD 56 billion (CBI EU market survey, 2001). In 2001, the five biggest national markets (Germany, France, the UK, Italy and Spain in descending order), covered 81% of the total EU market. Thus the US market for personal care and cosmetic products touched USD 52.7 billion in retail sales, up 5.7% as compared to the previous year. The US and EU together represent an expanding personal care market estimated at $ 108 billion. Evidently, the global market would be substantially higher.

Worldwide demand for flavours and fragrances (including blends, aromatic chemicals and essential oils (Report on World Flavours and Fragrances, Fredonia group) is expected to exceed USD 18 billion by 2004. Flavour blends are expected to experience the fastest growth overall, buoyed by robust gains in key markets such as snack and convenience foods, novel beverages and nutraceuticals.

The total world market for dyes was valued at USD 4.2 billion in 1997. Moreover, unconfirmed reports have projected a growth in demand to USD 7 billion by 2003, with the US alone accounting for USD 3 billion.

THE GLOBAL MARKET FOR NATURAL/TRADITIONAL PLANT–BASED PRODUCTS

WHO estimates that over 80% of the world's population relies on traditional plant-based medicine for their primary healthcare needs. While this was initially particularly true of the less developed and the developing nations, it also reflects a growing trend in the developed nations with consumers increasingly seeking alternative or complementary therapies to pharmaceutical drugs and modern healthcare. The increase in demand for 'natural' medicine is also strongly related to the rise of the green consumption movement. Medicinal plants have additional advantages of simplicity, effectiveness, a broad spectrum of activity and emphasis on preventive rather than curative drug action. During the last few years there has been a massive entry into this arena by large mainstream manufacturers, pharmaceutical and OTC drug companies entailing large advertising budgets and media attention, which have also contributed to rapid growth in consumer demand. Increased emphasis on safety, efficacy and quality has resulted in more research and development; a shift towards standardized products and high-quality raw materials; and as a logical consequence, improved legitimacy for botanical medicines, whose demand has been fuelled further with the acceptance of botanical medicines by national companies (Germany and Japan) and commercial insurance companies (USA). Furthermore, plants are also found to contain disease specific curative properties and extracts of such plants are increasingly used to manufacture effective drugs for these diseases. The global demand for medicinal plants is, therefore, steadily increasing both for the traditional as well as modern medicinal systems.

In many parts of the world, the personal care and cosmetics market is crowded. Companies' market shares are likely to stagnate unless they reformulate their products to address the needs of niche markets, incorporate new ingredients, and heighten the performance of products. 'Natural' or 'herbal' products fit well into such a strategy - growth in the natural personal care and cosmetics market is thus global.

While the demand for natural dyes is showing a declining trend with the development of substitute 'organic dyes', the demand for organic colorants, including dyes and organic pigments, is forecast to increase at a healthy rate. Larger growth is expected in the natural colorants market for food, drugs and cosmetics (FD&C) in which certain dyes, such as carmine and annatto constitute common components.

In essence, the message to consumers that "Natural is Better" is gaining ground.

ESTIMATES OF GLOBAL DEMAND FOR MADPs

Widely varying figures are quoted for the world market for medicinal plants and plant-based material/products, making it difficult to analyse data relating to the international market for MADPs. The industry is complex with little vertical integration, and a general reluctance to share data. Cross trading between companies is commonly practiced (in most cases, manufacturers do not even know the original sources of their MADPs), adding to the difficulties of understanding the trade. Moreover, as we have seen earlier, medicinal plants find applications across a range of industries, and trade statistics, where available, do not identify the plants individually and/or by application.

WHO estimates put the global market for herbal products, including medicines, health supplements, and herbal beauty and toiletry products at over USD 60 billion. Another study (Kamboj, 2000) also estimates the market to be USD 60 billion growing at the rate of 7% per annum.

According to an Exim Bank publication (Exporting Indian Healthcare), the market for herbal remedies stood at USD 16.7 billion in 1997 with a global distribution as follows:

Europe (EU)	:	45%
US	:	11%
ASEAN	:	17%
Japan	:	16%
Rest of Europe	:	4%
Others	:	7%

Within the EU, Germany and France are the most established markets with a share of 22% and 11% in Europe respectively, followed by Italy, UK, Spain, and Holland.

The Commonwealth Secretariat (2001) estimates the EU market for licensed herbals at around USD 1.1 billion and that of herbal remedies, dietary supplements and functional foods as exceeding USD 7.5 billion. With Europe accounting for an estimated 51% of the world market, the global market is currently thought to be in the region of USD 17 billion.

Trade in herbal medicines is estimated at USD 9 billion annually and is growing in

excess of 10% annually (Nutraceuticals International, January, 2001), the largest markets being Germany, China, Japan, US, France, Italy, UK, and Spain. Consumption of vitamins, minerals and herbs/botanicals was estimated at USD 38.5 billion (NBJ, 2000), with Europe accounting for around 38% of the world market.

According to another study (Laird and Pierce, 2002), the world market for herbal remedies was valued at USD 19.4 billion, the major components being Europe (USD 6.7 billion), Asia (USD 5.1 billion), North America (USD 4 billion), and Japan (USD 2.2 billion).

A Task Force set up in 2000 by the Indian Planning Commission, for Conservation and Sustainable Use of Medicinal Plants produced the following estimates for the global market:

- Phyto pharmaceuticals: $ 10 billion growing at 6% p.a. through 2002
- Medicinal botanicals/botanical extracts/herbal or dietary supplements: $ 16.5 billion growing at 15% +
- Nutraceuticals: $ 4 billion growing at 10%
- Cosmeceuticals: $ 7.5 billion

While it may be difficult for a variety of reasons to accurately estimate the size of the market per se, it would be reasonable, based on the above figures, to assume that the market for MADPs and related products is in the region of USD 40 - 60 billion, growing at the rate of 7-10% per annum.

It is important to note here, that this estimate includes the market for end products (supplements, cosmeceuticals, botanicals, etc.) derived from MADPs. The reported average annual global imports of medicinal plant material itself stood at an average of USD 1.2 billion during the 1990s. Evidently, value addition in the processing chain for medicinal plants from raw materials to end products is very significant. As we will see later, this will have significant implications for the MADP project itself at the experimental (research) stage, as well as subsequently as a full fledged development project.

GLOBAL TRADE IN MADPs: A PERSPECTIVE

In the 1990s, the reported annual global importation of MADPs plant materials, based on the commodity group pharmaceutical plants, amounted to an average of 400,000 tonnes valued at USD 1.2 billon (Lange, 2001). While the data is relatively old, what it clearly highlights is the relative importance of a few countries in the global trade in MADPs, the identity of those countries, and trading opportunities available in the area of MADPs. It can be seen that a few countries dominated international trade – twelve countries accounted for 85% of worldwide imports; likewise, just twelve countries were responsible for 82% of the world's exports (Table 1)

Table 1: International Trade in Pharmaceutical Plants – An Analysis (Average for the Period 1990–98)

COUNTRY OF IMPORT	VOLUME (TONES)	VALUE ('000 $)	COUNTRY OF EXPORT	VOLUME (TONES)	VALUE ('000 $)
Hong Kong	73,650	314,000	China	139,750	298,650
Japan	56,750	146,650	India	36,750	57,400
USA	56,000	133,350	Germany	15,050	72,400
Germany	45,850	113,900	USA	11,950	114,450
Rep. Korea	31,400	52,550	Chile	11,850	29,100
France	20,800	50,400	Egypt	11,350	13,700
China	12,400	41,750	Singapore	11,250	59,850
Italy	11,450	42,250	Mexico	10,600	10,050
Pakistan	11,350	11,850	Bulgaria	10,150	14,850
Spain	8,000	27,450	Pakistan	8,100	5,300
UK	7,600	25,550	Albania	7,350	14,050
Singapore	6,550	55,500	Morocco	7,250	13,200
TOTAL	**342,550**	**1,015,200**	**TOTAL**	**281,550**	**643,200**

Figures based on commodity group Pharmaceutical Plants (SITC 3: 292.4 = HS 1211)

Source: UNCTAD COMTRADE database

Relevant points to note here are that the average European export price per tonne was USD 3225 in 1998. Within Europe, the figures varied widely from USD 2078 for Eastern and South-eastern European countries to USD 4811 in Germany, USD 4950 in France and USD 9930 in Switzerland. It should also be noted that the average import price into Germany was USD 2480 per tonne, while the average export price was USD 4811 per tonne, that is, 94% higher than the average import price. The impact of value addition is thus obvious, and this must be borne in mind in the specific context of the MADP project.

The leading European market is Germany, accounting for over 50% of the European market, followed by France, the United Kingdom, and Italy. At the level of product groups, however, there are important markets in other countries. Spain, for example, is an important market for raw plant material and natural colours. While the large European markets (Germany and France) are consolidating, smaller markets show stronger growth. New markets at a global level include Brazil, Argentina, and Mexico.

The US market grew relatively fast during the initial years of its development due to the relative ease of new product introduction resulting from legislation which considered products safe unless proven otherwise. This situation has, however, changed with the

development of regulatory standards in the USA; OTC drugs must now meet defined criteria for active ingredients or botanical drug substances. Growth in the coming years may not, therefore, be as high as in the past. Nonetheless, the US still remains a significant and growing market for natural and herbal products, and the major consumer (40% of the world market) for essential oils.

It would also be relevant here to examine the market scenario in the two most populous countries in the world, namely India and China, both of which have their own well established systems of traditional medicine, representing huge markets in them.

Over the past ten years, improved standards of living in China have led to increasing medicine sales at an average rate of over 20% per annum. Due to cultural reasons, the mainland populace is generally very receptive to the theory and efficacy of the Traditional Chinese Medicine (TCM), contributing to the strong demand for Chinese medicinal products. Sales of proprietary Chinese medicines have reached over Rmb 40 billion (USD 4830 million) and are projected to top Rmb 100 billion (USD 1.21 billion) by the year 2010. Likewise, sales of health products reached Rmb 30.6 billion (USD 3695 million) in the year 2001. According to the China Medicine Retail Analysis System report of August 2000, proprietary Chinese medicines accounted for 37% of the overall medicine market, higher than that of chemical medicines (33.57%), while health products accounted for 29.26%. According to a recent consumer survey, 23% of respondents indicated that they rely primarily on Chinese medicine while another 73% indicated that they would rely more on Chinese medicines in future. The market potential for traditional medicines in China is therefore, strong. With the average import tariff on pharmaceuticals slated to come down from 12% to 6% following China's entry into the WTO, and retail and wholesale trade set to be fully liberalized, this sector is poised for further growth in the years to come.

According to a study conducted by Operations Research Group (ORG), the total Ayurveda market in India is valued at Rs. 25000 million (USD 555 million), of which Rs. 18000 million (USD 400 million) represents the OTC market (for products such as Liv 52, Chyawanprash, Hajmola, etc.). Data from the Centre for Research, Planning and Action (CERPA) study of 162 main species of medicinal plants conducted in 2001-2002 puts the total domestic demand for these plants at a level of 198,054 tonnes valued at Rs. 8860 million (USD 197 million) during the year, growing at 16.7% and expected to touch a level of 272,618 tonnes valued at Rs. 14530 million (USD 323 million) by the year 2004-2005 (at constant 1999-2000 prices). Increasing awareness and acceptance levels of traditional medicines across all strata of the population, aggressive marketing of Ayurvedic/traditional medicines and OTC products by local companies, and stated plans by top business houses in the country to enter this business segment, can only lead to an expansion in future demands.

FOCUS ON INDIVIDUAL MADP SPECIES

Medicinal Plants:

Although about 8000 species of plants are estimated to be used in healthcare and related industries, including cosmetics and colouring, these industries are largely based on some 400 plant species according to the Foundation for Revitalization of Local Health Traditions (FRLHT).

Any sustained effort to commercially exploit the immense potential of MADPs must be able to identify and focus on a few critical plant species, around which a comprehensive program can be built. An attempt has been made as a part of the current study, to collate from personal discussions, data and reports currently available, a 'shortlist' of species that can be focused on as a part of the MADP project. While the reports pertain in large measure to India as a country, it would be reasonable to extend the findings to Nepal, Bhutan and Sri Lanka as well, given that the agro climatic conditions would not vary very significantly. For the most part, the following studies/ reports/reference materials have been used to arrive at the MADP shortlist.

- Findings of the Task Force for Conservation and Sustainable Use of Medicinal Plants set up by the Indian Planning Commission in the year 2000.
- Report of March 2001, of the Sub Committee on Herbal and Natural Products and Floriculture of the Scientific Advisory Committee to the Indian Cabinet (SAC-C), Centre of Quantitative Research (CQR), Pune, and the Technology Information, Forecasting and Assessment Council (TIFAC).
- Study by the Centre for Research, Planning and Action (CERPA) in 2001-02, to assess the demand for selected Medicinal Plants.
- 2002 ETS Publication on the Ayurvedic Medicine Industry: Current status and sustainability
- Demand list for prioritised medicinal herbs published by the Indian National Medicinal Plants Board in 2003.
- Priority plants as identified by the Ayurvedic Drug Manufacturers Association.
- Report entitled "Opportunities in Herbal, Medicinal and Aromatic Plants" by the Industrial and Technical Consultancy Organization of Tamil Nadu Ltd. (ITCOT) – 2002.
- Internet sites on MADPs, publications, such as the, Agriculture and Industry Survey, and personal interactions during the course of the study.

The shortlist of medicinal plants thus arrived at is provided in Annexure 2, Table 1. For the purpose of the current project, plants with a short or at most medium gestation period have largely been considered.

Annexure 2, Table 1.1 also provides for most of the plant thus identified, relevant data for the domestic market in India. Figures of the projected demand supply gap in the year 2004-2005 could provide reasonable

indicators as to plant species that could be focused upon.

Aromatic Plants:

Aromatic plants are used for essential oils - volatile materials extracted from plants or plant parts, usually by steam distillation, and used as flavours and fragrances for food, soap, detergents, perfumes, lotions, etc. - Data shows that ten major essential oil crops account for 80% of the world market for essential oils (The Australian New Crops newsletter – July 1999). These include:

Citrus
Eucalyptus
Cedar wood
Clove
Mint oils: Peppermint, Spearmint, Cornmint
Lemon fragrance oils: Citronella, Lemongrass, Litsea cubeba

The remaining 20% of the world essential oil market comprises over 150 plants.

Other prominent aromatic plants that should be considered and studied for commercial utilization include vanilla and patchouli.

Dye Plants:

Very little information is available about dye plants, prices and their relative importance in the world markets. However, some of the most common natural dyes available in the market include:

Cochineal
Indigo
Annatto seeds
Brazilwood
Madder root
Osage Orange
Logwood powder
Liquid Fustic
Kamala Powder

Of the above, cochineal's extract carmine is the most expensive of the natural colorants, being the only red colorant approved by the FDA for food, drugs and cosmetic applications.

PRICES FOR MADPs:

Prices for MADPs show wide variation at different points of time, at different levels in the supply chain, and in different locations, international as well as national. A few illustrative examples are provided below (Table 2 & 3):

Table 2: Prices in the Delhi market (INR/kg)

	JULY 2001	AUG. 2002	JUNE 2003
Amla (*Phyllanthus emblica*)	27	52	31
Chirayita (*Swertia chirayita*)	286	148	118
Jatamansi (*Nardostachys grandiflora*)	189	97	118
Satawari (*Asparagus racemosus*)	154	106	153
Sikakai (*Acacia rugata*)	19	28	13
Atis (*Aconitum heterophyllum*)	256	256	236

Table 3: Price List of selected NTFPs in Nepalese and Indian Markets (July 2004)
(Price in NRs/Kg; NRs. 160 = Indian Rs. 100 & USD 1.00 = NRs. 75.00)

S.NO	NTFP	KATHMANDU	NEPALGUNJ	TANAKPUR	KOLKATA	DELHI
1	Amala	45	51	56	62	60
2	Atis	240	325	360	360	400
3	Bojho	25-32	32	32	-	39
4	Chiraito	115-125	130	128-160	152	168
5	Dalchani Bark	-	42	64	-	48-64
6	Gucchi Chyau	4300	6400	7200	-	7200
7	Jatamansi	135-145	140	176-185	208	176-208
8	Kakarsinghi	120-125	115	128	128	128
9	Majitho	45-50	-	48	40	64
10	Padamchal	42	65	40-51	-	80-88
11	Pakhanbed	9	13	18	-	18-21
12	Rittha	16	16	19	-	18-26
13	Satawari #1	160-170	180-240	237	240	240-320
14	Satuwa #1	120	70-130	128	-	160
15	Sikakai	18-28	28	26-42	32	36
16	Shilajit	225	260	256	216	360
17	Sugandhwal	110	115	128	152	176
18	Suntho	130-150	185	128	160	204
19	Tejpat	25	24	35	-	-
20	Timur	140	125	115-125	104	96-136

Note:

- Prices indicated above are for dried parts.
- *Ban on export in crude form
- Prices for Delhi and Lucknow are from cession agent, a 6.5% commission is deducted from supplier in the quoted price.
- Above prices are indicative which need to be confirmed with the traders before making actual business transaction
- Source: ANSAB; NTFP Market Information Service; P.O.Box 11035, Kathmandu, Nepal; Tel: 977-1- 4497547. Fax: 4476586

Price fluctuations are common in the international market as well. Examples include:

- Raw material prices of American Black Cohosh Rhizome (*Cimicifuga racemosa (L.) Nutt*) - were in the range of USD 8.3 – 9.9/kg, fob (free on board) US Eastern seaboard, in Sept. 2002. By December 2002, these prices had dropped to USD 8.3 – 8.5/kg.
- Indian Garlic bulb (*Allium sativum L.*) prices for export were USD 0.9/kg fob

Mumbai in December 2002. In September 2003, the price had dropped to USD 0.41/kg.

- Indian ginger rhizome (*Zingiber officinale Rosc.*) commanded a price of USD 0.76/kg, f.o.b Cochin in September 2002. The prices in December 2002 and September 2003 were USD 0.83/kg and USD 1.2/kg, respectively.

- Senna leaf (*Cassia augustifolia Vahl.*) from China was traded at USD 1.01/kg, fob Shanghai in September 2003. Indian senna leaf (*Cassia augustifolia Vahl.*) traded at the same time, at a price of USD 0.85/kg, fob Mumbai.

- Prices of Black cohosh (*Cimicifuga racemosa (L.) Nutt.*) extract in America were USD 50-65/kg in September 2000. In December 2000, the same extract was available at USD 30-40/kg.

- In September 2002, the price in America, of an EU-produced Black cohosh (*Cimicifuga racemosa (L.) Nutt.*) rhizome extract was USD 46/kg. In September 2003, the price rose to USD 82/kg. The corresponding prices of the similar American made extract went up from USD 42/kg to between USD 87 and USD 110/kg during the same period.

- Extract of Rattlesnake Weed (*Echinacea purpurea DC*) in America commanded a price of USD 35-50 per kg in September 2002, but only USD 25 in September 2003. The price of the root extract declined from USD 80-95 to USD 40-95 during the same period.

- In the US, the popularity of St. John's Wort (*Hypericum perforatum L.*) as a medicinal product soared as a result of positive publicity in 1998. The plant was subsequently heavily cultivated and manufactured and this shortly led to overproduction and a drop in prices.

  (Source: ITC MNS bulletins)

These price fluctuations have several important implications for the MADP project, and for the cultivation and marketing of MADPs in general. Thus:

- Obtaining accurate pricing information on an ongoing basis becomes critical, from a planning perspective, as well as from a sourcing and marketing perspective.

- Forecasting of likely pricing trends and demand estimates, however difficult given the nature of the market, also becomes critical, especially for the current project given that conversion to organic in itself will take a period of up to 3 years. Changes in the demand and price patterns can have major implications for the collector/cultivator.

- Value addition as against supplying plants and herbs in raw material form can serve the purpose of insulating stakeholders from variations in prices and demand. This aspect is dealt with in greater detail further on in the report.

CHAPTER THREE

COUNTRY PROFILES

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THE EUROPEAN MARKET

Herbal medicines have a long history of use in Europe, where for over a hundred years their quality control and good manufacturing practices have been comparable to those of conventional drugs. An ageing population afflicted with chronic diseases for which modern medicine has few satisfactory treatments is one major reason why European consumers show such a strong preference for herbal remedies. Besides, consumers in general have shown an increasing tendency to reject conventional drugs with their potentially severe side effects, preferring natural alternatives instead. The member states of the European Union together represent the largest single commercial market for medicinal plants and herbal remedies in the world.

The EU market for licensed herbals is estimated at around USD 1.1 billion while estimates of the sales of herbal remedies, dietary supplements and functional food combined exceed USD 7.5 billon (Commonwealth Guide to the European Market, 2001). Herbal medicines accounted for 27% of the total sales of OTC drugs sold in Europe. Four countries, namely Germany (39%), France (23%), Italy (9%), and the UK (7%) together accounted for 78% of the market. Italy and Poland are expected to be high growth markets in the years to come.

The most popular herbal remedies and herb-based food products include Ginkgo, St. John's Wort, Valerian, Ginseng, Garlic and Echinacea. Major distribution channels for herbal medicine in Europe are drugstores and pharmacies, supermarkets, and specialized health food and herbal product stores. Traditional Chinese medicines (TCMs) and medicinal products are sold in Chinese supermarkets and Chinese clinics which are found in all European and North American countries.

The EU is also the largest importer of crude medicinal plants in the world. Germany is the most important EU importer accounting for 38% of the European market, followed by France (17%), and Italy (9%). Germany, France and Italy are also the three leading manufacturers of herbal medicines in Europe.

Apart from imports of medicinal plants, Europe also produces a substantial volume of such products. France and Spain are the most important producers, followed by Germany and Austria. Outside the EU, Bulgaria, Turkey and erstwhile Soviet Bloc countries are some of the other most important source countries for European medicinal and aromatic plants.

There are two distinct trends in European medical plant production. Large scale cultivation of relatively low value products (evening primrose, thyme and milk thistle) is generally on the decline and is being replaced by imports. Production of the more specialist plants is, however, increasing, especially using organic or bio-dynamic cultivation techniques. The largest buyers of medicinal herbs particularly for teas or other specialist uses prefer to purchase their materials locally from farmers they know and trust, more so since companies often find it difficult to get regular supplies of authenticated herbs from scattered overseas suppliers.

Listed below are the most popular products sold in Europe (Source: Commonwealth Guide). Some of these products are primarily sourced within Europe (Valerian, Bilberry, Melissa); some are exclusively imported (Saw Palmetto, Pygeum, Pysillium); while others are partially supplied from local sources and partially from imports (Echinacea, Thyme, St. John's Wort).

Ginkgo	Butcher broom
Valerian	Melilotus
Horse Chestnut	Evening Primrose
Saw Palmetto	Pygeum
Bitter orange extract	Grape seed
Garlic	Milk Thistle
Hawthorn	Melissa
Ginseng	Nettle
Psyllium	Bilberry
Echinacea	Chamomile

Apart from the production and consumption of crude medical plants, Europe plays a major role in production and global trade in herbal extracts, with sales approaching the USD 1 billon figure. It is also a major consumer of several plant-based ethical drugs sold on a prescription-only basis (phytomedicines).

Germany is by far the largest market for licensed herbal medicines in Europe,

accounting for 49% of the market, with Italy (10%), France (9%) and UK (9%) following, though at considerably lower levels. Switzerland and Austria are some of the other major consumers of herbal medicines.

Another important and growing market in Europe is that for medicinal plants used in functional foods and dietary supplements. This still expanding market, though smaller that that in Japan or the US was still estimated to be in excess of USD 1.3 billon in 1999, with new formulations and products being developed at a much faster pace as compared to the licensed sector. Again, Germany accounted for the largest share (40%) followed by France (26%), and the UK (22%).

Market research studies were conducted in Europe to understand the most desirable health claims for products in key countries in the EU. Some of the main findings of this research are outlined below (Table 4).

The leading EU markets for natural cosmetic ingredients are Germany, France, United Kingdom, and Italy. At the level of product groups however, other countries could be important markets, Spain, for example, is an important market for raw plant material and for natural colorants.

Trends which could have a significant impact on the demand for natural personal care and cosmetic products and consequently on the demand for ingredients and related products include increasing consumer sophistication and interest in all things natural, the entry of large, mass market companies and MNCs into this field, changing demographics (ageing population), and increased demand for therapeutic products (cosmeceuticals).

RECENT DEVELOPMENTS IN THE EUROPEAN MARKET

Following its pronouncement that available data for two popular evening primrose (*Oenothera biennis L.*) products (*Epogam and Efamast*) does not meet the current standard of efficacy required for their authorization as medicines for the treatment of eczema and mastalgia, the UK's Medicines Control Agency (MCA) withdrew the product licenses for these products and mandated their clearance from pharmacy shelves by October 2002.

Table 4: Desirable Health Claims: Europe

GERMANY	UK	FRANCE
1. Boosts immune system	1. Gives energy	1. Gives energy
2. Promotes healthy bones	2. Promotes healthy bones	2. Lowers cholesterol
3. Promotes healthy teeth	3. Promotes healthy teeth	3. Increases disease resistance
4. Gives energy	4. Reduced risk of breast cancer	4. Boosts immune system
5. Promotes healthy gut	5. Lowers cholesterol	5. Prevents constipation

On receiving reports of adverse long-term effects of the consumption of foods or food supplements containing Kawa-Kawa, the Federal Institute for Medicinal Products and Medical Devices (BfArM), Germany revoked the marketing authorization for all medicinal products containing the Kawa- Kawa rhizome (Piper methysticum) in June 2002. A similar ban was also imposed on the product in France. Likewise, effective from mid-January 2003, the sale, supply or importation of medicinal products containing kawa kawa was prohibited in the UK. The Swiss authorities similarly revoked product licenses for all medicines containing Kawa from October 2003, and also proposed to restrict other Kawa dosage forms, for example, Kawa tea preparations, from Swiss commerce.

In July 2003, Portugal passed new regulation that recognizes the professional practice of acupuncture, chiropractic, homoeopathy, naturopathy, osteopathy and phytotherapy. As practitioners of these therapies generally prescribe products that contain medicinal herbs or extracts, the new regulation is expected to have a positive effect on the overall demand for medicinal plants and herbal products in Portugal.

THE GERMAN MARKET

Economically and technologically, Germany has the best developed herbal medicine industry and is the single largest market in Europe. It is a key player in the global market for MADPs accounting for 49% of all European licensed herbal sales, apart from being the largest producer of herbal medicines and phytomedicines. While the herbal tradition in Germany dates back to the Middle Ages, significant R&D activities initiated by the pharmaceutical industry and a regulatory environment which encourages the widespread consumption of herbal medicines have been strong contributing factors to the continued development of the industry.

Consumer attitudes in Germany fit into a medical establishment that accepts the use of herbal medicines (i.e. phytopharmaceuticals). A key feature of the herbal industry has been its integration into the health system and the fact that doctors have been able to prescribe licensed herbal remedies as a substitute for, or supplement to, synthetically derived drugs. Courses in the use of herbal medicines are a regular component of medical and pharmacy curriculae, and since 1993, this subject has been a regular component of the German medical examination. More than 70% of general practitioners prescribe herbal medicines, most of which are reimbursable by the public health insurance system.

The German Medicines Act of 1978 allows for the issuance of standard licenses for herbal products subject to the publication of a monograph that provides qualitative and quantitative information about each product. The overall focus in the German system is on individual herbs.

The existence of a legal framework for herbal products has certain important consequences: they can be sold as drugs with both labels and inserts providing the necessary information; prescribed by

physicians; and are reimbursable through medical insurance schemes.

In Germany, herbal medicines can be sold through apothekes (which also sell prescription drugs), pharmacies (which sell OTC products and cosmetics) and natural food stores. In the future however, this system is likely to undergo changes with new EU regulations, including the EU Traditional Herbal Medicinal Products Directive (THMPD).

Germany is a significant producer of medicinal plants although the area under cultivation has been steadily declining during the 1990s, to the extent that only 5 - 10% of the total requirements are met through domestic production. Logically then, it has emerged as the largest importer of medicinal plants in Europe, and the fourth largest in the world. It is also the third largest exporter of medicinal plants and plant material in the world today.

Estimates of sales of plant-based OTC medicines stood at around USD 1.4 billion in 2000, accounting for about 45% of herbal sales, the remainder being phytochemicals used to produce ethical drugs.

Table 5 outlines the most frequently prescribed herbals in Germany, as per a 1998 study by Keane and Associates.

There are more than sixty companies producing herbal medicines in Germany. Though large MNCs have a sizable herbal portfolio, it is medium sized private companies that dominate the herbal medicine field. Many of these specialize in specific areas such as garlic-based herbals and gingko products. Schwabe, for example, is a world leader in Gingko products, while Lichtwer is a market leader in the field of garlic based herbals. MNCs too have started looking seriously at what can be termed as 'green pharmaceuticals'. A good example is Bayer's strategy of jointly marketing their

Table 5: Frequently prescribed herbals - Germany

Product Name	Therapeutic Use	% of Total
Ginkgo biloba	Circulatory preparations	46%
Horse Chestnut	Vein preparations	11%
Yeast preparations	Acne, Anti-diarrhetic	6%
St. John's Wort	Antidepressant	6%
Myrtle	Cough Suppressant	4%
Stinging Nettle	Urologic	3%
Echinacea	Immune system	3%
Saw Palmetto	Urologic/Prostrate	3%
Milk Thistle	Urologic	3%
Ivy	Cough Suppressant	3%
Mistletoe	Cancer Treatment	2%

pharmaceutical antidepressant alongside their herbal counterpart, thus giving the physician the option of treating mild depression with botanical products (with few side effects) and severe depression with chemical products. Optimistic projections of a growing global market have also led to German companies setting up subsidiaries in the US. Schwabe and Madaus, for example, collaborated to establish a joint venture called Nature's Way in the US.

Germany's herbal extraction industry is also the largest in the world, supplying extracts not only to domestic customers, but also to other countries in Europe, the US, and Japan.

The Federal Institute of Drugs and Medical Devices (BfArm) is responsible for the assessment of medicines and the verification of dossiers on quality, safety and efficacy. All approved drugs including herbal medicines are reimbursable by German health insurance companies as long as they are approved and prescribed by a doctor.

THE US MARKET

The US market for herbal products showed significant growth during the 1970s when holistic forms of medicine gained popularity with the consumers. Products during this period could be introduced faster in the US market as against Europe or Japan, since as per US laws, products were considered safe unless proven otherwise. This situation has since changed and regulatory standards have been developed in the US market.

Nonetheless, about 25 percent of all prescription drugs in the US today are derived from medicinal plants and sales of herbal remedies at drugstores, supermarkets and other retail outlets have grown substantially. The market for medicinal herbs will continue to grow, albeit at a reduced pace from the boom period of the mid - to late -1990s. As indicators suggest a levelling in the number of people consuming medicinal herbs, the current challenge facing the industry today is in attracting new consumers to herbal products. Medicinal plants used in OTC medicines and for which legal drug claims can be made are therefore expected to enjoy a relatively stable market.

In general, Americans tend to take herb-based health foods for flu, allergy, muscle/joint/back pain and menopause discomfort. According to one study, since 1998, Americans have become less worried about health problems such as fatigue, stress and depression, and are instead, increasingly concerned about headaches, skin problems, pre-menstrual discomforts, stomach problems, and heart disease. Meanwhile, women tend to be more concerned about the symptoms of certain female diseases. As herbal-based health food is known for its efficacy in alleviating such symptoms this, coupled with the fact that the majority of health food consumers are women, has prompted many manufacturers to develop products that are targeted at female consumers.

Obesity is a serious problem in the US, with an estimated 139 million people in the

country currently categorized as overweight or obese; a figure that is projected to increase to encompass almost 14% of the population by 2010. A substantial proportion of the population, specifically women, either go on diets to shed weight or purchase products that help keep body weight in check. Hence, low-calorie health foods and those that can help lose weight are very popular.

Popular medicinal plants and herbs in the US market include:

- **Ginseng** *(Panax ginseng Mey.)*: one of the most commonly used medicinal herbs consumed in tea, tablet and extract form. It is used to boost energy, improve stamina and resistance to stress, and is said to improve virility.

- **Rattlesnake Weed** *(Echinacea purpurea DC)*: its primary use is to boost immunity and prevent colds and the flu as well as symptoms such as respiratory tract infections.

- **St. John's Wort** *(Hypericum perforatum L.)*: A native of Europe and derived from the yellow flower of that name, it is used in the treatment of arthritis, bruises, sprains, circulation problems and gout. In the US, it is also a popular treatment for mild depression and anxiety.

- **Kawa-Kawa** *(Piper methysticum Forst)*: obtained from the root of a pepper plant, it has been in the news of late after its withdrawal from many European markets. Kawa Kawa is fairly popular in the US as a stress-reliever.

- **Ginkgo/Maidenhair tree** *(Ginkgo biloba L.)*: a native Chinese herb, it is popular in the US among the elderly as a treatment for memory loss by improving the flow of blood through the arteries. It is also said to help with depression and headaches.

- **Valerian** *(Valeriana officinalis L.)*: native to Europe and Asia, it is popularly used as a sedative to treat nervous tension, muscle spasms, cramps and related conditions, and is also said to aid digestion.

Table 6:
US – Market Share of herbal products

HERB	% OF MARKET
Echinacea	9%
Ginseng	8%
Gingko	7%
Garlic	6%
St. John's Wort	6%
Golden Seal	4%
Saw Palmetto	4%
Aloe	3%
Multi-herb products	27%
All others	26%

Herbal teas are also fast gaining acceptance and popularity in the US market and represent an important potential market for the South Asian Region.

US consumer sales of herbal products across all channels in 1998 were distributed as follows:

Consumer use of herbal products in the US has increased quite substantially over the

years from less than 5% of the population using these products in 1991, to almost 40% in 1998, and increasing. The massive increase in consumer usage of medicinal plants and herbs is attributable to absence of an effective cure for some ailments in allopathy, increased advertising by major companies, positive press publicity, and the spin off effect of the natural, green and organic movements within the country.

As seen earlier (Table 6), eight products contribute to nearly 47% of total sales in the US. The inclusion of aloe amongst these is largely due to the introduction of numerous aloe vera gels and creams for cosmetic purposes and for the treatment of skin conditions and sunburn.

Another significant feature is the large share of multi-herb products (27%). There is a growing inclination towards combination formulae as compared to individual herbal formulae. Since botanical extracts and herbs cannot be patented, manufacturers are increasingly looking for additional methods of product protection, and combination formulae are harder to copy. Botanicals are also appearing as healthy ingredients in conventional foods, for example, Gingko crisps.

The most popular Ayurvedic Herbal Plants in the US, as per a recent publication by the Exim Bank (Exporting Indian Healthcare) are outlines in Table 7.

Unlike the EU, the most important distribution channels for herbal medicinal products and health foods in the US are stores specialized in such products (for example, Fred Meyers and Cornucopia) which account for 47% of sales. Direct sales companies like Amway and Herbalife follow with 27% of the share, and supermarkets and drugstores account for 18% and 8%, respectively. Over the next few years, however, the distribution channels are likely to undergo changes, the most significant being that more and more Americans are buying through the internet. Statistics show that total online sales of herb-based health foods had risen sharply from USD 5 million in 1997 to USD 152 million in 2000. It is expected that the Internet will become an even more important distribution channel for this category of products in the coming years.

Vitamins and herbs/botanicals dominate the US dietary supplement market accounting for over 65% of the share. This provides immense potential for herbal products and remedies from the South Asia region.

As per the September 2003 bulletin released by MNS (ITC), selected high demand medicinal crops in the US market include:

American ginseng root and extract (*Panax quinquefolia L.*)

Black cohosh rhizome (*Cimocofuga racemosa (L.) Nutt.*)

Flaxseed and flaxseed oil (*Linum usitatissimum L.*)

Ginger rhizome (*Zingiber officinale Rosc.*)

Hop strobile and hop extract (*Humulus lupulus L.*)

Kawa-Kawa (*Piper methysticum Forst.*)

Table 7: Popular Ayurvedic Herbal Plants in the US

BOTANICAL NAME OF HERB	POPULAR NAME	USE
Phyllanthus emblica	Amalaki	Rich source of Vitamin C. Used to treat inflammation, fever, infections, and to normalize cholesterol levels.
Zingiber officinale	Ardhrakam	Treatment of nausea, colds and to improve digestion. May also prevent diarrhea, arthritis and ulcers
Azadirachta indica	Arishta	To boost the immune system, relieve allergies and inflammation, and heal skin conditions
Withania somnifera	Ashwagandha	To promote energy and vitality, treat respiratory problems, and as a sedative
Bacopa monniera	Brahmi	To stimulate mental function, and as a non-stupefying sedative
Commiphora wightii	Guggul	As antiseptic and astringent, anti inflammatory, and to normalize cholesterol levels
Terminalia chebula	Haritaki	To relieve constipation, fight infections and cleanse the colon. May be anti-bacterial against salmonella
Centella asiatica	Mandukaparni	To treat wounds, jaundice, high blood pressure, rheumatoid arthritis, and nervous disorders. Improves emotional and cognitive functions
Asparagus racemosus	Shatavari	To cleanse blood, and as a tonic, especially for the female reproductive organs, and for post-menopausal symptoms.
Glycyrrhiza glabra	Yashtimadha	To combat stomach ulcers and intestinal irritation, urinary and respiratory problems. Can also ease eczema, dermatitis and psoriasis

Peppermint leaf and peppermint oil (*Mentha piperita L.*)

Psyllium (*Plantago ovata Forsk*, *P. psyllium L* or *P. indica L*)

Saw palmetto fruit (*Serenoa repens (Bartr.*) Small

THE PHILIPPINES MARKET

The Philippines market for herbal products is estimated at an annual value of USD 30-50 million as compared to USD 1 billion for synthetic products.

In line with the burgeoning global movement in support of alternative therapies, the early 1990s saw the merging of western allopathic and alternative medicine in the Philippines, and the beginnings of a formal herbal medicinal R & D program.

In 1992, following the publication of a brochure of ten medicinal plants for common health problems, commercial production of herbal products was initiated. The passing of the Traditional and Alternative Medicine Act (TAMA) in 1997 provided a legitimizing boost to the alternative medicine movement in the Philippines. The R & D pursuits of the Philippine Government through the National Integrated Research Program on Medicinal Plants (NIRPROMP) led to the development and manufacture of a range of phyto-pharmaceutical products at four herbal medicine factories in different parts of the country established by The Philippine Institute for Traditional and Alternative Health Care (PITAHC). PITAHC also holds weekly free training seminars on small-scale business applications (liniments, ointments, soaps, etc.) that utilize medicinal plants.

Apart from a few branded herbal medicines, most commercial products in the country are sold as nutritional supplements or herbal teas. Popular Philippine medicinal plants currently sold in the retail market include Malunggay (*Moringa oleifera*), Banaba (*Lagerstroemia speciosa*), and Luya (*Zingiber officianale*), which are sold under a variety of local brand names. Other medicinal/aromatic plants such as *Aloe vera, Carica papaya, Psidium guajava* and *Citronella* are used in the manufacture of personal and body care products including soaps, shampoos and lotions, while Ylang-ylang, Patchouli and Citronella are commonly used in a range of perfumery and fragrance products. A sizeable population of Chinese origin uses and dispenses traditional (unbranded) Chinese medicines, which are also fairly popular.

Through CITEM (Center for International Trade, Expositions and Missions), the Department of Trade and Industry (DTI) holds the annual BioSearch every June in cooperation with other Government agencies and the private sector in order to showcase Philippine organic and herbal medicine products. Launched in 1997, BioSearch has evolved over the years into the country's leading annual trade fair for the organic, herbal and natural health products and services industries. During BioSearch 2002, CITEM launched a two year Herbal Development and Licensing Program (HDLP), under which 23 plant-based

pharmaceutical and personal care products formulated locally are being licensed out for manufacture to Filipino entrepreneurs. CITEM also participates in major international trade shows abroad to promote Philippine herbals.

In November 2001, the Department of Health announced that through PITAHC and the NFA (National Food Authority), quality herbal medicines would be made available to 55 areas of the National Capital Region. In line with the Government's commitment to provide affordable medicinal alternatives to the public, these herbal medicines are to be made available through "rolling stores," alongside basic day-to-day needs and commodities.

There are also continuing efforts to promote the household use of other herbal medicinal plants for the treatment of cough and asthma; as diuretics and to prevent kidney stones; for abdominal pains, fever and body aches; as antiseptics; for skin (antifungal) infections; for arthritis and gout; to lower cholesterol levels; and for treatment of diabetes.

Some of the popular and widely used branded herbal products/medicines in the Philippines include:

Akapulko (*Cassia alata L.*): Ringworm bush or shrub

Ampalaya (*Mormodica charantia L.*): Bitter gourd/African cucumber

Bawang (*Allium sativum L.*): Garlic

Bayabas (*Psidium guajava L.*): Guava leaf

Lagundi (*Vitex negundo L.*): Five-leaved chaste tree

Niyong-Niyogan (*Quisqualis indica L.*): Burma/Rangoon creeper

Sambhong (*Blumea balsamifera DC.*): Blumea camphor

Yerba Buena (*Mentha cordifolia*): Mint/ Peppermint

Locally branded herbal remedies in capsule form are also available commercially for a variety of applications ranging from cholesterol and weight reduction and the treatment of arthritis, rheumatism, blood sugar, hypertension, diabetes, asthma, prostrate disorders, colds, flu, etc., to immune system stimulators. Prices for these products range from USD 30 - 40 for a pack of 90 capsules.

THE CHINESE MARKET

The Chinese Healthcare system and Government Policy

The healthcare system in China is unique in that it combines two healthcare concepts, Western allopathic medicine (60%) and Traditional Chinese Medicine or TCM (40%). The Government's policy of integration of the Chinese and the Western systems has had the most impact in rural areas where 80% of medication used is estimated to be TCM.

According to the philosophy of TCM, the human body is regarded as an integer consisting of materials considered as Yin, and functions considered as Yang. In a healthy human body, Yin and Yang are viewed as being in harmony. This equilibrium is, however, lost when the body is attacked by pathogens, and the primary aim of TCM is to restore this equilibrium.

TCM was officially incorporated in the healthcare system by the Government in 1950, when Mao declared: "Unite all medical workers, young and old, of the traditional school and the Western school, and organize a solid front". This policy was further endorsed in 1965 when he further declared that: "Chinese traditional medicine and pharmacy are a great national treasure and vigorous efforts must be made to explore them and raise them to a higher level". TCM has over the years become an integral part of the healthcare system playing a role at both the micro and macro levels; China is perhaps the only country in the world with a consciously developed healthcare system that so extensively provides for traditional medicine within the structure. The two forms of treatment work alongside each other at every level, and this point is fundamental to understanding the Chinese healthcare system.

Since the 1970s, there has been widespread recognition in China that some Chinese medicines can be even more effective when used in combination with Western drugs; a principle which is now applied in almost all areas of medicine. It is particularly appropriate with regard to the treatment of chronic diseases where Western medicines can be used to control the most acute symptoms of disease and TCM is used in conjunction with allopathy or as a follow up treatment. TCM acts to re-establish the body's own ability to fight the disease by strengthening the immune system using either active agents and/or acupuncture. Chinese medicines can also be used to overcome the side effects of western allopathic medicine. Research is being undertaken at various levels to compare the efficacy of a combined approach in which these two systems of medicine can work together and enhance their mutual benefits.

Given the vastness of its territory, the huge population base, and the sheer logistics of running a healthcare system from a manpower as well as medicinal supply perspective, the Chinese Government's strategy has been to build up a team of rural healthcare workers who could serve the primary healthcare needs in those areas where it is not possible to supply adequate numbers of trained allopathic medical practitioners and/or allopathic medicines. Previously known as barefoot doctors, they are now called village doctors and their role in the rural healthcare system has become indispensable. There are currently 1.3 million such doctors in China who represent a major resource within the healthcare system. These doctors are given basic treatment in hygiene, preventive medicine, acupuncture, and routine treatment of common diseases using Chinese medicines as the main form of treatment.

The Government's central policy for the pharmaceutical industry has been one of expansion and modernization, and it is for this reason that the pharmaceutical sector was one of the first sectors to promote joint venture investments. At the same time, the integrated policy is also evident with some Western medicine factories producing Chinese medicines and vice versa. In an effort to develop TCM led by science and technology, the stated objectives of the Government include making use of modern

science and technology for R&D in traditional Chinese medicines and establishing a national standard and norms for R & D in TCM. The Government is fostering a number of trans-national traditional Chinese medicine groups to sharpen their international competitiveness, and to aggressively promote TCM in the international medicine market, thereby significantly raising the market share, and "making Chinese medicines a new growth point and pillar industry of China's economy".

The Government is thus making major demands on the TCM industry through the implementation of new legislative requirements such as more stringent approval criteria for new products and Good Manufacturing Practice (GMP). Under the 1999 Chinese Medicine Bill, tighter controls on the manufacturing and use of Chinese medicines have been introduced and an Innovation Fund set up to promote TCM research. According to the Law of Drug Administration of the PRC, the production and clinical application of any new drug must be examined and approved by the Ministry of Public Health. This approval procedure is specified in the Regulations for new drug examination and approval, which covers both Western as well as Chinese medicines. Regulators for the approval of new Chinese medicinal drugs in turn, are guided by the principles of TCM combined with modern scientific standards. Thus, traditional experiences are respected whilst modern scientific expertise is used to appraise the therapeutic effect and quality of the new Chinese medicines.

In keeping with the above philosophy, new drug approval requirements for Chinese medicines mandate that

- Drug examination and approval procedures need to be perfected to improve standards of new Chinese medicines;
- Chinese medicines be developed according to modern standards so they can meet the needs of the world market;
- Raw materials for TCM, as well TCM products in themselves, need to be assessed for quality control purposes; and
- TCM theories should be used for guidance.

The progressive role played by the Government also extends to the distribution structure for Chinese medicines. Wholesalers play an important role in the distribution of medicinal plants and related material in the country, subsequent to the government's liberalization of the previously restricted distribution structure. At the same time, there are numerous laws controlling distribution and wholesaling which aim to improve standards of storage, handling, quality as well as sales. Thus, storage norms as well as minimum storage space requirements in relation to volume/value of sales have been specified, traditional Chinese and Western medicines are required to be stored separately, and guidelines have also

been issued to bring pharmaceutical wholesalers up to the standards of Good Selling Practices (GSPs).

As a matter of policy, collaborations between Chinese and international organizations, research agencies, MNCs, and foreign governments are being encouraged in areas related to medicinal plants and TCM. These include research projects involving plant species that have been used in TCM in an effort to find a biochemical code with plants and plant extracts that might offer cures or treatments for diseases such as AIDS, Alzheimer's disease and cancer. In April 2000, two large Chinese life insurance companies together invested 70 million RMB (USD 8.45 million) to help finance the establishment of a major new drug discovery company based on herbal medicine.

Under the overall ambit of the Government, individual provinces have also taken major steps to promote TCM and the medicinal plants industry in general. Hainan Island, China's southernmost Province and home to over 3000 known medicinal plants, has attracted significant domestic and overseas investment as an outcome of a recent business conference. Investors from the USA, Japan, Germany, Spain, Italy, Republic of Korea, Thailand, Singapore, Hong Kong, and Taiwan have collectively initiated the construction of more than 50 new pharmaceutical facilities, and agreements for 14 new pharmaceutical projects have been signed.

The Hong Kong Trade Development Council has also begun a world-wide export promotion program to encourage exports of Chinese medicines and extracts. The Government of the Hong Kong Special Administrative Region plans to promote Hong Kong as a centre for TCM.

The first International Chinese Medicine Festival, took place between August and October 2004. The festival was planned and organized by the Modernized Chinese Medicine International Association (MCMIA). The programs were conducted throughout the Hong Kong Island, Kowloon, and the New Territory. Proposed programs include a conference and exhibition, a public health forum, an herbal street bazaar, and an herbal banquet.

These and related developments have largely been spurred on by official recognition of the fact that industry will otherwise miss out on the potential inherent in Chinese medicines, locally as well as globally. At the same time, Chinese herbal manufacturers stand to gain significantly from China joining the World Trade Organization (WTO). Many companies are registering patents for their formulations and processes in the hopes of a significant increase in technology transfer in the field of TCM. There are over 10,000 varieties of traditional Chinese medicine, approximately only 1500 of which are used for domestic supply and exports.

Under the WTO regime, Chinese medicines will have easier access some countries, as non-tariff measures will no longer be able to block their entry.

TCMs are also finding increasing acceptance in global markets as is evident in the following developments described below:

- The US Food and Drugs Administration (FDA) has approved imports of compound Chinese herbal medicines. Chinese

medicines are largely sold in the US through TCM practitioners. It is mandatory for such practitioners to have been trained through an accredited course and to be registered in order to practice TCM, and treatment is also eligible for medical reimbursement in some states. TCM is mostly prescribed for indications such as HIV/AIDS, chronic fatigue, women's health, stress and debility-related disorders.

- The Government of Canada has listed 1000 types of herbal medicines, including Chinese medicines, as natural health products under same regulations as western medicine.

- In Germany, the medical insurance law includes Chinese medicine within the scope of traditional therapies.

- Russia has shown interest in TCM for the treatment of many chronic diseases such as hypertension and migraine.

- Japan's indigenous healing system (Kampoh) is based on the Chinese system. Most of the raw material used in the Kampoh system is imported form China as Japan cultivates only a limited number of medicinal plants. This is also one of reasons why there are many Japanese joint ventures in China.

- TCM in the UK has been primarily developed within the complementary medicine field. There are approximately 400 to 600 outpatient clinics with the total number of ethnic Chinese doctors numbering approximately 1000.

Many major US and European companies are turning to China to obtain not only extracts of traditional Chinese products such as Ginkgo, Astralagus, Ginseng, and Dong Quai, but also some major exotic herbal extracts including St Johns Wort, Valerian and Milk Thistle. Some of these extracts are made using locally grown raw materials, while others are being imported into China and extracted using Chinese equipment and technology. Of late, there has been strong growth in the demand for herbals such as Soy (isoflavones), *Citrus Aurantium* (Sour Orange) and Green Tea (Extract) from China.

Demand is also increasing significantly for several TCM herbs that are now also being used in the cosmetic/beauty industry, including Chinese yam rhizome (*Dioscorea oppositifolia*), dong quai root (*Angelica sinensis*), lily bulb (*Lilium spp.*), lycium fruit (*Lycium barbarum* or *L. chinense*), rehmannia root (*Rehmannia glutinosa*), and sacred lotus seed (*Nelumbo nucifera*).

SOUTH ASIAN SCENARIO

In South Asia several thousand tones of MAPs are extracted from forests providing earnings that run into millions of dollars each year (Karki, 2003, Belcher 2003). In India, at the national level up to 40% of the state forest-based revenues and 70% of forest export revenues, come from MAPs & non-timber forest products (NTFPs) mostly in unprocessed and raw forms. In Nepal it is estimated that every year 20,000 tons of MAPs worth 18-20 million US$ are traded and about 90% of this collection is exported

mainly to India in raw form (Kanel, 2002). In Bangladesh where herbal medicines have been used for centuries, the most important markets are the rural consumers. Each year, companies producing herbal medicines import huge amounts of raw plant ingredients into Bangladesh. The cultivation is becoming both profitable and environmentally friendly. The Government has encouraged the development of the industry since the Prime Minister launched plantation fortnight' last year with a call to plant medicinal plants & fruit trees. It is estimated that around 12,000 tones of dried medicinal plants are sold from the rural collection and production areas worth around 4.5 million USD to the rural economy. The wholesale value is estimated to be US$ 6 million and the import of around 5,000 tons worth US$ 8 million. In summary the MAP sector in Bangladesh is worth US$ 14 million with local supply comprising of 70% by volume and 40% by value (SEDF/IC, 2003).

Bhutan has a rich biodiversity and the government's commitment to conservation has led to passage of number of important acts such as the 1995 the Forest and Nature Conservation Act. The act, however, has made provisions for the issue of special permits for collecting plants for regulating the collection, cultivation, sale, import and, export of medicinal plants. The permit for the collection of medicinal plants, for the manufacture of traditional medicine is also issued annually.

More recently, the Government has also lifted the ban on collection of the Yarsa Gumba or *Cordiceps cinesis* giving adequate access and benefit rights to the communities (Kunsel, Feb. 2004). The government is systematically developing traditional medicine sector as one of the major domestic consumer components of both the raw materials and processed drugs.

Market Scenario

Trade in medicinal and aromatic plants in the region as already mentioned is highly unorganised and unfair. The regulations governing the trade and enterprise are based on restrictive policies and age-old practices of command and control. Except for a few isolated cases, lack of clearly defined resource tenure rights and benefit sharing mechanisms is leading to over-harvesting and mismanagement of these resources. Archaic rules and ad-hoc practices of imposing collection permits, blanket bans, and lack of knowledge of nature of rules and regulations are contributing to increased rent seeking policies on the part of government functionaries that have aggravated illegal harvesting leading to 'the tragedy of commons' type syndromes in MAP resources. Royalty payment, sales, custom and excise taxes, and transport permits are illogically imposed and unfairly enforced. The problems also arise due to discrepancies in interpretations and distortions in use of existing regulatory provisions. There are other non-obvious, un-predictable and unfair hassles in the hands of regulatory agencies, administrative sanctions and simple payments imposed on collectors, producers, local traders and users involved in marketing and transportation of MAPs adding to the

cost of the products. Product identification and authentication are major challenges as there are many inferior substitutes and spurious materials in the market and these products are often traded under fake names (Holley & Cherla, 2000; CSE, 1997). There is neither a system to trace the origin of raw and processed products nor standards to adhere to and, therefore, the quality of the products cannot be ascertained.

The available information on internal and external trade is discontinuous and disjointed in terms of geographical distribution, time series, quantity of harvests, national level value addition and exports, price information and margins to producers and other market intermediaries. While research has shown that the total export value of produce from Nepal to be US$ 8.1 million, the official value was put at US$ 0.6 million by the Central Bureau of Statistics, Nepal in 1999 (Olsen C; Bhattarai N.K., 2003). Trade related studies on a regional level is yet to be carried out and interventions till date have mainly focused on country specific issues and markets ignoring the fact that India is a regional market and consumes at least 90% of the production from Nepal, and substantial amounts from Bhutan and Bangladesh. The market rates/kg of some species of MAPs in India are higher by almost 300% in the case of *Aconitum heterophyllum* to almost 100% in the case of *Swertia chiraita*, than the rates available in Nepal (ANSAB, October 2004).

India's regional market status implies that the demand and supply scenario prevalent in the Indian market can be considered to an extent as regional trade information, keeping in mind that the MAP sector operates in an unorganized market. The demand of 162 MAPs in India has increased by 15.1% during the period 1999-2000 and is expected to grow at 16.7% per annum between the periods 2002-2005. In quantity terms for the same number of plants, the demand increased from 120,817 tons in 1999-2000 to 160,542 tons in 2001-2002 and is expected to reach 272,618 tons in 2004-05 (CERPA, 2002).

Despite the lack of information and data on regional trade it is estimated that the total annual demand in Indian markets for MAPs is 400,000 tons, while the supply is 250,000 tons/year (GOI, 2000). The total demand from one large private sector in India for 7-8 species of MAPs is 5,875 metric tonnes annually. Obviously, there is a huge gap

Table 8: Demand and Supply Gap of key Medicinal Plants

BOTANICAL NAME	DEMAND (METRIC TONNES)	SUPPLY (METRIC TONNES)
Dactylorhiza hatagirea	> 5000	< 100
Gentiana kurroo	> 5000	< 100
Aconitum heterophyllum	> 1000	< 100
Picrorhiza kurrooa	> 5000	< 100
Discorea deltoidea	> 5000	< 100

Source: UNCTAD

between demand and supply of authentic, good quality raw materials.

The domestic demand of nine high value species in India in the year 1999-2000 was 18,926 tons and has been projected to be 34,106 tons in the year 2004-05 with a value of 30,626 lakhs (US$ 68 million) in the market. The projected shortfall for year 2004-05 is 15,178 tons. Similarly, for five high value species from the Himalayas the gaps between the demand and supply of raw materials for the year 1996 are shown in Annexure 2, Table 1.1.

The same conditions prevail to date and there lies a huge gap in the demand and supply of some potential high-value low-volume products from South Asia. Therefore, there is potential for neighbouring countries especially Bangladesh, Nepal and Bhutan to fill the huge gap in the Indian regional market as well as to tap the growing international market.

In 1997-98 almost 93% of all volume of MAPs traded from Nepal went to India with a total value ranging between US$ 12.8 to 18 million (Olsen C. & Bhattarai N.K., 2003 & Kanel, 2001). Annual export to Tibet (China) from Nepal amounts to only 46-155 tons[1] and the annual domestic demand is 10,381 tons. According to a study by TRAFFIC International, the annual export to India from Nepal of dried unprocessed rhizomes of *Nardostarchys grandiflora* (Jatamansi) and *Picrorhiza kurrooa/ Scrophularifolia* (Kutki) is approximately 1000 tons and 100 tons respectively. A significant quantity of Kutki is also exported regularly to Tibet (China) through Nepal's northern frontiers, although no official records or customs data are available. Likewise, a significant quantity of Jatamansi is regularly imported into Nepal from Tibet, where the oil is extracted and is believed that the 'marc' (rhizomes after extraction of oil) may possibly be mixed with unprocessed Nepalese plant materials and exported to India. Significant amounts of rhizomes of Kutki are also traded between India and Pakistan. Demand for Kutki in Pakistan exceeds the amounts harvested domestically, with the remainder imported from India. There is also a relatively small trade in these species from Bhutan to India.

In Bangladesh, 12,500 tons of dried plant material produced within the country is sold. These products are worth US$ 4.5 million for the rural economy and US$ 5.8 million at the factory or wholesale rates. Five thousand tons of MAPs worth US$ 4.8 million are imported into the country every year. The total export value of NTFPs, many of which are medicinal and aromatic plants, from Bhutan is US$ 0.3-1 million (Bhutan Trade Statistics, 1991-1999).

LEGAL/LEGISLATIVE DEVELOPMENTS

Apart from understanding the MADP market itself, it is important in the context of an increasingly open and seamless global trading environment to also understand the legal and/or legislative requirements being

[1]*The Nepalese capital Kathmandu in recent years has become a secondary regional market centre for South Asian MAP products due to its vantage position for trading with the Tibetan herbal market in Lhasa.*

adopted by countries/trading blocs in different parts of the world. While a detailed study from a technical/legal perspective is certainly called for, an attempt has been made below to outline key developments in this regard in some of the major global MADP markets. The relevant WTO regulations are also touched upon.

THE EU TRADITIONAL HERBAL MEDICINAL PRODUCTS DIRECTIVE (THMPD)

The THMPD is a recent EU legislation which was endorsed by the European Parliament with some amendments in November 2002. The proposed Directive and the adopted amendments have now been submitted to the European Commission, which will work on the same in order to arrive at a consensus. The redrafted directive will ultimately go back to the Council of Ministers and the European Parliament for final approval, currently expected around the middle or end of 2004. There will also be a transition period thereafter for five years, which may be extendable by another two years.

The stated objective of the THMPD is to establish within the EC, a harmonised legislative framework for authorizing the marketing of traditional herbal medicinal products. This will entail a simplified registration procedure aimed at removing differences which create obstacles to the free movement of medicinal products in the European Union, while ensuring protection for public health.

In essence, the Directive would require Member States to introduce a simplified registration procedure. Traditional herbal medicines which do not fulfil the criteria for a marketing authorization under the provision of Community Law relating to medicines could receive a traditional use registration if the applicant is in a position to provide necessary evidence of traditional use, safety and quality.

The applicant will need to demonstrate that the herbal medicine or corresponding (comparable) product(s) has been in medicinal use in the European Union for 30 years at the time of the application; evidence for up to 15 years can, however, relate to use outside the European Union.

The Directive also envisages the setting up of an EC Committee for Herbal Medicinal Plants (CHMP) with the discretion in individual cases to lower the 15 years EU usage requirement where justified. It also proposes that the CHMP will establish a 'Positive List' (an agreed list of herbal substances accompanied by the therapeutic indication, specified strength, route of administration and any relevant safety information) at the Community level. This would remove the requirement for many companies each to have to produce similar evidence of traditional use and safety where this has already been clearly accepted. The applicant could then refer to this list rather than have to demonstrate traditional use and safety (quality, however, would still need to be demonstrated).

In the context of the THMPD, it is important to note that the Directive relates only to products classified as medicines. Many herbal products can legally sold in other regulatory categories such as foods, cosmetics

or general consumer products. Registrations under THMPD will be restricted to herbal medicines that are intended for use without the intervention of a medicinal practitioner, whether for diagnostic purposes, prescription or monitoring of treatment. The proposed Directive would not directly affect the provisions of Section 12(1) of the Medicines Act 1968, U.K., which permits herbal remedies to be formulated without a medicines licence to meet the identified needs of individual patients.

In the South Asian context, the main disadvantage of the new law could be that products which do not have the benefit of 30 years of established use will in all likelihood have to seek expensive market authorization for medicinal products. This could also have a major impact on several less well established herbal products and producers. Of course, established players and/or products could also benefit with "dubious" or "questionable" products being forced out of the market.

US Regulations on Traditional Medicine

In the US, herbal products are considered as food, food supplements; herbal medicines or cosmetics while products with therapeutic effect are classified as medicine. Products having only the effect of regulating body functions are categorized as food supplements and not as medicine.

At present, under the Federal Food, Drug and Cosmetics Act, herbal medicinal products must be registered with the Food and Drug Administration (FDA) as medicine before they can be sold as OTC drugs in the US. To be successfully registered as an OTC drug, the medicine – whether herbal or chemical – must meet safety and efficacy standards. The FDA has in place a very stringent regulatory mechanism under which all new drugs have to undergo a series of tests and clinical studies to prove their efficacy, safety, quality and dosage standard, as well as go through an approval process before they can be sold on the market. According to recent statistics, no herbal medicine has so far been granted approval to be registered as a new drug.

Given the slim chance of herbal medicinal products being registered as medicines in the US, selling such products as food supplement is the legal and most feasible way of marketing them. In the US, the sale of food supplements is primarily governed by the Dietary Supplement Act, while labeling requirements are subject to the Nutrition Labeling and Education Act. According to regulations, food supplements have to meet the following criteria before they can be sold in the US market: (1) they must be safe; (2) their production and storage conditions must be in compliance with the GMP standards applicable to food in the US; and (3) nutrition facts must be clearly and accurately stated on the product label. According to the labeling rules, information given on the label includes ingredients, a nutrition statement, a composition/function statement, and a health statement. It is also stipulated that the label of food supplements must not state, either directly or indirectly,

that the product is intended to prevent any disease.

Unlike registered drugs, food supplements do not require FDA approval before they can be sold on the market. The manufacturers only have to submit to FDA the information as stipulated by the relevant rules stating that the product concerned has met the above-mentioned three criteria before launching the product. However, if the product fails to meet the labeling requirements, FDA may ban its sale. Even after a product is put on sale, FDA may require the manufacturer to recall or stop the sale of the product if it is proved to cause certain hazards when used under normal conditions.

THE US BIOTERRORISM ACT 2002

A recent development that must be borne in mind while evaluating the US market is The Public Health Security and Bio-terrorism Preparedness and Response Act of 2002 (Bio-Terrorism Act) and its implications for the sale of MADPs and related products.

The Bio-Terrorism Act assigns the US FDA with the responsibility of protecting food and beverage supplies that enter or pass through the United States against potential acts of terrorism.

Effective from December 2003, the FDA requires companies to provide specific information about incoming food and/or beverages before the shipment arrives in the US (Prior Notice). The Bio-Terrorism Act mandates that the foreign and domestic manufacturer/processor, packer and/or holder of the food and/or beverage must be registered with the FDA. Firms coming under the purview of this regulation include: (a) foreign and domestic facilities that manufacture, pack or hold food or beverages for human or animal consumption in the US; (b) companies that import food or beverages for human or animal consumption in the US; and (c) companies that trans-ship food or beverages for human or animal consumption through the US.

The Act specifies records to be maintained by manufacturers, processors, packers, distributors, holders, and importers of foods meant for consumption in or transit through the US. This includes identification of the immediate source from which the material was received and the immediate subsequent recipient to whom it was sent. With respect to the immediate previous source, the specific source of each ingredient that was used to make every lot of finished food product would need identification if this information is reasonably available. What is reasonably available may vary from case to case.

Given that medicinal herbs are classified as food ingredients in the US (as components of dietary supplement products) their importation will be affected by the new requirements of registration, notice and record keeping. Registration of foreign facilities must include the name of the US agent for the facility. FDA defines "facility" as any factory, warehouse, or establishment of an importer that manufactures, processes, packs, or holds food.

Prior notification of imported food shipments including botanicals must provide a

description of the article, the manufacturer and shipper, the grower (if known within the specified time in which notice is required), the country of origin, the country from which the article is shipped, and the anticipated port of entry. If notice is not provided, the article shall be refused admission. If an article is imported and prior notice has not been provided to FDA, the article will be held at the port of entry until the importer, owner, or consignee complies.

A statement to FDA will also be required at the time of importation of herbal ingredients or dietary supplements if they are intended to be further processed in the US and re-exported. Imports of raw materials will require an accompanying Certificate of Analysis document.

THE WTO CONTEXT:

Article 20 of the General Agreement on Tariffs and Trade (GATT) allows governments to act on trade in order to protect human, animal or plant life or health provided they do not discriminate or use this as disguised protectionism.

The Sanitary and Phytosanitary Measures Agreement on food safety and animal and plant health standards (SPS) sets out the basic rules. While allowing countries to set their own standards, it also stipulates that:

- Regulations must be based on science;
- They should be applied only to the extent necessary to protect human, animal or plant life or health; and
- They should not arbitrarily or unjustifiably discriminate between countries where identical or similar conditions prevail.

Member countries are encouraged to use international standards, guidelines, and recommendations where they exist. However, members may use measures which result in higher standards if there is scientific justification, or based on appropriate assessment of risks so long as a consistent approach is adopted. They can also to some extent apply the "precautionary principle", a kind of "safety first" approach to deal with scientific uncertainty.

The agreement includes provisions on control, inspection, and approval procedures. Governments must provide advance notice of new or changed sanitary and phytosanitary regulations, and a national enquiry point must be established to provide information.

Technical regulations and industrial standards can vary from country to country. Having too many different standards can complicate matters for producers and exporters. Moreover, if standards are set arbitrarily, they could be used as an excuse for protectionism, and become obstacles to trade.

Consequently, the **Technical Barriers to Trade Agreement** (TBT) tries to ensure that regulations, standards, testing, and certification procedures do not create unnecessary obstacles. The agreement sets out a code of good practice for the preparation, adoption, and application of

standards by central government bodies. It also includes provisions describing how local government and non-governmental bodies should apply their own regulations. Normally they should use the same principles that apply to central governments.

The agreement stipulates that the procedures used to decide whether a product conforms with national standards have to be fair and equitable. It discourages any methods that would give domestically produced goods an unfair advantage. The agreement also encourages countries to recognize each other's testing procedures. A product can thus be assessed to ascertain whether it meets the importing country's standards through testing in the country of manufacture.

Manufacturers and exporters need to know what the latest standards are in their prospective markets. To help ensure that this information is made readily available, all WTO member governments are required to establish national enquiry points.

TO SUM UP

The world market for pharmaceuticals, personal care products, flavors and fragrances, and dyes is in excess of USD 600 billion, and still growing. There is no audited or organized data on the demand for MADPs and related products which is part of this overall market. However, based on an analysis of available information and published literature on the subject, it would be reasonable to estimate this market to be currently in the region of USD 40 to 60 billion growing at the rate of 7-10% per annum. While over 80% of the world's population relies on traditional plant based medicine for their primary health needs, there has been a distinct shift in developed countries towards natural products, be it in the foods and flavors, pharmaceutical, personal care, or cosmetics industries. This market therefore, provides a huge untapped potential for MADPs.

12 countries today account for over 80% of trade in MADPs and related products, with Germany being a major focal point for imports as well as exports. The US market which grew very fast initially, has slowed down somewhat since 2001. New emerging markets include Brazil, Argentina and Mexico.

An initial shortlist of 27 medicinal plants has been prepared for consideration at the implementation stage of the MADP project, and potential aromatic plants have also been identified. While not much information about natural dyes is readily available, commonly used natural dyes have been identified.

The domestic as well as international markets have been witness to substantial changes and fluctuations in prices of raw materials as well as extracts. Moving up the value chain and providing processed/semi-finished or even finished products can provide an effective hedge against the vagaries of the marketplace.

Regulatory Situation

Traditional medicine is widely used in India, especially in rural areas where 70% of the

Indian population lives. There are 2860 hospitals, with a total of 45, 720 beds, providing traditional Indian systems of medicine and homeopathy in India. In 1998, more than 75% of these beds were occupied by patients receiving ayurvedic treatment, which is by far the most commonly practised form of traditional medicine in India. There are 22, 100 dispensaries of traditional medicine (2). There are 587, 536 registered traditional medicine practitioners and homeopaths, who are both institutionally and non-institutionally qualified (2).

Ayurveda, Unani, Siddha, Naturopathy, Homeopathy, and Yoga are all recognized by the Government of India. The first step in granting this recognition was the creation of the Central Council of Indian Medicine Act of 1970 (2). The main mandates of the Central Council are as follows:

- ✔ to standardize training by prescribing minimum standards of education in traditional medicine, although not all traditional medicine practitioners and homeopaths need be institutionally trained to practice;
- ✔ to advise the central Government in matters relating to recognition/ withdrawal of medical qualifications in traditional medicine in India;
- ✔ to maintain the central registery of Indian medicine, revise the register from time to time, prescribe standards of professional conduct and etiquette, and develop a code of ethics to be observed by practitioners of traditional medicine in India. All traditional medicine practitioners and homeopaths must be registered to practice.

The Central Council of Homeopathy (2), constituted in 1973, has the same mandates. The Indian Government created the Department of Indian Systems of Medicine & Homeopathy in March 1995 (2). The primary areas of work for the Department are education, standardization of medicines, enhancement of availability of raw materials, research and development, information dissemination, communication, and the involvement of traditional medicine and homeopathy in national health care. More than 4000 personnel work in these areas.

The Indian Government seeks the active and positive use of traditional medicine and homeopathy in national health programmes, family welfare programmes, and primary health care (2).

When developing a global marketing strategy for MADPs, the latest relevant legal and legislative requirements must be borne in mind, particularly those pertaining to the countries/trading blocs being targeted for a sales/market development thrust.

CHAPTER FOUR

TRADE CHANNELS FOR MADPs

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While examining the logistics and the trade channels for MADPs, it is important to note that Indian markets are heavily supplied by plants from neighboring SAARC countries, mainly Nepal and Bhutan. In fact, most of the centuries old trade from these two countries has been routed through India, legally as well as illegally. As such, from the supply side, we will examine the trade channels in India to understand the implications for trade in MADPs. From a demand perspective, the European trade channel will also be discussed.

TRADE STRUCTURE AND PRACTICES IN THE INDIAN SUBCONTINENT

A distinctive feature of MADP trade is its highly secretive nature. Traders at different levels of the supply chain from the farmer to the consumer are fairly well organized, though in an informal manner. Traders involved in the business are well aware of the prices and trends in the market and have very strong, though informal business networks. As a general rule, no formal documentation is even attempted, and no reliable information on prices, commissions, and marketing costs are available in a regular or organized manner. Similarly, knowledge

about value addition if any, at various stages is not available; in fact, it is quite likely that wastage takes place at different levels, and even that adulterants get added on at some stage(s) in the chain. This tends to adversely affect the quality and reliability of the product, and of the brand image itself. Because of lack of standardization and hygiene, and of adulteration, the efficacy of the medicine itself becomes dubious, and the entire scientific and research effort becomes costly and time consuming, with results which are not always replicable.

Other than cleaning and grading, there is little scope for value addition at the collector level. There is little if any, market information available to collectors and others located at a distance from the major markets – a factor that affects decision making regarding next level of primary processing. Moreover, lack of storage technologies and facilities is another major factor which probably accelerates sales of plants even when prices may not be as competitive.

THE SUPPLY CHAIN

The main players in the MADP supply chain include collectors/cultivators, local (petty) traders or agents at the village level, commission agents in the major markets, wholesale merchants and retailers in the major markets like Delhi, Mumbai, etc., and exporters and industrial consumers. On an average, the share of the collectors in the final price paid by the consumer ranges between 10% and 58%, in most cases being lower than 33%. (Karki et al, 2003; CECI Nepal) (see Chart 1)

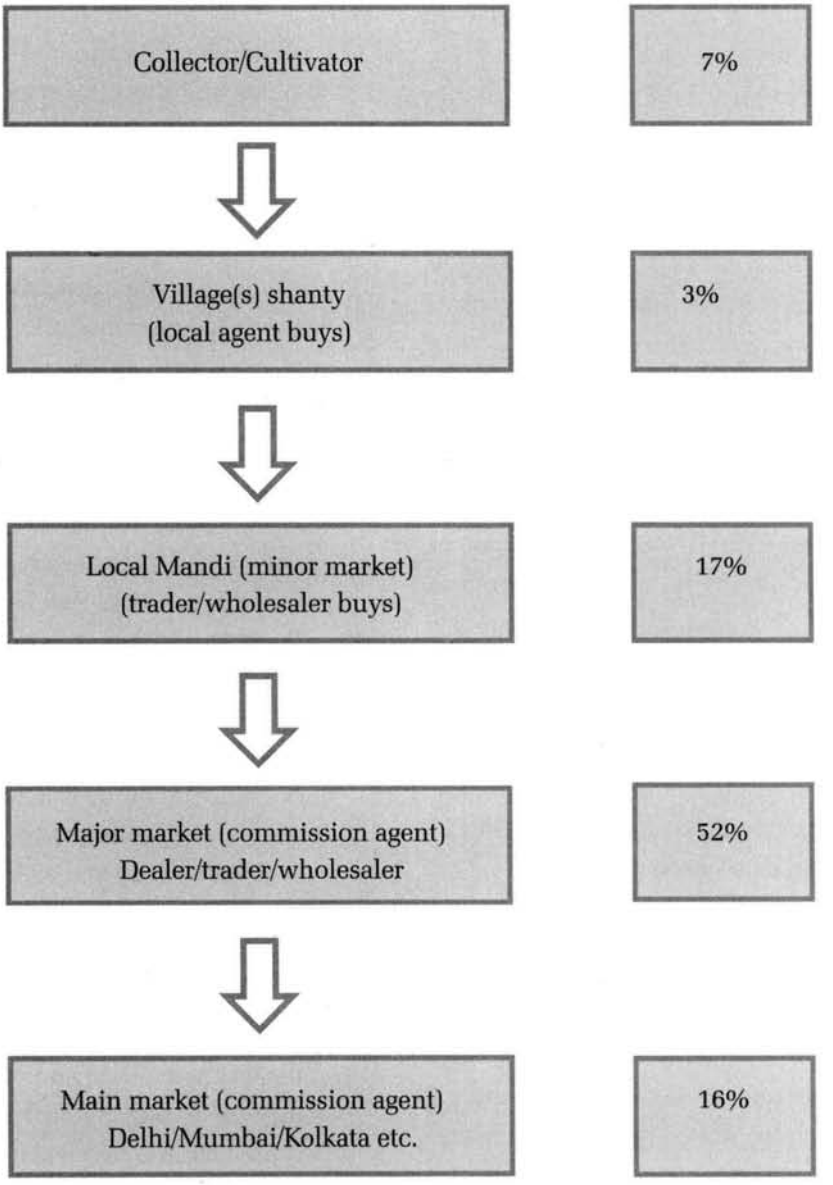
Collectors

Collectors are usually tribals, landless families and the rural poor, dependent on the forest for basic needs like fuel, food and fodder. Most often, those who go out into the forests for fuel-wood and fodder also collect seasonal medicinal plants. Collection from the wild is a labor intensive activity, often involving entire families, including women and children. In some tribal pockets, collection and sale of medicinal plants is the only source of cash income. Apart from such tribal pockets, this activity provides supplemental incomes to the families involved and is generally not a full time economic activity. The rates paid to the collectors of herbs are extremely low, often just a fraction of the end consumer price. Payments to collectors are usually based on the prevailing daily wage rate in the area, for whatever quantity and number of species of medicinal plants collected, and usually ranges between 10 and 58% of the end user price, often being lower than 33% (Chart 1).

Local agents/traders

They buy the raw material from a number of collectors in a village and often operate in a group of villages. Different kinds of procurement and payment mechanisms exist at this level. The local shopkeeper or grocery merchant supplying the general stores also deals with medicinal plants. During lean seasons, he provides supplies on credit to the villagers and sometimes even lends cash to them. These debts are paid back during

Chart 1: A general representation of a supply chain 7 typical margins of return (Nepal)



the rest of the year in the form of medicinal plants collected from the wild. The credit facility translates into a hold which the trader/agent exercises over the collector, and this point must be kept in mind while planning any intervention in this area. An agent, on receiving an advance order from a commission agent at the state level, organizes collection through the villagers by advancing a part of the payment in turn. Collectors bring the harvested raw material to the local village markets or bazar, where medicinal plants and parts are also sold along with other agricultural produce, to agents who make bulk purchases.

Stockists/agents at the State level

The agents or stockists operate from major/medium markets or *mandis* and are major players in the supply chain. They are well organized and it is at this level that the trade takes on truly commercial overtones. The agents are aware of rates across different *mandis* as well as in the final markets. The agents may or may not be specialists in a particular variety or varieties of medicinal plants; again they may be dealing in other products and commodities as well. Secrecy regarding prices, quantities traded, margins, and quality begin to assume impenetrable dimensions from this level onwards, with information being shared only with those who are considered as insiders in the trade.

The local agent or trader referred to earlier sells raw material to the stockist at a specified rate, who then brokers a deal with his counterpart in one of the major markets, for which he charges a commission in the region of 8% (ETS publication on the Ayurvedic industry, April 2000). Full payment is received once the raw material is sold to the commission agent in the major market. As a general rule, none of the transactions are carried out with written contracts; instead, deals are informal, and based on mutual trust.

Stockists generally have storage facilities for the raw material, which they procure in bulk and trade throughout the year as and when they get remunerative prices.

Commission Agents/Suppliers/ Wholesalers (Major markets):

Located in the major markets in Delhi, Mumbai, Chennai and Kolkata, they buy the material from stockists at smaller locations. They in general are relatively well organized, with many having their own warehouse and cold storage facilities. The Commission Agents supply raw materials to exporters, manufacturers, and wholesale dealers. Suppliers are usually consolidators who supply bulk quantities of the raw material to established manufacturers. Wholesalers usually make the final purchases before distributing supplies to the manufacturers and retailers in the cities, and to other petty traders. They usually initiate business, in that their placing of orders with the commission agents results in a backward chain of reactions reaching down to the collector level. Typically, advance orders are placed by wholesale dealers in the larger markets with the private agents or stockists in the smaller markets located at a distance from the major markets, but closer to the source of the required raw material. They in

turn contact the local agents or petty traders who visit the local markets or haats, to buy directly from the cultivators/collectors or their representatives.

It must be pointed out here that the above is only an indicative illustration of the operation of the supply chain as it operates, and the sale of all medicinal plants may not necessarily follow the same pattern. There could be instances, for example, where transactions take place across markets at a particular location in the supply chain, and/or instances where direct cultivator/collector – end user transactions are carried out. In addition, trade activities may move in and out of the formal sector as well as legal boundaries at various points of the supply chain. What also needs to be noted is the recent trend towards contract farming whereby identified species are cultivated as per specifications of the end user/customer, and where a direct, one-to-one relationship exists between the supplier and the customer.

Information flow between different components of the supply chain is generally, however, linear with no direct contact between the collectors/growers and the end user. The collectors (or cultivators) are usually unaware of the final prices, the end destination of the material, or the final form of their output. Each level of the supply chain guards its privileged information and operates in a secretive manner. As a rule, there is no awareness or concern whatsoever about the issues relating to the growing scarcity of medicinal plants, conservation, sustainability, and so on, though the difficulty in finding medicinal plants in wild is becoming increasingly obvious.

There is a general perception that the middlemen operating between the cultivator/collector and the end user are able to corner a sizeable chunk of the end price of the plant or herb without adding any value in the process. However, due recognition needs to be also provided to the role played by individuals, specifically regarding the provision of credit provided at the first level of the supply chain (from the local shop-owner-cum-medicinal plants trader to the villager), storage facilities at different levels, consolidation of material into economically viable production/export lots, and of course, in depth knowledge of the industry itself, its demand pattern and trends, price patterns, and so on. Rather than seeking to eliminate the middleman altogether, a better approach perhaps would be to find an appropriate mechanism to constructively utilize his strengths in the area, to the mutual benefit of all concerned.

DISTRIBUTION OF THE MEDICINAL PLANTS TRADE IN INDIA

Trading for the domestic as well as global markets is largely centered around 6 major, 21 medium and 37 minor medicinal plants markets distributed throughout the country (ETS 2000). A major market may be defined as one composed of more than 25 large traders with an individual turnover of US$ 0.15 million or more per annum, while a location having 25-50 traders with turnovers of US$ 0.5 million per annum may be classified as medium markets. Locations with

smaller numbers of big, exclusive traders and lower turnover may be classified as minor markets. The latter category also includes locations which display a greater volume of trade but where only a few species are traded. The six major markets in the country include Delhi, Amritsar, Raipur, Chennai, Kolkata, and Mumbai. Major exports take place from Delhi, Mumbai, Chennai, and Tuticorin. Medium markets include locations such as Neemuch, Katni, Tuticorin, Tanakpur, and Siliguri, which are specifically medicinal plants markets, while some of the prominent minor markets include Bilaspur, Ranchi, Palghat, Guwahati, Shillong, Ratnagiri, Rampur and Pune. A brief, indicative description of the markets in different zones is outlined below:

Northern Zone

The major market is located in Khari Baoli, Delhi which is probably one of the biggest regional markets in Asia serving as a focal point for material from Nepal, Bhutan, Bangladesh, Pakistan and Afghanistan. Each state in the Northern Zone has its own medium and minor markets feeding into Delhi. The states of Uttar Pradesh and Bihar are also transit routes for material entering India from Nepal.

Central Zone

This zone is almost completely composed of the states of Madhya Pradesh and Chattisgarh, with a major market located at Raipur. A significant feature about the Central Zone is that it has one of the highest percentages of tribal populations in the country; for example, the Bastar area where a large proportion of the population is almost solely dependent on collection of medicinal plants as a source of livelihood. Two minor markets in this Zone, namely Ajmer and Jaipur in Rajasthan are transit markets rather than sources for medicinal plants.

Western Zone

The main center is Mumbai which has the largest number of exporters, manufacturers and importers of medicinal plants and related material. Important feeder locations into Mumbai include medium-sized markets such as Nagpur and Ahmedabad and minor markets such as Ratnagiri and Pune.

Southern Zone

The major market in the Southern Zone is located in Chennai, while Tuticorin, though itself a medium-sized market is significant as one of the major export points for medicinal plants Due to its strategic location.

Eastern Zone

The main center in the East is located at Kolkata, which serves as a focal point for material coming in from eastern Nepal, Bangladesh, and Bhutan. Assam is an important Regional market within this Zone.

An increasing trend over the last few years has entailed the active role and involvement of self help groups, societies, federations, forest development corporations and government/semi-government organizations in processing and marketing of MADPs and

in directly/indirectly facilitating livelihood opportunities to the rural poor, marginalized communities, women, and children. The role being played by two such organizations is outlined below:

Tribal Cooperative Marketing Development Federation of India (TRIFED)

Tribals, comprising over 8% of India's population, are heavily dependent upon forests and agriculture for their livelihoods. Improving the living standard of tribals while simultaneously conserving the nation's ecological heritage is thus an important policy issue for the Government. In this context, establishing proper marketing channels for tribal produce assumes growing significance. Guaranteed disposal of tribal produce at remunerative prices can help control exploitation of tribals by market forces and facilitate sustained upgradation of living standards amongst these indigenous people. It was with a view to paying specific attention to the marketing requirements of tribal forest and agriculture produce that the Government of India set up TRIFED as a cooperative society in 1987.

TRIFED is a New Delhi-based apex-level federation of state tribal development cooperative federations and state corporations. Composed of an extensive, country-wide network of agencies for the procurement, processing, and marketing of forest and agricultural commodities produced in the country's tribal areas, TRIFED has branch offices spread across various states of India; the major ones being located in Mumbai, Chennai, Kolkata, Hyderabad, Udaipur, Guwahati, Ranchi, Bhopal, and Bhubaneswar. While procuring commodities from tribals, TRIFED has attempted to overcome the problems of poor communication, lack of access, poor economies of scale, and perishability of goods. Its procurement operations cover the whole country either directly or through its associates located practically at the doorstep of tribal people. TRIFED's procurement policy framework also provides price support for tribal people and protects them against exploitative market forces by influencing the latter to pay prices at par with the prices paid by TRIFED. Items procured by TRIFED through its network of agencies are marketed within the country as well as through exports at competitive prices. It is in turn provided with financial assistance by the Government in support of its efforts to ensure remunerative prices for tribals.

While TRIFED has in the past traded in medicinal plants and herbs, a recently acquired focus has been in the area of demonstrative projects aimed at encouraging a turn-key approach covering cultivation, processing as well as trading/marketing. One such project embarked upon in the area of medicinal plants recently is for Safed Musli cultivation in the Jagdalpur area of Chattisgarh in Central India.

Khadi and Village Industries Commission (KVIC)

The Khadi and Village Industries Commission (KVIC) was set up in 1957 under an Act of the Indian Parliament with the express purpose of promoting khadi and village industries in the country. A huge

organization with revenues in excess of Rs. 100,000 million (USD 2220 million) during 2002-03, it is the biggest marketer of consumer products in the country, selling goods ranging from soaps to shampoos to processed foods, leather products, and handmade paper, besides handloom and khadi, through its network of 7000 odd stores distributed across the country. It has generated employment for more than 66,00,000 people so far and plans to do so for another 25,00,000 by 2006. It has also helped to set up 6000 cooperative institutions and has funded 165,000 village entrepreneurs.

Given the fact that it was set up with the express purpose of promoting village industries, KVIC operates like a huge incubator. It helps village entrepreneurs by funding up to 30% of their project costs. It provides technical support, assists entrepreneurs to source raw material and set up their small factories or units, and reach end consumers through its outlets. In essence then, its primary function is to create entrepreneurs. An example of how KVIC actually achieves this in practice is illustrated in through the Dev Blenders case study discussed later in this report.

During the 5 year period from 2002-2007, KVIC plans to invest Rs. 75000 million (USD 1667 million) in promoting village industries, adding 1000 outlets annually to its network, and leveraging such initiatives to increase its sales to a level of Rs. 200,000 million (USD 4444 million).

KVIC and TRIFED are discussed here as examples of alternative trade/distribution channels that have proved to be equally, if not more effective in developing and marketing products and services similar in nature to those being examined in this report.

Another significant recent development has entailed the use of the internet as a purchasing medium through the mechanism of reverse auctions by business houses. Dabur, in particular, is increasingly carrying out procurement of plants and herbs through B2B (Business to Business) transactions on the net. While such transactions across the country may not be very significant in terms of monetary value at this point of time, the likely importance of this mode of commercial transactions in the future cannot be ignored.

TRADE STRUCTURE IN EUROPE

The trade structure in Europe is complex and is dominated by a few wholesalers. The raw material is bought from cultivators and collectors by various types of traders at the local or district levels, and is then passed up the chain to wholesalers, retailers or manufacturers, who may be using the plant material for various end uses, including pharmaceuticals, cosmetics, foods, extracts and coloring agents.

The length of the supply chain and the perceived need to protect available information leads to a lack of transparency in the field. Thus, on the one hand, the cultivator/collector at the origin of the chain is usually unaware of the final product sold to the consumer, including its price. On the

other hand, given the fact that material is consolidated from across suppliers, harvesting areas within countries, and across countries, the end user is usually not in a position to identify the source(s) of the material and/or to ensure adherence to norms of quality, safety and efficacy. Many end-users do not consider this important as long as the material meets their specifications and price requirements. As we shall see further on, however, this trend is undergoing a steady change.

In the former Eastern Bloc countries, the trade has changed from strictly organized, state controlled systems to free and diversified markets with an increasing number of competing private companies. This has tended to have some significant negative impacts on sustainability and conservation since quotas and controls, which were earlier in place, have largely been ignored. Bulgaria is the only former Eastern Bloc country which still has a relatively well-controlled trade structure. Bulgarcoop, a cooperative enterprise instituted under the communist regime, is still the main national dealer in MADPs. The cooperative helps growers with cultivation and guarantees to buy an agreed upon harvest. Since the fall of communism, 50 to 60 private and small companies, mostly family owned, have joined the MADP trade and founded the Private Herb Exchange, which provides similar assistance to cultivators, and also organizes courses for collectors.

According to the CBI study on natural ingredients for pharmaceuticals (2002), the structure of the botanical medicines industry in Europe can broadly be identified as follows:

Cultivation or wild crafting

Cultivated/wild crafted material is cleaned and dried. The majority of plant material is traded in dried form, while a small portion is traded fresh, or preserved in alcohol.

Middlemen

Raw material is purchased either directly from cultivators/collectors, or after it has passed through traders such as local dealers, village cooperatives, or district level traders with brokers and agents acting on behalf of purchasing companies. Wholesalers, importers, and exporters sell raw material as commodities to different companies. Wholesalers/traders may however, also carry out some value addition/ processing activity. Some buyers carry out testing or use sample specimens at this stage to ensure correct species and adherence to quality specifications. In most cases, the trade is dominated by a few wholesalers; 21 in Germany, 10 in Bulgaria and 4 in Albania to mention some examples.

Bulk ingredient suppliers and processing companies

Plant material is tested for contamination and formed into bulk ingredients, which are either coarsely cut, rasped, or ground into powdered form. Consolidation in the industry has led to a situation where production of bulk ingredients is often undertaken by wholesalers/traders. Further processing in the form of extracts is undertaken by processing companies, many

of whom also produce branded lines which they sell directly to distributors and to retail outlets.

Manufacturers of finished products

These are companies using the bulk and processed ingredients to manufacture, label and package the end product for retail sales, through a variety of mechanisms, for example, health professionals, multi-level marketing, mail orders, mass retail outlets, and speciality outlets.

Distributors

Some manufacturers use distributors to sell finished goods to retail outlets. Distributors are engaged mostly either by large producers or new comer.

Retail/Consumer sales

The bulk of finished products is sold through retail outlets; mass markets or speciality outlets. Direct marketing is uncommon although promotional outlets could be set up by newly opened countries.

Botanical raw material is also supplied to the personal care and cosmetics industries through similar channels. Food and drugs are sold by village grocers and/ or super market chains.

WHOLESALE TRADE CHANNELS

The largest hub of the medicinal plant trade in Europe is Hamburg, where most drug wholesalers are located. Organically cultivated medicinal plants are sold to wholesalers, retail traders or via direct dispatch. Re-exports of raw material are rare, while that of the finished (consumer) products are more common. Medicinal plants used for TCM are mostly sold directly to the end users – hospitals, physicians, and chemists, thus avoiding the intermediate trade.

We have seen earlier that given the nature of the trade channels, most buyers are unable to obtain satisfactory details on origin of the material bought, and that many do not consider this important as long as the material meets their specifications and price requirements. On the other hand, however, a number of partnerships have been created based on the sourcing of raw materials, often with the express purpose of contributing to environmental and social objectives, and sharing commercial benefits.

The Body Shop, for example, has a Community Trade Program aimed at achieving long-term sustainable relationships. In 2000/2001, the Body Shop purchased over £5 million worth of natural ingredients and accessory items through the Community Trade Programme, including nearly 400 tonnes of natural ingredients. The Body Shop now trades with over 42 Community Trade suppliers in more than 26 countries. Throughout the world, there are similar examples of direct sourcing relationships and partnerships for specific products. Thus, while traders and brokers still perform important functions in the supply chain (purchases throughout the world or from specific areas; consolidation, analysis and quality control; rectification of sourced material to bring it up to specified

norms; blending/value addition etc.), direct relationships and strategic sourcing relationships are also on the rise.

RETAIL/CONSUMER TRADE CHANNELS

Major distribution channels for herbal medicine in Europe are drugstores (for example, Boots, Pharmacy, and the Health Shop), supermarkets, and specialised health food and herbal product stores. Large health food chain stores and drugstores are the primary distribution channels for Chinese herbal medicines for instance. The variety of products available at these stores may be rather limited, but the turnover is huge. Examples include ginseng essence, garlic capsules, ginkgo leaf products, and royal jelly powder, most of which are produced by German and US companies. TCM products are also sold in Chinese supermarkets and Chinese clinics, found in most European countries.

Unlike the EU, the most important distribution channels for herbal medicinal products and health foods in the US are stores specialised in health foods and herb-based products (for example, Fred Meyers and Cornucopia) and direct sales (for example, Amway and Herbalife). Supermarkets and drugstores (for example, Walgreen Drug Stores and Albertson's) also account for retail sales. A significant recent trend however, has involved increasing purchases of herb-based health foods online by Americans. Statistics show that total online sales of herb-based health foods had risen sharply from USD 5 million in 1997 to USD 152 million in 2000. It is expected that the Internet will become an even more important distribution channel for herb-based health foods in the coming years. Besides, the number of "alternative" doctors (including Chinese herbalist and acupuncturists) in the US has increased significantly in recent years. For instance, the number of acupuncturists had soared from 9,000 in 1993 to 15,000 in 2001. In light of this, the clinics of Chinese herbalists and acupuncturists are also expected to become an important distribution channel for TCM. According to recent statistics, 80 to 90% of the patients who consult Chinese herbalists or acupuncturists purchase Chinese herbal medicine upon their recommendations.

CHAPTER FIVE

EMPOWERMENT OF THE SMALL FARMER

CASE STUDIES IN THE INDIAN CONTEXT

CHAPTER FIVE

EMPOWERMENT OF THE SMALL FARMER

Case Studies in the Indian Context

THE ITC E-CHOUPAL

The Indian Tobacco Company (ITC) Limited is one of India's largest consumer product and agro-business companies with an annual turnover of over USD 160 million and activities spanning paper and packaging, hotels and tourism, information technology (IT), agricultural exports, and tobacco and cigarettes.

The endemic constraints facing the Indian farmer: fragmented farms, weak infrastructure, numerous intermediaries; excessive dependence on the monsoon and so forth pose their own challenges to improving land productivity and crop quality, and result in inconsistent quality and uncompetitive prices. This not only impacts on the farmer, but also on companies involved in agro-business and trading. ITC's *e-choupal* initiative, an IT-based intervention launched in rural India in June 2000, seeks to address these issues while creating a win-win situation for all concerned.

ITC procures various agricultural commodities such as soybeans, coffee, and oil seeds for its agro-exports division. In the conventional procurement and trading system, sale of produce would typically take place from the small farmer to a small trader (*kaccha adat*), to a larger trader (*pakka adat*) and finally to a *mandi* trader in the nearest *mandi* or market-place. In turn, *mandi*

traders, with the help of brokers negotiate sales to companies such as ITC. This long supply chain resulted in inefficiencies, high procurement costs for ITC, and lost profit opportunities for the farmer in addition to inherent time delays and resulting deterioration in product quality.

The word *choupal* means a village gathering place. The *e-choupal* can be looked upon as an internet kiosk, a village gathering place and an e-commerce hub, all rolled into one. A choupal is converted into an *e-choupal* by setting up a computer with internet connectivity. E-choupals are managed by a *sanchalak* (operator), a literate person who is elected from among the farmers of the village. He acts as an interface between the computer and the illiterate farmers, and retrieves and disseminates information on their behalf. While ITC covers the cost of equipment, the *sanchalak* pays for day-to-day operational costs, such as electricity and internet charges. ITC invests in the support and maintenance of each *e-choupal*, including training, help-desk, equipment, and software complaints. Training is given to the *sanchalak*, who also doubles as an ITC "representative", and is paid a commission per tonne of processed product, which translates into healthy earnings for him.

On-line information in Hindi, accessible from an e-choupal, includes crop prices, weather patterns, scientific farming practices, farmer peer groups, and soil-testing services. The farmer carries a sample of his/ her produce to a local kiosk and receives an on-the-spot quote from the *sanchalak*. Web-enabled, real-time data on crop prices gives him/her an accurate picture of the prices he/she can expect from ITC vis-à-vis those obtained from different *mandis*. As an informed decision maker, he/ she can now sell his/her produce at a price that gives him/ her a higher profit margin. If the ITC quote is acceptable to him/ her, he/ she can then transport the produce directly to an ITC collection center and receive payment within two hours. If located in a remote areas, he / she also has the option of selling his / her produce to the *sanchalak* as well.

The project has come a long way since its inception, and is today recognized as India's largest internet-based marketing initiative, covering more than 2,000 choupals, linking 12,000 villages, serving 1.3 million farmers, and growing at the rate of six new kiosks per day. The e-choupal initiative currently covers the states of Madhya Pradesh, Uttar Pradesh, Andhra Pradesh, and Karnataka with a vision of expanding to 15 states and 1,00,000 villages over the next seven years. ITC's long-term plan is to develop the e-choupal into a one-stop shop for farmers, providing for their different business and consumer needs and ultimately evolving into the e-commerce hub of the village, that is, a single point of contact among farmers and a wide range of suppliers of agricultural inputs and consumer goods. Already, a number of companies in the country are seeking to leverage ITC's presence in the country's vast, lucrative, and growing rural market economy of the country. The first motorcycle sale through an e-choupal took place a year ago, and Government as well private sector

insurance companies are now looking at the *e-choupal* network as a valuable tool to expand their reach.

It is important to note here that the decision to sell their crops to the mandi or to ITC rests with the farmer, who is free to check the prevailing prices and make comparisons at the e-choupal, but is under no obligation whatsoever to sell his produce only to ITC. Access to information through the e-choupal also enables the farmer align his agricultural output with market demands. Historical data and figures on supply, expert opinion on future price movements, information on farming practices and techniques, the weather, soil testing, virus testing etc., also contribute to the empowerment of the farmer.

Although the prices offered by ITC are not higher than those at the mandi, the farmer tends to choose ITC because the transactions are done closer to home and the practices of weighing and quality assessment are more efficient and transparent. Farmers save on travel time and costs and incur less wastage. Their savings have been estimated at Rs. 400 to Rs. 500 (USD 9.0 to 11.0) per tonne of soybeans for instance. Transacting directly with the company and dealing orders on the Internet, the farmers save about Rs. 250 to 500 (USD 6.0 to 11.0) per tonne in the process, depending on their location relative to the collection center. ITC, in turn, gains through an assured supply and savings of more than Rs. 200 (USD 5.5) per tonne by avoiding the costs of transporting the crop from the mandi to the collection center as well as other intermediary costs in the supply chain.

Also noteworthy here is the fact that intermediaries have not been entirely removed from the value chain. Instead, their roles have been redefined as *samayojaks* (coordinators), who assist ITC in setting up new e-choupals by conducting village surveys and by identifying the best *sanchalak*. They manage the physical transportation of sales made at the e-choupal, collect price data from local auctions, and maintain records. These coordinators earn a commission on products processed. Initial resistance to joining due to commissions being as low as one percent was overcome once the increased volume of transactions became apparent.

ITC, which exports USD 140 million worth of agricultural commodities, sourced USD 15 million worth of commodities from *e-choupals* in 2001 and clocked in overall savings of more than USD 1 million between various elements in the supply chain.

MAHINDRA SHUBHLABH SERVICES LTD.

Mahindra Shubh Labh Services Ltd. (MSSL) is a subsidiary Company of Mahindra & Mahindra Ltd. (M&M), India's largest farm equipment company with a group turnover of about Rs. 40000 million (USD 890 million). The International Finance Corporation (IFC) has a 28% stake in MSSL.

Set up with a mission to "usher in the second green revolution by dramatically increasing

profitability of Indian farmers and significantly optimizing the agri-supply chain", MSSL has launched a new concept in agro-business under the brand name Mahindra Krishi Vihar, through which attempts are being made to bring together all components of agricultural production with the objective of improving farming profits through crop-specific and region-specific farming solutions. Value creation is sought through improvement in farm productivity and reduction in production costs, and by improving farmer realization by growing what the market requires and by establishing and improving market linkages to optimize the supply chain. MSSL is attempting rapid growth in Mahindra Krishi Vihar's business across the country by leveraging the established M&M brand name, the 0.7 million strong M&M tractor customer base, and the 400+ dealer network spread throughout the country.

The business portfolio of Mahindra Krishi Vihar includes:

Agro-input retailing

Provides new and quality products to farmers in the form of new varieties of seeds, agro-chemicals, chemical and bio-fertilizers and micro-nutrients through partnerships with a wide variety of companies in the field to provide array of choices to the farmer. The company staff also provide training inputs to farmers in the selection and use of products and services relating to crop health, environment, and human safety.

Farm Solutions

Under this service, farming practices and agricultural produce markets in a given territory are surveyed to understand the opportunities for profitability improvement through the introduction of new crops, increasing yields, reducing farming costs, and improving farmer price realization. A typical farm solution program would run through a PDCA (Plan-Do-Check-Act) cycle of continuous improvement. In an initiative conceived along the above lines, groundnut farmers in Rajasthan were made aware of a new, high yielding seed variety developed in Maharashtra, and a series of steps were taken to implement the use of the new seed variety.

These included visits by agronomists, entomologists, and soil scientists; development of a tailor-made package of cultivation practices; farmer training; and in-the-field supervision at critical stages of the crop cycle. The company shared the cost and revenue from cultivation of the new variety on a 50:50 basis to reduce farmer risk. The program resulted in a 53% increase in farming profit.

Farm Mechanization

Given the restricted period of usage and high capital investment involved, farm machinery for specialized operations such as planting, harvesting, and crop spraying is usually beyond the means of the average farmer. The company maintains its own fleet of till drills, paddy transplanters and other such equipment, which is leased out to farmers as per their requirement in order to help complete the desired operations efficiently and to achieve higher yield rates and productivity.

Farm Finance

Mahindra Krishi Vihar provides financial channels for agricultural financing and farmers' access to low cost institutional finance, with minimum documentation, quick sanctions, and attractive interest rates. The financial institution is thus provided with a safer portfolio and lower overheads, while access to cheaper finance significantly increases the profitability of agricultural operations.

Market Access

Mahindra Krishi Vihar encourages farmers to grow crops specifically required by institutional buyers such as food processors, retailers, commodity traders, and exporters. Through the method of contract farming, farmers sell the produce directly to the institutional buyer, thus reducing the market risk to a large extent while improving price realization. The buyer gets raw material of the desired specifications at an attractive price, and the lending institutions benefit from a safe lending opportunity.

MSSL today has a presence, through a dedicated channel of franchisees, in almost all agriculturally progressive states in the country. Currently incorporating about 60 agencies, the company's vision is to extend the network to 5600 outlets distributed across 180 districts nationwide.

The MSSL platform is of interest to the MADP project as it provides a kind of bare-bone facility to situate the MADP farmers service, especially marketing needs.

CHAPTER SIX

SWOT ANALYSIS OF THE MADP SECTOR

CHAPTER SIX

SWOT (STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS) ANALYSIS OF THE MADP SECTOR

SWOT ANALYSIS

Based on the information presented in the preceding chapters, an analysis of the strengths and weaknesses inherent in the South Asia region with regard to the MADP sector is developed below. The analysis is intended further to assess the opportunities and threats present in the environment which should be borne in mind in the context of any sustained initiative to promote cultivation, processing, and marketing of medicinal, aromatic and dye plants from the region.

STRENGTHS

- Vastness of the agro- ecological zone and genetic and landscape diversity, including climatic suitability and biological diversity at the species as well as ecosystem levels;
- Land availability both in terms of farm forest and degraded (waste lands);
- A long and well established traditional knowledge system and a documented history of traditional medicinal practice;
- Economical cost of labor as well as raw material and other inputs;
- Good institutional infrastructure for R&D; and
- A well developed pharmaceutical industry especially in India and Pakistan, linked to global markets.

WEAKNESSES

- Lack of brand equity;
- Lack of a well developed, transparent market mechanism (distribution and trade channels) within the country;
- Lack of market intelligence and infrastructure for information gathering;
- Inadequate linkages between cultivators/ collectors and the end users/institutional purchasers;
- Inadequate incentives available for cultivation of MADPs, for example, buy-back arrangements and price guarantees;
- Lack of infrastructure/facilities for value addition/processing;
- Lack of a comprehensive, dynamic resource database on MADPs from the cultivation stage to post-harvest management, drug formulation, and marketing, including their potential and prices in the domestic and global markets;
- Lack of standardization and well documented quality control processes/ standards, leading to doubts on reliability, traceability, and sustainability of South Asian produce and products;
- Inadequate packaging standards in comparison to international norms; and
- Lack of government support on parity with other exportable crops such as horticulture products.

OPPORTUNITIES

- Revival and renewal of global interest in all things natural, including natural medicine, cosmetics, dyes, and fragrances;
- Growing interest in the area of MADPs at the policy-making levels within governments; in large corporate houses, and amongst financial institutions and donors;
- Opening up of the Indian business environment and its increasing integration with the global economy;
- Availability of a significant resource base of consumers as well as the influence of citizens of South Asian origin settled abroad;
- Renewed interest and recognition of MADPs as providing income-generating/ poverty alleviation opportunities;
- Increasing acceptance of Ayurveda as an alternative and/or complementary healthcare system, domestically as well as globally, leading to the opening up of huge business segments;
- Increasing demand for organic products as a category, including price premiums accorded to organic products;
- Health tourism, and synergies between Ayurveda, Yoga and Homeopathic medicines, and the broad use of MADPs; and

- Potentially huge domestic demand due to popularity of Ayurvedic and green products

THREATS

- Over-exploitation of scarce resources and unequal distribution of benefits, particularly to cultivators and collectors, thus increasing chances of unsustainable collection and reducing incentives for cultivation of MADPs

- Lack of traceability and adoption of adulteration and other unethical practices by middlemen resulting in a negative brand image;

- Fluctuating prices of medicinal plants and herbs at the commodity level;

- Existence of already established, large players in the global market, for example, in China and Korea;

- Changing and increasingly stringent regulatory environment in some of the largest markets throughout the world;

- Cost of organic certification, and time frame for conversion into organic production spoken; and

- Due to internal competition, non-strategic production planning and lack of competitiveness, many MADPs may turn out to be the "sunset" crops.

As in any business situation, while the MADP project provides a range of exciting, high potential opportunities for which the South Asian region has inherent strengths, at the same time there are inherent weaknesses and constraints which need to be addressed, and threats in the environment which need to be guarded against. The final chapter on conclusions and recommendations seeks to provide a snapshot view of the situation as it exists today; the outlook for the future; and a set of short-term as well as medium/long-term solutions aimed at ensuring the success of the MADP program.

CHAPTER SEVEN

CONCLUSIONS AND RECOMMENDATIONS

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CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

- The last few decades has seen a resurgence in the demand for traditional medicines, both as alternative remedies and as inputs to the pharmaceutical industry. Worldwide, the green, "back-to-nature" movement is gaining momentum as reflected in the demand for medicinal plants, including in non-medicinal applications such as cosmetics, health foods and food supplements, fragrances, coloring agents and exotic cuisines. MADPs today thus represent a high potential, high growth business segment, globally.

- The South Asian Region is a repository of wealth and opportunity in the form of MADP natural resources, apart from being rich in traditional and indigenous knowledge. The region has well documented traditional systems of medicine and abundant supplies of indigenous roots and herbs. It is, thus, uniquely positioned to play a major role in a growing world market. Yet, its share in the market is currently negligible due to its inability, so far, to exploit its comparative advantage in the area.

- Apart from the global market, considerable scope also exists to increase consumption and sale of MADPs and related products as well as services in the local markets, particularly in India

- Consumption in the local markets must be encouraged through institutionalization of the entire process in the form of policy initiatives by the Government, that is, a National Traditional Medicine Policy. Such a policy should include issues such as R&D, formal recognition of traditional medicinal systems, and integration of traditional medicine into the national healthcare system, apart from related issues such as Intellectual Property Rights to facilitate investments in product as well as market development. The involvement of all concerned Ministries (for example, Health, Finance, Commerce, Rural Development, Environment and Forest Science & Technology, Industry Education and External Affairs) on one hand, and the corporate sector on the other (domestic as well as global) must be made a part of the policy formulation as well as implementation exercises so as to ensure that policies on paper are actually implemented at the ground level.

- There is a need to create a vertically integrated platform covering sustainable cultivation and collection of MADPs, their transportation, storage and processing/ value addition, packaging, logistics of distribution, and sales to retail/ institutional customers, domestically as well as internationally.

- The MADP project in its current form is a pilot project, and to that extent, its scope is limited. At the same time, implementation of the project must be carefully planned for maximum impact, and to enable its evolution into a full-fledged development program . As such, it is important to have a future-oriented vision towards which all activities in the short and medium-term in the research project are aligned to eventually run as a program.

- A first draft Vision for the MADP program in South Asia statement could be outlined as follows:

  - To provide sustainable livelihood opportunities to small and medium farmers and the rural poor in South Asia through organic cultivation and aggressive marketing of MADPs;

  - To provide affordable healthcare options in the form of high quality traditional medicines to domestic markets in South Asia by adopting an integrated approach drawing on examples such as China and Germany;

  - To progressively develop a South Asian MADP brand in the global markets to tap the lucrative and fast growing demands for products and services in the healthcare, healthfoods, fragrances, dyes, and cosmetics business segments

  - To achieve the above objectives in a manner that is environment friendly and contributes to maintaining biodiversity while arresting the

exploitation and sustained degradation of natural resources

POCKETS OF EXCELLENCE: THE CONCEPT

- Given the wide diversity of plants and herbs in the region, it would be prudent to concentrate on a few selected species at the research or pilot project stage, and to develop standardized cultivation, harvesting and post-harvest practices for these species. Simultaneously, product(s) to be addressed from a medium/long-term perspective also need to be identified, and a foundation put in place to build a more broad-based product portfolio over a period of time.

- Returns to the small and medium farmer/collector can be substantially improved, and the entire business platform made profitable and financially viable by incorporating value addition/processing activities to raw plants and herbs in rural areas, thereby moving up the value chain. The project needs to provide for such value addition activities.

- At the other end of the spectrum, it is important to focus on selected geographical areas/markets from a sales and marketing perspective whereby the South Asian brand and strong customer linkages can be built up during the research project stage as a prelude to a broader and more widespread sales thrust.

In essence then, a key success factor of the MADP project would be to build "Pockets of Excellence" – profitable individual enterprises at the level of different project sites throughout the region. The idea in doing so is to build upon the success of these pockets in order to create the necessary momentum for realizing the project's vision.

PROJECT ROADMAP

A roadmap towards creating pockets of excellence as conceptualized above would essentially comprise the following components: (1) Short-listing of plants/species based on ecological, commercial, and technological criteria; (2) Product/product development strategy; (3) Market selection; (4) Brand-building; and (5) Strategic tie-ups and linkages.

Let us now examine each of these in some detail.

SHORT-LISTING OF PLANTS/SPECIES:

An initial short-list of 28 plant species has been drawn up, as presented in Table 2, and relevant statistics on the domestic market for these plants provided in Table 2.1. This list needs to be further pruned based on discussions between the stakeholders. For the purpose of pruning, the following segments and/or criteria could be examined:

- **The time perspective:** Some products have a low gestation period and these can be taken up for cultivation at this stage itself and their availability factored into the overall project strategy. At the same time, there are other high value, high potential plants and herbs which require a medium to long term gestation period. Groundwork on these species can be done at this stage, for subsequent follow-up action. Plant species such as aloe vera,

kalmegh, pudina, and kokum would fall into the former category, while guggul and sandalwood would fall into the latter.

- There are some MADPs which would withstand scrutiny of any type to qualify for exports, and which could provide for high levels of export volumes as well as value. Products such as guggul, senna, psyllium, ashwagandha, ashwani, brahmi, amla and rasayanas would fall into this category.

PRODUCT/PRODUCT DEVELOPMENT STRATEGY

The international market for MADPs at the raw material/commodity level is subject to wide fluctuations depending on factors such as demand and supply, consumer needs and trends, regulatory factors, and so on. The time frame required for organic conversion could itself take as long as three years during which time the world market may undergo several changes. At the same time, the value of a medicinal plant or herb undergoes a substantial change as it undergoes various stages of processing. As such, a fundamental objective should be to move up the value chain on an ongoing basis, even selling the finished product itself wherever possible. Apart from ensuring that price realization, and hence profitability itself is substantially higher than in the case of the raw material, this would also serve the purpose of insulating stakeholders from the vagaries of fluctuating prices of the raw material or herb.

- At a micro level, semi-processing of raw materials at or in the vicinity of the cultivation/collection points would ensure better returns to the primary collectors and growers, having the potential to generate wage employment for women as well. Possible avenues could be as follows:

- Cleaning and grading to enhance the price as well as quality of the raw material. Cleaning involves washing and drying or simply removing mud and other impurities. Even these simple steps have largely been ignored so far due to lack of awareness of higher prices that could accrue from these basic post-harvesting techniques. Grading involves separating the different quality classes and could also greatly enhance the price received.

- Value addition/semi-processing: Production processes involved in making the formulations include drying, powdering, making aqueous extracts, boiling, distilling, and cooking. Most of these activities are conducted in sequence and are logistically best carried out in a central place. However, care needs to be taken to ensure that there is adequate traceability to ascertain the quality of the material being processed. Illustrative processing activities for some of the popular plant species are described in the Table 9.

- From a practical perspective though, even seemingly simple activities like drying/cleaning in hygienic conditions are difficult to achieve in most rural areas given the cramped living and working conditions. The construction of storage-cum-working sheds (ideally as an

Table 9: Simple Processing Methods

COMMON NAME*	SEMI-PROCESSING/VALUE ADDED ACTIVITY
Baibaranga, Kutki, Sarpagandha, Ashok, Chirayita, Harra, Ashwagandha	Cleaning, drying, grading
Jatamansi	De-seeding, drying
Amla	Washing, boiling, drying
Guggul	Cleaning, grading
Safed Musli	Washing, cleaning, peeling the skin, drying, grading
Aloe vera	Cutting leaves into 2 inch pieces and extracting juice out of the leaves

** For botanical names refer Annex 3, Table 1*

enterprise managed by a member of the community) would thus be an important element of such an activity. Ensuring availability of basic storage facilities must in any case, be an important element of the MADP project, as it will ensure that raw material does not need to be sold on-the-spot. This is often the root cause of low prices to the cultivator/collector, who has no option but to accept the price(s) quoted by the trader, since he cannot take back the material or store it in the hope of better prices at a later stage.

- Countries all over the world, particularly high potential markets such as Europe and the US, are becoming increasingly stringent in terms of the norms that medicines and medicinal products must meet in order to qualify for product registration. The time and the costs involved in ensuring compliance with all such regulatory issues is considerable to say the least. At the same time, there is a growing demand for food, personal care and beauty products, where the acceptance of products made from MADPs, including those available in the South Asia region, is already quite high. The logical way forward then, in the short/medium-term at least, would be to develop primary health care, health foods and the personal care/beauty products markets within the region as well as globally. Within these categories, the focus, as already emphasized earlier, should be on moving up the value chain towards processed materials, and even finished products to the extent possible.

- Possibilities exist, and technologies are also available, for making finished products from MADP – herbal shikakai powder, hair oils, anti- wrinkle creams, shampoos, body lotions, mouthwashes, face packs, scrubs, pain relieving balms, and henna powder (for hair conditioning as well as for decorative purposes). Such products have come to command huge markets worldwide. Further, investments in the projects are not very high, and many

of them can be established as community enterprises at a village group/small town level. The returns, if they are successfully marketed domestically as well as internationally, as niche products in focused markets, could be quite substantial. Technologies as well as project profiles with investment patterns and projected rates of return for several enterprises conceived along the above lines are available with Industrial and Technology Consultancy Organization of Tamil Nadu Limited (ITCOT), Chennai and with Central Institute for Mediicnal and Aromatic Plants (CIMAP), Lucknow. The internet portal (www.agricultureinformation.com), and the monthly magazine "Agriculture & Industry Survey" are useful sources of information on market trends, success stories in the field, products and technologies available, consultancy services and so on. A new portal managed by Herbal Cerpa (www.herbalcerpa.org) has more detailed information on plants, products and prices. MAPPA and National Medicinal Plants Board (NMPB, Government of India websites - www.mappa-asia.org and www.nmpb.nic.in respectively are equally informative.

- There is a large and growing demand in hotels for complete sets of personal care products available in small pack sizes - shampoos, soap-free body cleansers, bubble bath solutions, toilet soaps, moisturizing lotions, etc. which are kept in guest rooms. Natural organic products would fit the bill for such applications very nicely, particularly in premium hotels globally. Hotels are also increasingly offering spa treatments where traditional remedies are very much in vogue. This can also translate into a sizeable and profitable demand for raw material and processed/semi-finished/ finished material from the MADP project

- Likewise, sale of high quality, attractively packaged organic cosmetics and health products through state-owned enterprises such as the Khadi and Village Industries Commission, Cottage Industries Emporiums and State Emporiums in the South Asian countries, as well as through their outlets overseas, also present attractive business opportunities.

- **Potential Services**: Another area of considerable potential is that of services as compared to individual products. This entails a strategy fairly similar to that of value addition/processing/finished products outlined earlier. In the area of services, eco-tourism as a concept holds great potential.

- A good example of the concept and the practice of eco-tourism is the spa/ rejuvenation/herbal treatment packages being offered by various hotel groups and resorts in the South India state of Kerala. The Ananda project in North India is another such good example. Ananda is an NGO exploring small-scale sustainable alternatives to conventional development and tourism in India. The

main project is based in a village in the Kullu Valley of Himachal Pradesh, India. Working together with local village groups, Ananda is developing projects aimed at restoring the environment, raising ecological awareness, and providing sustainable sources of income in the local community. The group offers accommodation in a cottage at the project site – simple, but clean and comfortable rooms with panoramic views of the valley. Water is piped from a spring nearby, and there is an organic herbal garden adjacent to the cottage. Guests can go trekking, and are offered lessons in local arts and crafts, yoga, music and cooking, apart from voluntary placements to help with community-based environmental schemes, including planting trees, cultivating and conserving medicinal herbs, clearing waste and growing organic vegetables. The project website: www.anandaproject.org can be referred to for further details. A number of MAPPA supported projects in Uttaranchal, Chattisgarh, Andhra Pradesh in India and Nepal are also promoting a holistic livelihood and health concept and practices. One such project is on agro-forestry, cultivating medicinal herbs for a community fair-trade scheme, and propagating multi-purpose tree species for village plantations.

- **The Pharma Opportunity**: While the health foods and personal care segments are targeted in the short/medium-term, the huge and growing potential of the high value, pharmaceutical industry cannot be ignored, and a long term focused initiative towards this end must be put in place at this stage with the support and involvement of large corporate organizations, industry associations in the respective countries, and the respective national governments. The pharma opportunity can be targeted through two distinct segments :

  - The larger consumer market for medical products: As we have seen, this will involve extensive research, clinical trials, and compliance with regulatory mechanisms in different countries, and will thus be an expensive, tedious and time-consuming effort.

  - Development of basic health care products for rural masses: In rural areas where infrastructure and conventional medical facilities/products are largely missing, and in any case economically outside the reach of the common man, government-run/supported primary healthcare centers would be an appropriate vehicle through which such an initiative could be launched, with policy and implementation support provided by the respective governments as part of their national healthcare and poverty alleviation programs. These would be aimed at encouraging the involvement of the rural masses in cultivation/collection/value addition/ processing/ utilisation of MADPs for improved health and livelihoods.

GEOGRAPHICAL MARKET SELECTION STRATEGY

The global market for MADPs may be segmented as follows:

- The domestic markets of the South Asian countries, namely Bhutan, India, Nepal, and Sri Lanka (especially for primary healthcare products, health products, and cosmetics for rural areas);

- Developed countries with strict entry norms and regulations in place, e.g. USA and the EU;

- Developed countries where the concept of traditional medicines is gaining acceptance, but where markets are not as well developed as in the US and/or major European countries. These include Canada, Korea, Australia, and New Zealand;

- Markets where traditional medicine is accepted as a system of medicine, and in some cases as the predominant healthcare system, for example, Hungary, Russia, UAE, Singapore, Africa, and South America.

- The domestic markets are obvious focus areas given their size, ease of access, and ready acceptance of traditional systems of medicine. Rural areas in particular, suffer from lack of low cost healthcare solutions for basic diseases such as fever, pain, cold and cough, and represent good markets for herbal remedies. Moreover, in the interim period before organic conversion of farm lands is carried out and it becomes feasible to have products available for accessing premium global markets, producing companies can develop a distribution channel for low cost medicines in rural areas in the domestic markets. This can be through an effective sourcing mechanism with distribution through agencies and organizations which already have a base in the rural markets. Distribution through government-owned and operated clinics could be one such option, while existing channels of organizations such as ITC and M&M could be another. This exercise could be started in one or two states or countries on an experimental basis to begin with, before expanding its geographical spread

- In terms of global markets, it would probably be appropriate to focus on the high potential, premium international markets from the initial stages of the project, since these will be the ultimate test of acceptance, from the quality, traceability and sustainability perspectives. Once acceptance is obtained in these markets, entry into other markets should not pose much of a problem. The European markets (specifically Germany, UK, France, and Italy) are areas where a detailed field research and identification of potential customers, products as well as strategic partners could be carried out. Herbal teas could be looked at seriously as a launching pad especially in the US markets as well. The implications of the increasingly stringent, often complex legal and legislative requirements being adopted by individual nations and trading blocs across the globe must, however, be borne in mind while finalizing a global marketing strategy.

DEVELOPING A SOUTH ASIAN BRAND

In keeping with the vision outlined earlier, building a brand image for any MADP related material from South Asia – be it in raw material, processed, semi finished or finished forms --will be critical for achieving the long term success of the MADP project Towards this end, an integrated approach cutting across individual producing Companies, Cooperatives, Growers Forum etc. is of utmost importance.

- While Producing Companies (PCs) or Community-owned enterprises at the individual site level will coordinate most of the project activities associated with agro-technical inputs, organic conversion, certification, harvesting and so on, it is recommended that an apex body/producing company or Self Reliant Cooperative be set up with the specific mandate of brand-building, marketing and, developing sustaining strategic tie-ups. The apex body would be responsible for generating enquiries and sales through diplomatic/ trade missions abroad, participation in organic fairs and conferences on MADPs. This will help to build economies of scale, optimize on costs, and will also enhance the bargaining power of individual (small) PCs when consolidated together as a group. A good example of this approach was the South America pavilion at the Biofach 2003 held in Germany. The pavilion was prominent enough by itself and well publicized, thus attracting larger numbers of individual consumers, and buyers as well as institutional customers apart from corporate entities from different parts of the world seeking collaborations in the field. Individual countries in South America stood to benefit from the same, while they still retained their individual identities in the form of individual stalls within the overall larger pavilion.

- The Apex Body would also undertake the responsibility of coordinating marketing activities through the involvement of Trade Attaches at country missions abroad, specifically in those countries which are targeted as a part of the MADP project. Likewise, it will be the nodal agency interacting with Chambers of Commerce and Industry Associations, government agencies such as the Indian Medicinal Plants Boards and respective Agricultural/Horticultural Departments, banking institutions such as the export/ import banks and Agricultural banks, for example, Exim Bank and NABARD in India or Agriculture Development Bank in Nepal. All such activities would help to spread awareness of South Asian MADPs within and beyond the region.

- Likewise, an apex body such as MAPPA or the National Medicinal Plants Board would also need to put together a South Asian e-commerce initiative, including on-line information on the project and its outputs, on-line availability of raw materials, processed as well as finished goods, an eco-tourism initiativ,e etc. With the increasing popularity of internet use for the purchase of traditional medicines, health foods, supplements etc., as well as for Business-to-Business (B2B)

transactions, this is one medium which cannot be ignored.

- It would also be relevant to consider promoting specific products as brands by themselves and laying down the foundation for a long-term sustainable export initiative A good example of such an initiative is the manner in which Ginseng as a product has been promoted in the world market by Korea and by China, resulting in the availability of a wide variety of Ginseng-based products in the international market. This would be done with the assistance and involvement of the respective governments of the stakeholder nations, industry associations such as ADMA, and other such bodies in South Asia. Products such as Psyllium and Senna, which already have a great deal of market acceptance, and for which the South Asia region is already a major resource base, could be possible candidates for such an initiative. Likewise, Aloe Vera is another product, which finds wide acceptance both in the nutrition and healthcare as well as cosmetics sectors and which is well worth considering from the MADP project perspective.

- Herbal Teas, while brands by themselves, can also be an integral part of the overall South Asian MADP brand-building exercise. This is a relatively small, but fast growing, premium market. Trade in teas made from herbs cultivated organically in the Himalayan belt – Bhutan, Nepal, and India (Uttaranchal, the North East and Himachal Pradesh) would have some inherent advantages as these regions are well known for their tea growing traditions. These include the "exotic" association with the area, the wide acceptance of teas from the Indian subcontinent, the strong sales pitch of teas from herbs grown organically using pure snow fed water from the Himalayan ranges to mention a few. Important markets for herbal teas are Germany and France in the EU, and the US. Focus on these locations is recommended for a more in-depth market study.

As a rule, it would probably be beneficial if the same product or group of products is focused on at two or ideally three project sites. This would allow for the development of economies of scale for processing/value addition and even marketing. Moreover, a comparison of the progress and results across project sites at various stages during the project would facilitate course corrections wherever necessary, allow for better assimilation of lessons, enabling their application to the full-fledged development project at a later stage. Thus, for instance, herbal teas could be considered for a project initiative in the Himalayan belt, and Aloe Vera and/or Vanilla at sites in the South.

BUILDING STRATEGIC RELATIONSHIPS

Over the years, NGOs, corporate organizations, industry associations and even governments have worked extensively to build up a substantial pool of knowledge and expertise related to cultivation, processing and marketing of MADPs and related products. Likewise, there are organizations that have developed expertise

in areas relating to other products and services, but which would also be of relevance to the MADP project. Strategically, it would be far more appropriate to actively pursue relationships with such organizations and entities rather than "re-inventing the wheel" and expending vast and scarce resources in the process. Some possible opportunities for strategic tie-ups are outlined below:

- Collaborating with companies such as ITC (e-choupal) and M & M Ltd., in order to leverage the power of technology, knowledge, an established rural network, and infrastructure with proven credibility. On-line information on prevailing market prices and the availability of a one-stop-shop solution for inputs as well as a market for outputs are very powerful advantages indeed. If successful, the same association could be leveraged at a later stage to utilize such expertise in international trade as well. In turn, these organizations could benefit from the considerable groundwork that has already been done by the stakeholder group in the area of MADPs, and from the credibility and networking opportunities available within a project of this nature. In practical terms, an association with ITC and/or with Mahindra & Mahindra could commence with a focused initiative at a state/district/block level where cultivation/procurement/processing and marketing could be undertaken along the lines of the "Pockets of Excellence" model outlined earlier. The experiences gained from this limited exercise could subsequently be incorporated into a more broad-based and medium/long-term sustained initiative.

- Industry associations such as the Ayurvedic Drug Manufacturers Association (ADMA) could play a key role. Considerable work has already been done by such associations in exploring international markets for finished products, and the efforts of the MADP project could thus be linked with these efforts, to their mutual advantage.

- In the case of herbal teas, the recommended approach again would again entail a strategic tie-up with a firm which already markets herbal teas in the selected market, so that the costs of building up a new brand name, publicity and sales promotion are avoided. In the US for instance, tie-ups could be considered with companies such as "Whole Food Market", the world's largest retailer of natural and organic foods with over 145 stores located in North America (website: www.wholefoods.com).

- The organic market itself is an interesting niche market for small suppliers, as quantities for the organic market are smaller than those in the conventional market. Opportunities exist to access the market with quantities as low as 10 kg of extract or 100 kg of flowers. Small producers need to look for small demand, which is easier to find in the organic market. Salus-Haus in Germany for example, is a medium-sized company, which only buys organic certified raw material (website: www.salus.de).

- Possibilities could be explored for setting up joint ventures with small and medium pharma or cosmetic companies that have established brands in the US or Europe, or with marketing companies which supply to institutional customers such as hotels and spas, for the supply of raw materials as well as processed products. This would involve a symbiotic relationship from which both parties would gain. Most of the EU countries at least are amenable to such linkages, and this option needs to be explored further, for marketing as well as for manufacturing tie-ups.

- The role of the middleman or the trader in the MADP supply chain has often been discussed. The middleman, as a knowledge bank on species in demand as well as the supplier and customer bases, prevailing prices, likely trends, etc., and also in certain cases as a provider of short term credit, cannot entirely be ignored. As such, it is recommended that selected MADP traders be involved in the project implementation stage as a value addition opportunity. A parallel can be drawn with the ITC e-choupal, where a distinctive value proposition was made available to the middleman as well, and he was co-opted into the entire effort and made a facilitator, while ensuring at the same time that the interests of all concerned – company, farmer, sanchalak, and middleman, were protected.

- Domestic markets within South Asia for traditional medicine, medicinal plants and for other natural products in general, also represent a huge largely untapped opportunity and need to be vigorously pursued. In this context, the Chinese healthcare system, in which TCM and the western system of medicine work alongside and in concert with each other at every level, is an excellent example of the symbiotic relationship that can exist between the two systems. The example of Bayer Waleda Companies in Germany jointly promoting their pharmaceutical antidepressant alongside their herbal counterpart could also be emulated in the region. As a rule, the emphasis should be to focus on the domestic markets in conjunction with the global market.

In general, producing companies at the individual level or preferably at the proposed Apex Cooperative Company level should endeavor to establish backward and forward linkages. Backward integration would imply regular and timely supply of authentic, quality raw materials through contract farming, buying, or setting up of in-house herbal gardens, or technology and licensing arrangements with research institutes for the production of proprietary new products. On the other hand, forward linkages can involve getting into marketing arrangements with leading firms for marketing of particular products on a benefit-sharing basis. Preliminary contacts with ADMA, ITC and M&M Ltd. and likes have been encouraging, and there is definite potential in exploring strategic tie-ups with such organizations as a part of the project. ITC in fact, is also looking independently at medicinal and aromatic plants as a prospective business venture.

A key success factor in the MADP project has been identified as the ability to move up the value chain to supply semi-processed, processed material as well as finished products, and to establish linkages with customers in the domestic as well as global markets. In this context it would be appropriate to outline two examples of such successful initiatives in the following boxes:

Box 1:

In an experiment by READS (Rural Educational Awareness Development Society), an NGO located in Hosur district of Tamil Nadu, it was observed that one Aloe Vera plant required about Rs. 1/- (2 cents) worth of investment and yielded about 5 kgs of wet leaf to fetch about Rs. 5/- (10 cents) at the rate of Rs. 1/- (2 cents) per kg. If one woman could purchase 100-200 plants from a nursery maintained by the NGO and cultivate them for about a year, she would earn about Rs. 800-1000 (USD 18 - 22) per year. The advantages of promoting such a model are that it does not displace any agricultural crop; does not require high investment (hence the risk is not very high); does not require protection as it is not eaten by cattle, grows well in semi arid regions; and provides supplemental income to the poor, thus ensuring increased interest in growing and protecting medicinal plants.

While this is a pertinent example in itself, now consider the fact that Aloe Vera leaves are today being door delivered to consumers in Mumbai where the gel is manually extracted and consumed. Consumers pay a price of **Rs. 100 (USD 2.2) per kg** of Aloe Vera leaves. While this cannot be taken as a sustainable price particularly at higher sales volumes, the overall implications, and the opportunities, are obvious. (see Box 1 & 2)

Box 2: The "Business Today" issue of November 2003 carried a story about Dev Blenders, a synopsis of which is provided below:

Sanjay and Ruma Dutta approached the Khadi & Village Industries Commission (KVIC) in 2001 to set up a village industry unit for making herbal cosmetics. A Bank gave them a loan of Rs. 120,000 (USD 2700) and the couple invested Rs. 150,000 (USD 3333). Their company, Dev Blenders in Badarpur near Delhi is a modest affair – a 400 sq. ft. hall in a ground floor of an old building where a dozen men and women are busy manufacturing herbal care products ranging from soaps to lotions and face creams. In the first year the Duttas achieved Rs. 700,000 (USD 15,550) in sales but last year they more than tripled this amount to Rs. 2,300,000 (USD 51,100)

Initially the Duttas obtained support from KVIC, whose outlets in Delhi bought 60% of their production. The remainder was sold to ethnic stores like Eicher's "Good Earth". Early this year, however, the duo attended an export fair at Delhi's Pragati Maidan and received some enquiries from buyers in the UK and Spain. Buoyed by Rs. 400,000 (USD 8900) worth of orders, the Duttas are now betting big on exports, since their products have passed stringent tests for toxicity in the labs of the importing countries. London retailer "Selfridges" has also initiated talks with them for sourcing herbal products, while a few other buyers have also approached them for contract manufacture of herbal products, which would be branded and sold. "Frankly speaking, we are not able to meet the demand. It takes about 10 - 15 days to execute the orders" says one of the Dutta's business partners. Which is why the unit is planning to increase its capacity of 1000 soaps (125 gms. a piece) a day to 2500 pieces. All this will boost sales to an expected Rs. 4,000,000 (USD 88,900) this year and to Rs. 10,000,000 (USD 222,200) by 2006.

Dutta is not wary of competition in herbal cosmetics from big players like Marico and Shahnaz Hussain. "Our USP is genuine and hand-made herbal products, and there is a market for it". In fact, Dev Blenders has just one machine – an emulsifier to make creams, which costs only Rs. 20,000 (USD 445). The rest of the work, including manufacturing and packaging, is done manually. The Government wants to promote units such as ours since it generates local employment and keeps villagers from migrating to cities", says Dutta.

The MADP project already has in place, a plan to bring together cultivators/collectors across the region to ensure supply of high quality organic plants and herbs according to international specifications. If the efforts on the supply side are matched with a focused thrust on value addition, demand generation, and customer development, through simple yet effective working examples, some of which are illustrated above, pockets of excellence will be created and the requisite momentum will be generated. These in turn will contribute critically to the success of the MADP research project and facilitate its scaling up into a full-fledged development project in the years to come.

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ANNEXURES

Annex 1: List of persons met

- Dr. Dietmar Rummel: Director (R&D), Roehr Corporation, Manila; and Adviser on Medicinal Plants to the Philippines Government.
- Ms. Menchu P. Lising: President and General Manager, Green Leaf Herbals, Inc., Manila, Philippines.
- Valentine L.B. Tan: General Manager, ABS GEN Herbs International Corporation, Quezon City, Philippines.
- Ms. Carmen P. Lising: Division Chief: Natural Products Division; and Brand Manager (Organic & Natural Products), Center For International Trade Expositions & Missions (CITEM), Manila, Philippines.
- Mr. S. Sivakumar: Chief Executive, ITC Limited (International Business Division), Hyderabad, India.
- Mr. S. Chandrasekar: Manager, ITC Limited (International Business Division), Kushalnagar, India.
- Mr. Pramod Sharma: Director, Shree Baidyanath Ayurved Bhawan (P) Ltd., Patna; and President, Ayurvedic Drug Manufacturers Association (ADMA), India.

- Dr. Narendra Bhatt: CEO, Zandu Pharmaceuticals Ltd., Mumbai; and General Secretary, ADMA, India.
- Mr. Ranjit Puranik: CEO, Shree Dhootapapeswar Ltd., Mumbai, India.
- Mr. Ashish Kumar Ghosh: Director, Herbochem Remedies India (P) Ltd., Kolkata, India.
- Mr. S. R. Dasgupta: Managing Director and CEO, Herbicure Private Ltd., Kolkata, India.
- Mr. Kairas Vakharia: CEO, Mahindra ShubhLabh Services Ltd., Mumbai, India.
- Mr. Manoj Gathani: Excel Drug House, Kolkata, India.
- Mrs. S. Isvarmurti: CEO, Vadamalai Consultancy Services, Bangalore, India.
- Mr. Kartik Isvarmurti: Managing Editor, Agriculture & Industry Survey, Bangalore, India.
- Dr. Padma Venkat: Joint Director (Laboratory), FRLHT, Bangalore, India.
- Mr. Mohit Goel: Vedic Cosmeceuticals (P) Ltd., Noida, India.
- Mr. V. J. R. Asirvatham: Senior Principal Vice President, ITCOT, Chennai, India.
- Mr. P. R. Perumal: Assistant Vice President, ITCOT, Chennai, India.

Annex 2, Table 1 : SHORTLIST OF POTENTIAL MEDICINAL PLANTS

SL. NO.	BOTANICAL NAME	COMMON NAME	PARTS USED	NATURE OF DEMAND	GESTATION PERIOD	CULTIVATION LOCATION	DOMESTIC DD 1999-2000 TONNES	PROJECT DD 2004-05 TONNES	PROJ. DD 2004-05 RS. LAKHS	PROJ. DD SS GAP 2004-05 TONNES
1	*Aconitum heterophyllum*	Ativisha, Atis, Bachnag	Roots	Both - Exp/ Dom	Medium	Cool temp and heights	192.7	448.4	5829.2	255.7
2	*Aegle marmelos*	Bael	Root	Domestic	Medium	Regionwide	4479.8	7084.5	1416.9	2604.7
3	*Aloe Barbadensis*	Ghrit Kumari, Korphad	Leaves, Powder	Both - Exp/ Dom	Short	Regionwide	NA	NA	NA	NA
4	*Andrographis paniculata*	Kalmegh	Whole	Both - Exp/ Dom	Short	Regionwide	1886.2	2197.3	439.5	311.1
5	*Asparagus racemosus*	Shatavaree, Satawar	Roots	Both - Exp/ Dom	Short	Regionwide	8246.3	16658.5	11661	8412.2
6	*Bacopa monnieri*	Brahmi	Entire plant and leaves	Both - Exp/ Dom	Short	Regionwide	2650.1	6621.8	1986.5	3971.7
7	*Berberis aristata*	Daruhalad, Indian barberry	Stem	Both - Exp/ Dom	Medium	Regionwide	890	1829.4	548.8	939.4
8	*Boerhaavia diffusa*	Punarnava	Leaves and roots	Both - Exp/ Dom	Short	Regionwide	2182.3	3373.2	1012	1190.9
9	*Cassia augustifolia*	Senna, Markandi, Sonamukhi	Leaves and pods	Both - Exp/ Dom	Short	Regionwide	4356.2	11677.3	3503.2	7321.1
10	*Centella asiatica*	Brahmee, Gotu Kola	Whole	Both - Exp/ Dom	Short	Regionwide	55.2	134.5	67.3	79.3
11	*Chlorophytum arundinaceum/ boerivillianum*	Safed Musli	Bulbs/ Tuberous roots	Both - Exp/ Dom	Short	Regionwide	NA	NA	NA	NA
12	*Commiphora wightii*	Guggul	Resin	Both - Exp/ Dom	Long	Regionwide	1059.2	2548.9	2548.9	1489.7
13	*Garchinaindica*	Kokum	Fruits	Both - Exp/ Dom	Short	Regionwide	272.3	1046.5	314	774.2
14	*Gloriosa superba*	Shakrapushpi, Glory, flame lily	Roots	Export	Short	Regionwide	49.1	100.5	50.3	51.4
15	*Glycyrrhiza glabra*	Jyeshtamadha, Liquorice	Roots	Both - Exp/ Dom	Short	Regionwide	650.2	1359.8	543.9	709.6
16	*Gymnema sylvestre*	Madhunasini	Leaves, roots	Both - Exp/ Dom	Short	Regionwide	40.3	80.7	24.2	40.4

SL. NO.	BOTANICAL NAME	COMMON NAME	PARTS USED	NATURE OF DEMAND	GESTATION PERIOD	CULTIVATION LOCATION	DOMESTIC DD 1999-2000 Tonnes	PROJECT DD 2004-05 Tonnes	PROJ. DD 2004-05 Rs. Lakhs	PROJ. DD SS GAP 2004-05 Tonnes
17	*Mentha piperita*	Pudina	Menthol powder from leaves	Both - Exp/ Dom	Short	Regionwide	NA	NA	NA	NA
18	*Mucuna pruriens*	Atmagupta, Muchkunda	Roots and seeds	Both - Exp/ Dom	Short	Regionwide	NA	NA	NA	NA
19	*Nardostachys jatamansi*	Ativisha, Jatamansi	Root and rhizomes	Both - Exp/ Dom	Medium	Regionwide	571.2	866.8	1300.2	295.6
20	*Phyllanthus amarus/P. niruri*	Bahupatra, Bhumi Amla	Roots	Both - Exp/ Dom	Short	Regionwide	1812.1	2985.3	597.1	1173.2
21	*Picrochiza kurroa*	Kutaki	Roots and rhizomes	Both - Exp/ Dom	Medium	Cool temp and heights	172.8	317	475.5	144.2
22	*Piper longum*	Pimpali	Fruits	Both - Exp/ Dom	Long	Regionwide	2951.8	6280.4	9420.6	3328.6
23	*Plantago ovata*	Isabgol	Seeds,	Both - Exp/ Powder	Short Dom	Regionwide	NA	NA	NA	NA
24	*Rauwolfia serpentina*	Sarpagandha	Roots	Export	Short	Regionwide	340.1	588.7	883.1	248.6
25	*Swertia chirata*	Kadu /Chiraita	Roots/ Whole	Both - Exp/ Dom	Short	Cool temp and heights	797.7	1284.7	3854.1	487
26	*Tinospora cordifolia*	Amruta, Gulvel, Guduchi, Giloe	Roots, stems and leaves	Export	Short	Regionwide	1897.3	2932.6	293.3	1035.3
27	*Withania somnifera*	Ashwagandha	Dried roots	Both - Exp/ Dom	Short	Regionwide	5905.1	9127.5	5476.5	3222.4

Annex 2, Table 1.1 : MEDICINAL PLANTS - DOMESTIC MARKET : SOME DEMAND ESTIMATES

SL. NO.	BOTANICAL NAME	COMMON NAME	PARTS USED	DOMESTIC DD 1999-2000 TONNES	PROJECTED DD 2004-05 TONNES	PROJ. DD 2004-05 RS. LAKHS	PROJ. DD-SS GAP: 2004-05 TONNES	PROJ. DD GAP: 2004-05 RS. LAKHS
1	*Aloe barbadensis*	Kumari, Korphad	Leaves, Powder	NA	NA	NA	NA	NA
2	*Chlorophytum arundinaceum/ boerivillianum*	Safed Musli	Bulbs/ Tuberous roots	NA	NA	NA	NA	NA
3	*Mentha piperita*	Pudina	Menthol powder from leaves	NA	NA	NA	NA	NA
4	*Mucuna pruriens*	Atmagupta, Muchkunda	Roots and seeds	NA	NA	NA	NA	NA
5	*Plantago ovata*	Isabgol	Seeds, Powder	NA	NA	NA	NA	NA
6	*Asparagus racemosus*	Shatavaree, Satawar	Roots	8246.3	16658.5	11661.0	8412.2	5888.6
7	*Piper longum*	Pimpali	Fruits	2951.8	6280.4	9420.6	3328.6	4992.9
8	*Aconitum heterophyllum*	Ativisha, Atis, Bachnag	Roots	192.7	448.4	5829.2	255.7	3324.1
9	*Cassia augustifolia*	Senna, Markandi, Sonamukhi	Leaves and pods	4356.2	11677.3	3503.2	7321.1	2196.3
10	*Withania somnifera*	Ashwagandha	Dried roots	5905.1	9127.5	5476.5	3222.4	1933.4
11	*Commiphora wightii*	Guggul	Resin	1059.2	2548.9	2548.9	1489.7	1489.7
12	*Swertia chirata*	Kadu Chiraita	Roots/Whole	797.7	1284.7	3854.1	487.0	1461.0
13	*Bacopa monnieri*	Brahmi	Entire plant and leaves	2650.1	6621.8	1986.5	3971.7	1191.5
14	*Aegle marmelos*	Bael	Root and fruit	4479.8	7084.5	1416.9	2604.7	520.9
15	*Nardostachys jatamansi*	Ativisha, Jatamansi	Root and rhizomes	571.2	866.8	1300.2	295.6	443.4
16	*Rauwolfia serpentina*	Sarpagandha	Roots	340.1	588.7	883.1	248.6	372.9
17	*Boerhaavia diffusa*	Punarnava	Leaves and roots	2182.3	3373.2	1012.0	1190.9	357.3
18	*Glycyrrhiza glabra*	Jyeshtamadha, Liquorice	Roots	650.2	1359.8	543.9	709.6	283.8

SL. NO.	BOTANICAL NAME	COMMON NAME	PARTS USED	DOMESTIC DD 1999-2000 TONNES	PROJECTED DD 2004-05 TONNES	PROJ. DD 2004-05 RS. LAKHS	PROJ. DD-SS GAP: 2004-05 TONNES	PROJ. DD GAP: 2004-05 RS. LAKHS
19	*Berberis aristata*	Daruhalad, Indian barberry	Stem	890.0	1829.4	548.8	939.4	281.8
20	*Phyllanthus amarus/P. niruri*	Bahupatra, Bhumi Amla	Roots	1812.1	2985.3	597.1	1173.2	234.7
21	*Garchina Indica*	Kokum	Fruits	272.3	1046.5	314.0	774.2	232.3
22	*Picrochiza kurroa*	Kutaki	Roots and rhizomes	172.8	317.0	475.5	144.2	216.3
23	*Tinospora cordifolia*	Amruta, Gulvel, Guduchi, Giloe	Roots, stems and leaves	1897.3	2932.6	293.3	1035.3	103.5
24	*Andrographis paniculata*	Kalmegh	Whole	1886.2	2197.3	439.5	311.1	62.2
25	*Centella asiatica*	Brahmee, Gotu Kola	Whole	55.2	134.5	67.3	79.3	39.7
26	*Gloriosa superba*	Shakrapushpi, Glory, flame lily	Roots	49.1	100.5	50.3	51.4	25.7
27	*Gymnema sylvestre*	Madhunasini	Leaves, roots	40.3	80.7	24.2	40.4	12.1

Annex 3, Table 1. Major medicinal and aromatic plants species of India

SL. NO.	SCIENTIFIC NAME	ENGLISH NAME	COMMON NAME
1.	*Embelia tsjeriam-cottam* A.DC	Vaividang	Baibaranga
2.	*Saraca indica*	Saraca	Ashok
3.	*Swertia chirayita*	Chirayita	Chirayita
4.	*Terminelia chebula*	Harra	Harra
5.	*Terminalia belarica*	Baheda	Baheda
6.	*Picrorhiza kurrooa*	Picrorhiza	Kutki
7.	*Podophyllum hexandrum*	May Apple	Laghupatra
8.	*Rauvolfia serpentina*	Serpentine	Sarpgandha
9.	*Ocimum sanctum* Linn.	Holy basil	Tulsi
10.	*Acacia rugata*	Shikakai	Shikakai
11.	*Acorus calamus*	Bach	Boj
12.	*Asparagus racemosus*	Shatawar	Satawar
13.	*Cinnamomum tamala*	Taj/Dalchini	Dalchini
14.	*Valeriana jatamansii*	Tagar	Sugandhwal
15.	*Phyllanthus emblica*	Amla	Amla
16.	*Commiphora wightii*	-	Guggul
17.	*Chlorophytum boerivillianum*	-	Safed Musli
18.	*Centella asiatic*	Centella	Brahmee
19.	*Aloe Barabdensis*	Aloe	Aloe

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MAPPA Publications

The Medicinal Plants Sector in India by Jason Holley & Kiran Cherla

Priority Species of Medicinal Plants in South Asia by Madhav Karki & J.T. Williams

Priorities for Medicinal Plants Research and Development in Pakistan by J.T. Williams & Zahoor Ahmad

Tribal Folk Medicinal Plant Resources of South Asia by Radhika Johari & Madhav Karki

The Role of Medicinal Plants Industry in Fostering Biodiversity Conservation and Rural Development by Madhav Karki & Radhika Johari

Some Important Medicinal Plants of the Western Ghats, India-a profile by P.K. Warrier, V.P.K. Nambiar and P.M. Ganapathy

Conservation Assessment & Management Plan Workshop Report (CAMP-Nepal) by Vinay Tendon, Nirmal Bhattarai & Madhav Karki

Sharing Local and National Experience in Conservation of Medicinal and Aromatic Plants in South Asia by Nirmal Bhattarai & Madhav Karki

Medicinal, aromatic and dye plants (MADP) sector in South Asia represents an unique window of opportunity for poorer countries of the region where imperatives of rural poverty, mountain perspectives and localized issues constantly influence the pace and quality of livelihoods transformation. Apart from the good potential to reach the poor and marginal population of resource-poor regions, MADP production, processing, marketing and industrialization can help in developing sustainable livelihoods, improved bio-resource management and an effective local health care system aiding both the poverty alleviation and environment conservation.

The growing demand of consumers worldwide for herbal and natural products has thrown up high potential, high growth opportunities for Medicinal, Aromatic and Dye Plants – opportunities not only from a commercial perspective, but also in the form of sustainable livelihood opportunities for small and marginal farmers, tribal, and womenfolk. The South Asian region, despite its inherent competitive advantages in the MADP arena, has so far largely missed out on this huge opportunity.

This report seeks to describe and analyze the market from the demand as well as supply perspectives and suggests macro as well as micro level strategies for promoting South Asian MADPs, in the domestic as well as global markets. Specific points addressed in the report include study of key MADP markets, identification of species requiring focused attention, brand building strategies, involvement of local stakeholders, the need for strategic tie-ups and collaborations, and macro level policy initiatives that could lead to a long term, sustainable market base.

An outcome of a Desk Research commissioned by the IDRC based Medicinal and Aromatic Plants Program in Asia (MAPPA), it forms part of an IDRC/FAO/ IFAD/ Ford/NMPB project on Organic Production of MADPs in the Region.

Through its analysis and suggestions/ recommendations, the report makes out a strong case for the development of Pockets of Excellence – ground level working models and success stories that can inspire progressively larger and ambitious projects, ultimately leading to a full fledged MADP development initiative.

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