



PHYTOMEDICA NETWORK

PROJECT REPORT

**Enhancing Interactive Discussion,
Exchange of Information and Knowledge on Medicinal Plants**

July 2002-June 2003



Implementing Agency

Conserve Africa Foundation

1st Floor, 36 The Market Square

London N9 0TZ, England

Tel: +44(0)20 88078000

Fax: +44(0)20 88070777

Web: <http://www.conserveafrica.org.uk>

Registered non-profit Company No: 442162 (England and Wales)

Registered Charity No: 109821

With support from:

Critical Ecosystem Partnership Fund

Conservation International

1919 M St., NW, Suite 600

Washington, DC 20036

United States of America

Enhancing Interactive Discussion,
Exchange of Information and Knowledge on Medicinal Plants

Table of Contents	pages
i. Summary	3
ii. Project Results and Impact	4
I. Introduction	6
II. Highlights of Issues Raised by Phytomedica Network Members	6
II.1. Medicinal Plants Cultivation and Conservation	6
II.2. Trade in Medicinal Plants	8
II.3. Importance of Information on the Wild Resource	8
II.4. Research and Development (R & D)	9
II.5. Legislation	9
II.6. Indigenous Knowledge, Intellectual Property Rights and Benefit Sharing ..	10
III. Constrains and Strategic Actions	11
III. 1. Medicinal Plants Conservation, Cultivation and Propagation	11
III. 2. Research and Development	13
III. 3. Indigenous Knowledge, Intellectual Property Rights and Benefits Sharing ..	14
III. 4. Integration of Traditional Medicine in Public Health Systems	15
III. 5. Trade in Medicinal Plants	16
IV. Conclusion	17

PHYTOMEDICA NETWORK PROJECT

Enhancing Interactive Discussion, Exchange of Information and Knowledge on Medicinal Plants.

Summary

Conserve Africa Foundation has been implementing a one-year Programme of Enhancing Interactive Discussion, Exchange of Information and Knowledge on Medicinal Plants through the Phytomedica Network with the support from the Critical Ecosystem Partnership Fund (CEPF). The Critical Ecosystem Partnership Fund is a joint initiative of Conservation International, US; the Global Environment Facility, US; the Government of Japan, the MacArthur Foundation and the World Bank Group. A fundamental goal is to ensure civil society is engaged in biodiversity conservation. CEPF provided support to CAF of US \$ 15,000 for the implementation of the project, which started in July 2002. Phytomedica Network is a worldwide Listserv established by Conserve Africa Foundation. It addresses issues related to medicinal plants and Phytomedicines. It has now 900 members (French and English versions).

This report presents an overview of the main issues discussed at the Phytomedica Listserv. The Listserv is considered useful by many Phytomedica Members as it brings together researchers, conservationists and traditional and modern medical practitioners to share experiences in the area of medicinal plants and traditional medicine. The listserv is

becoming an important tool for dissemination of news, publications and research work and announcements of events, conferences and workshops relating to medicinal plants. The Listserv provides networking opportunities for practitioners and researchers in this important sector across for the South.

Phytomedica is a global network of individuals and organisations committed to the advancement of medicinal plants conservation and its related issues. It consists of a broad spectrum of individuals and organisations from the traditional healers to donors. Its purpose is to facilitate networking, collaboration, exchange of information, experiences and knowledge among partners involved in the key issues of medicinal plants and Phytomedicine development, research and use. This global network addresses areas such as: conservation and sustainable use, traditional health systems and traditional medicine, commercialisation and trade; intellectual property rights and indigenous knowledge. The objectives of the Phytomedica Listserv are to provide a vehicle for the free exchange of ideas and experiences on medicinal plants and Phytomedicines. The listserv is moderated, e.g. all messages posted by members are approved before distribution.

The project involved the following activities:

1. Gather, disseminate and exchange regional and international information on different issues related to medicinal plants and Phytomedicines.
2. Enhance opportunities between stakeholders to exchange skills, experiences and information.
3. Encourage the generation of new ideas from communities to achieve medicinal plants conservation.

The type of information posted to the Listserv range widely, including conferences, workshops, funding opportunities, general information about medicinal plants and other related issues. Text-based papers, research reports and documents on medicinal plants are accessible through the website.
<http://www.groups.yahoo.com/group/phytomedica>

This information includes:

- Status reports of ongoing case studies.
- Discussion of basic concepts of sustainable use and conservation of medicinal plants.
- Discussion of methodological and research issues.
- Reviews and reports of findings.
- Funding opportunities.
 - News of ongoing projects from other countries.
 - Awareness of how medicinal plants become are extinct, rare or endangered.
 - Announcements of events related to medicinal plants (e.g. conferences, exhibitions, workshops, etc)

Project Results and Impact

The Phytomedica Listserv opens up numerous possibilities for networking in the area of medicinal plants. This;

- Makes information sharing much less costly.
- Facilitates access to information that would have been difficult to obtain.
- Obviates the need to have meetings, in order to have meaningful dialogue; and,
- Provides mechanisms for networking which are less formal, non-bureaucratic and less costly.
- Enhances the use of electronic communication.
- Is a useful tool to exchange reports and information about medicinal plants and phytomedicines?
- Contributes to raise awareness, stimulate discussion and participation and generate a network of organisations;
- Contributes to build a cohesive network of groups that are working on medicinal plants and Phytomedicines.

*The following species were discussed at the Phytomedica Listserv:

Garcinia afzelii, *Garcinia epunctata*, *Garcinia kola*; *Pausinystalia johimbe*; *Griffonia simplicifolia*; *Voacanga thourasii*; *Voacanga Africana*; *Okoubaka aubervillei*; *Warburgia salutaris*; *Curtisia dentate*; *Prunus Africana*; *Griffonia simplicifolia*; *Warburgia salutaris*, *Garcinia afzelii*, *Okoubaka aubervillei*, *Erythrophleum lasianthum*; *Cassine transvaalensis*; *Alepidea amatymbica*; *Pericopsis elata*; *Pterocarpus angolensis*; *Siphonochilus aethiopicus*; *Ledebouria hypoxidoides*, *Mystacidium millari*; *Trichilia emetica*; *Albizia adianthifolia*; *Stangeria eriopus*; *Mondia whitei*; *Vernonia neocorymbosa*; *Dioscorea dregeana*; *Erythrophleum lasianthum*, *Moringa oleifera*; *Pelargonium reniforme*; *Spilanthes*; *Aloe vera*; *Synaptolepis kirkii*; *Adhatoda robusta*; *Allanblackia floribunda*, *Ancistrocladus abbreviatus*



Centella



Ravintsara

This project was implemented as planned. Some constraints encountered include:

- Limited access to the Internet in some countries. The Francophone Group was not active as expected.
- Lack of experience in participation in on-line discussion.
- Most participants have been passive but preferred to receive information from others.
- Some researchers are not willing to share their knowledge, experiences and research results.
- High cost related to access the Internet in developing Countries.
- Lack capacity to compile and process the information to be shared with others.

THE PHYTOMEDICA NETWORK PROJECT

Enhancing Interactive Discussion, Exchange of Information and Knowledge on Medicinal Plants.

I. INTRODUCTION

The majority of people in Africa and in other parts of the South use plant based traditional medicines for their care. Demand for medicinal plants is increasing in Africa as the population grows. The threat posed by over-exploitation of medicinal plants has serious implications on the survival of several plant species, many of which are faced with extinction.

The demand by majority of the people in developing countries for medicinal plants has been met by indiscriminate harvesting of spontaneous flora including those in forests. As a result, many plant species have become extinct and some are endangered. It is therefore necessary that systematic cultivation of medicinal plants be introduced in order to conserve

biodiversity and protect threatened species. Systematic cultivation of these plants could only be initiated if there is a continuous demand for the raw materials.

Traditional medicinal plants are under constant threat from a variety of pressures emanating largely from population growth, unsustainable harvesting methods and inequitable terms of international trade. Such losses are threatening not just the biological resource but traditional knowledge systems as well. Therefore, there is a need of continuing the exchange of information about the status of medicinal plants and the development of relating Phytomedicines.

II. Highlights of issues raised by Pytomedica Network Members

The following key issues were raised in the discussions and in the papers posted to Phytomedica Listserv:

II. 1. Medicinal Plants cultivation and conservation

Phytomedica members identified that only few Medicinal and Aromatic Plants (MAP) species are currently in formal cultivation for commercial production. On the other hand, however, participants recognized that many more MAP species are cultivated on a small-scale in home gardens, either as home remedies or by herbalists. Given the demand for a continuous and uniform supply of medicinal plants and the accelerating depletion of forest resources, increasing the number of medicinal plants species in cultivation would appear to be an important strategy for meeting a growing demand.

The domestication of the resource through farming is not always technically possible. Many species are difficult to cultivate because of certain biological features or ecological requirements (slow growth rate, special soil requirements, low germination rates, susceptibility to pests, etc.).



**...Local medicinal plants
harvesting and trading.**

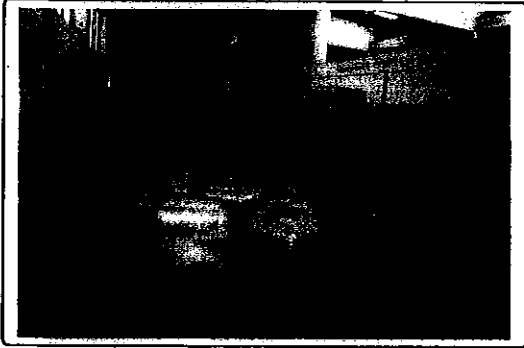
These species suffer most from harvesting and many of them have been seriously depleted, for example *Prunus africana* in West Africa, *Warburgia salutaris* in southern Africa and *Saussurea costus* in the Himalayas. Examples for threatened but cultivated species are *Garcinia afzeli*, *Panax quinquefolius*, *Saussurea costus* and *Warburgia salutaris*. With respect to economic viability many highly endangered MAP do not qualify for cultivation. This group of plants will enter cultivation only with the help of public domestication programmes. For all other harvested MAP species the priority conservation option is sustainable harvest from wild populations. The price for favoured species might be monitored as a potential indicator of scarcity; if cultivation is not a viable option, and demand exceeds supply, then price will rise.

Conservation and production of medicinal plants primarily in community gardens must be given priority along with other conservation options and market incentives, for the preservation of essential medicinal herbal plants in order to ensure a sustainable supply of safe, effective and affordable medicinal herbs.

Sustainable harvest is increasingly seen to be the most important conservation strategy for most wild-harvested species and their habitats, given their current and potential contributions to local economies and their greater value to harvesters over the long term. The basic idea is that non-destructive harvests and local benefits will maintain population, species and ecosystem diversity. Besides poverty and the break-down of traditional controls, the major challenges for sustainable wild-collection include: lack of knowledge about sustainable harvest rates and practices, undefined land use rights and lack of legislative and policy guidance.

It was noted that conservation, must also work towards maintaining a certain level of diversity rather than concentrating on individual species, which could have enormous implications in terms of genetic diversity. It is important to keep this in mind when considering the conservation of medicinal plants, where the end use is of paramount importance. In addition it is also necessary to take into consideration the fact that each plant species may require different conservation measures. Proper botanical authentication should be followed by development of agricultural practices and post-harvest technology.

II. 2. Trade in medicinal plants:



.....*The bulk of the plant material is exported from developing countries, while major markets are in the developed countries.*

It is difficult to assess how many MAP are commercially traded, either on a national or even an international level. The bulk of the plant material is exported from developing countries, while major markets are in the developed countries.

The various markets available in the Western World for plant parts and extracts are not usually available to institutions and companies in the South. Also, the quality requirements of standardised plant extracts are generally not met by most researchers in the South due to lack of personnel and inadequate facilities and resources. Furthermore, the regular supplies of plant raw materials in adequate quantities on long-term basis cannot be guaranteed.

Many individuals and agencies charged with regulation or implementation of legislation are unaware that medicinal plants, and especially traditional medicinal products, are materials that should be

subject to existing wildlife legislation and controls.

Trade in medicinal plants for established natural products can be considered to result in conservation issues if the trade:

- * Endangers survival of the species;
- * Seriously erodes genetic diversity of the species;
- * Threatens the survival or functional integrity of important natural or semi-natural ecosystems;
- * Is non-sustainable, which in its most basic form, means that the species is extracted from a particular site at a rate greater than that at which it is being replaced.

Regulatory agencies should be made aware of the trade in wildlife medicines and its implications (such as declining population and reduced medicinal security for the region as a whole), and their role in controlling it.

II. 3. Importance of information on the wild resource

In general, resource managers are always confronted with the lack of adequate information about the plants used, their distribution, the genetic diversity of wild populations and relatives and, above all, the annual sustained yield that can be harvested without damaging the populations.

II. 4. Research and Development (R & D)

The main problem facing the use of traditional medicines is the proof requirement that the active components contained in medicinal plants are useful, safe and effective. As the characteristics and applications of traditional medicine are quite different from western medicine, how to evaluate traditional medicine and what kind of academic research approaches and methods may be used to evaluate the safety and efficacy of traditional medicine are new challenges which have emerged in recent years. This is highly required to assure the medical field and the public regarding the use of medicinal plants as drug alternatives. The proofs of pharmacology activity that are available at present are mostly based on empirical experience. The scientific proof then becomes the most important thing in order to eliminate the concern of using medicinal plants as drugs for alternative treatment. Unfortunately, most southern countries are not able to conduct research or provide scientific proof of pharmacology. International scientific collaboration is important for southern countries, as it would enhance the

development of drugs obtained from medicinal plants to their benefit.

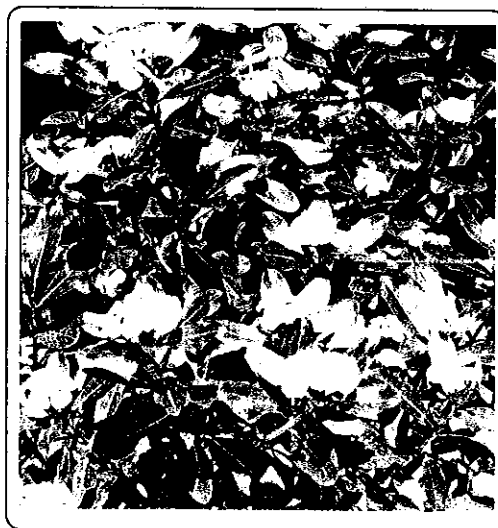
Priority should be given to the development of herbal medicine by means of the following measures: inventorying and documenting the various medicinal plants and herbs, which are used to treat common diseases in each country; setting up a regional network of laboratories and pilot plants with adequate facilities for the assessment of the efficacy of medicinal herbs, and establishing dosage norms for and production of the most efficacious of herbal extracts, whether in tablet, capsule, powder, syrup, liquid or other form.

Regarding the necessity to westernise traditional medicine in order to systematise it, most members felt that traditional medicine in its own way is systematic and that the issue of systematising does not arise. What researchers try to do is actually westernise the system, which is the wrong approach. Traditional medicine needs to keep pace with development in other areas, but that it should be allowed to develop itself using its own unique (unique to itself) methods.

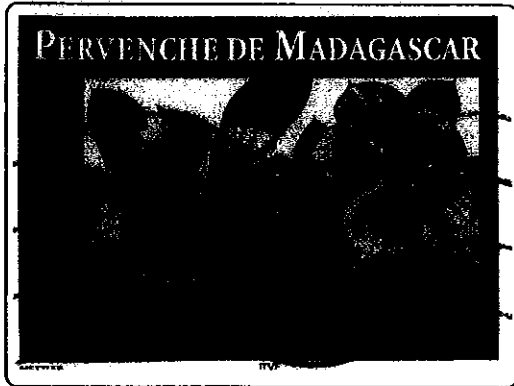
II. 5. Legislation

Despite its existence over many centuries and its expansive use during the last decade, in most African countries, traditional medicine, including herbal medicines, has not yet been officially recognised, and the regulation and registration of herbal medicines has not been well established.

Vinca



Vinca



Although, in most African countries more than 80% of the population rely on traditional medicine for their primary health care needs, the governments have not yet promulgated edicts or decrees vis-à-vis regulation and recognition of the practice of traditional medicine. Even in countries where there is an apparent recognition, appropriate budgeting to facilitate the functioning of the Traditional Medicine Sector is usually inadequate or totally lacking.

In many countries in Africa for example, the entire traditional medicine community seems to be operating outside the framework of national legislation on the collection and trade in wild species. There is also a large intra-African trade in medicinal plants, again almost entirely outside

the usual international trade controls. There is thus a need for the formulation and development of national as well as regional policies and legislation in terms of the trade and access to these resources if maximum benefits are to be reaped in order for such policies to be successful. Phytomedica members noted that there is also a lack of a policy and enabling environment change attitudes and perceptions, (e.g. no policies that support or promote the use of traditional medicine). There is an urgent need to develop legislation to control and monitor harvest and trade of medicinal plant species and consider conservation and sustainable use of medicinal plants as a priority in establishing protected areas.

II. 6. Indigenous Knowledge, Intellectual Property Rights and Benefit Sharing:

The absence of an internationally agreed methodology for sharing economic benefits from the commercial exploitation of biodiversity with the primary conservers and holders of traditional knowledge and information is leading to a growing number of accusations of bio piracy committed by business and industry in developing countries. Biodiversity in both developing and developed countries has been accessed for a long time, for various purposes, by outside researchers, private

companies as well as local communities, with little or no returns to conservation activities.

Many legal and practical problems relating to protection of IPRs remain yet to be fully understood and addressed: the collective ownership/custodianship of traditional medicine; the problem of ownership and exercise of rights in traditional medicinal knowledge which exists across different countries in a region; practical means for the exercise and

management of rights; mechanisms for application of customary law to protection of traditional medicine; and the need for comprehensive documentation standards, for traditional medicine.

Many African countries do not have procedures to register medicinal plant preparations. The regulations are very stringent requiring the same standards expected of modern medicines. WHO published guidelines for the assessment of herbal medicines taking into account their long and extensive usage? These guidelines should encourage developing countries to

relax some of the current regulations to be realistic in recognising the role of traditional medicines in the health care delivery systems.

There is usually lack of compensation in use of traditional knowledge even where the communities participate. It was noted that it is necessary that communities be consulted before any data from them is published. Communities should also be informed of their right to say no if they do not want to get involved in a research project; for whatever reason.

III. CONSTRAINS AND STRATEGIC ACTIONS

III. 1. MEDICINAL PLANTS CONSERVATION, CULTIVATION AND PROPAGATION

Constraints

- Lack of criteria to decide on whether or not a plant should be considered as threatened or abundant
- Lack of understanding of propagation methods relating to medicinal plants.
- Sustainable harvesting methods unknown or not popularised.
- Lack of leading national institutions on MPA conservation: In most countries, various institutions are involved in conservation. An official national focal point on MPA conservation does not exist;
- Conservation activities are mainly dealt with by national organisations and NGOs. The local communities are not involved although they may possess relevant input;
- Available information is often unclear, inconsistent and contradictory, e.g. regarding the state of MAPs;
- Scarcity of examples of effective conservation of medicinal plants initiatives.
- Lack of appropriate scientific and technical expertise/ experience in medicinal plants conservation within governments and among stakeholders.
- Lack of ownership of resources
- Lack of data on species, and scientific uncertainty about the relationship of loss to extinction rates.
- Lack of institutional support, strategies and programmes for production and dissemination of key species for cultivation.
- Some key stakeholders in the medicinal plant trade not adequately recognised (e.g. traders and gatherers)
- Direct economic pressure on ecosystems and lack of national budget allocations.

Strategic actions

- Provide comprehensive assessment of the status of medicinal plant species at the national level both in terms of taxonomic groups and geographical scale
- Research into propagation techniques which are replicable at the community level.
- Carry out inventories and assessments of local collections to determine which existing collections are in most need of conservation measures.
- Use local as well as other knowledge for cultivation and propagation of plants.
- Develop resource information on whether the species used are cultivated or gathered from wild sources, on population abundance and distribution.
- Recognize and strengthen the role of local people in forest inventory, monitoring and impact assessment processes and integrate non-timber product uses into forest management.
- Integrate local knowledge and harvest practices, monitor and audit the harvesting process to determine whether it is sustainable
- Establish nurseries to encourage propagation to provide species to people who want to cultivate medicinal plants.
- Encouragement of land provision and national policy for medicinal plant cultivation and sustainable use.
- Provide support (funding and technical assistance) to develop computerized information databases.
- Support and create incentives for effective agro-ecological methods that enhance cultivation of medicinal plants.
- Reorient land use at local and national levels for conservation of medicinal plants.
- Decentralization of biological diversity collections at the local level to increase awareness.
- Training in taxonomy related to medicinal plants.
- Organise/establish propagation and distribution centres at different levels and scales as appropriate (e.g. promotion of home medicinal and nutritional gardens, community-based and commercial nurseries, large scale propagation efforts by private companies).
- Organise public awareness campaigns and information dissemination to medicinal practitioners and others.
- Identify existing (and in particular "threatened" cultural practices) that are supportive of conservation and sustainable utilisation of medicinal plants e.g. traditional harvesting and propagation.
- Identify and support potential income generating and self-motivating activities in the area of conservation.
- Studies and research information which identify threatened medicinal plants should be strengthened.



Vinca

III.2. RESEARCH AND DEVELOPMENT

Constraints

- Insufficient collaboration and networking. Data remain fragmented and sometimes duplicated;
- Poor agricultural practices and harvesting, and post-harvest treatment practices.
- Lack of research and information on plants with high therapeutic value.
- Community and individual contributions to research activities are typically not acknowledged by researchers and research institutions (lack of respect).
- Communities are used to legitimise research activities and research institutions to the benefit of researchers and institutions, not for the benefit of communities.
- Lack of education on the part of local communities about their rights concerning research activities.
- Poorly trained researchers in participatory research methodologies.
- Research used not friendly and feedback from researchers.
- Communities are not given a role in the initiation of research activities (both traditional and conventional medicine).
- Lack of information from the side of traditional medical practitioners on the preparation methods, collection methods, posology/dosages, contraindication/aetiology, mechanism of action of the preparations, toxicity/antidote.
- Lack of appropriate technology for post harvest and pre-processing purposes adapted productively and effectively.

Strategic actions

- Document and publicise experiences, case studies and best practices on participatory tools and methodologies.
- Existing national research bodies should members as representatives of traditional healers.
- Develop guidelines for negotiation and contract between researchers and local communities.
- Enhance education of local communities on their rights and ability to be compensated (including the right to say "no" to researchers).
- Create national platforms for continuous interaction between traditional healers and modern practitioners.
- Deposit research data, findings and reports into a repository for local communities' access.
- Inform traditional healers of research findings and allow them to review findings before publication.
- Establish policy, legislation and other mechanisms for equitable compensation of traditional knowledge and for research in the areas of medicinal plant biodiversity.
- Strengthen the role of women in medicinal plants conservation and traditional health systems.
- Focus research initiatives on indigenous knowledge and on the traditional methods and technology of preparations and use, as well as issues of potency, safety, quality and side effects.
- Disseminate and document various methods for validation of traditional medical practices and preparations.

III.3. INDIGENOUS KNOWLEDGE, INTELLECTUAL PROPERTY RIGHTS AND BENEFITS SHARING.

Constraints

- Inequitable distribution and exchange of benefits from bio prospecting.
- Inadequate and ill-adapted legislation and regulations.
- Lack of clear understanding and mechanisms pertaining to ownership of knowledge and its implications (individual or community).
- Lack of policy on distribution of benefits and of clear definition of ownership.

Strategic actions

- Establish process for assistance in negotiation and legal aspects and develop capacity building.
- Carry out survey and analyse benefit-sharing through case studies.
- Review legislation regarding access and benefit-sharing with a view to making suggestions for its improvement for the benefit of local communities.
- Establish mechanisms to return benefits to support conservation of medicinal plants.
- Governments to integrate legal measures governing medicinal plants and the sharing of benefits into existing institutional and legislative policy

III.4. INTEGRATION OF TRADITIONAL MEDICINE IN PUBLIC HEALTH SYSTEMS

Constraints

- Lack of political will and appropriate legislation that could enhance the integration of traditional medicine
- Negative attitudes towards traditional medicine.
- Many developing countries do not have procedures to register medicinal plant preparations although they are widely used for health care needs of the majority of people.
- Low prices paid for traditional medicinal plants by herbal medicine traders and urban herbalists.
- Lack of appropriate documentation and scientific experimentation for verification of herbalists' claims.
- Low education level of healers
- Lack of recognition of the traditional health sector by most governments.

Strategic actions

- Develop and modernise hospitals/clinics for traditional healing.
- Improve professionalism- efficacy of traditional medicine, hygiene standardisation, training of healers.
- Remove legislative barriers that prevent complementarities between the two systems.
- Hold joint workshops between traditional medicine and western medicine.
- Establish provincial/district umbrella organisations and national associations.

III.5. Trade in medicinal plants

Constraints

- Undertake regular research and monitoring on wildlife medicinal trade and its impacts.
- Lack of local market for primary processed products and difficulties in marketing.
- Plant laws are largely unknown.
- Lack of information about wildlife medicinal trade and its impacts.
- Lack of information on medicinal plants of high therapeutic and commercial value.
- Many government agencies are aware that plant medicinals should be regulated, and occasionally, even if awareness exists, legislation does not.
- Existing regulations are very stringent requiring the same standards expected of modern medicines
- Lack of information on the social and economic benefits that could be derived from the industrial utilization of medicinal plants.
- Except for the use of these plants for local health care needs, not much information has been available on their market potential and trading possibilities.
- Regulatory agencies should be made aware of the trade in wildlife medicinals and its implications (such as declining population and reduced medicinal security for the region as a whole), and their role in controlling it.
- Many individuals and agencies charged with regulation or implementation of legislation are unaware that medicinal plants, and especially traditional medicinal products, are materials that should be subject to existing wildlife legislation and controls.

Strategic actions

- Undertake research on marketing forces, opportunities and strategies taking onto consideration conventional standards.
- Link producer groups to maximize supply and reduce storage and transport costs in order to sustain market interests.
- Assist in identification of market opportunities.
- Assist with linkages to the private sector at local, regional and international levels (distributors, retailers and exporters)
- Carry out research on market prospects and trends on medicinal plant - derived products to support trade in wildlife medicinals.

IV. CONCLUSION

Through various messages posted to the Phytomedica Listserv, members recommended that sustained efforts are required in ethno botanical surveys, equitable inter-regional trade and training of taxonomists to ensure appropriate documentation of valuable medicinal plants.



Ravintsara

The natural forestry reserves and parks should be adequately monitored so as to assist in the conservation of endangered and valuable plant species.



Cultivation of medicinal and aromatic plants on community level and on large-scale basis should be encouraged. Training should be organised for herbal sellers and herbalists vis-à-vis conservation efforts, rational use of medicinal plants and limitations of traditional medicine. Traditional Medicine Practitioners (TMPs) are very aware of the conservation status of local medicinal plant resources and can be influential in changing local opinion so as to limit over-exploitation. It is recommended that support is given to the formation of rural TMP associations and the self-sufficiency of TMPs, particularly in buffer zones. In particular, information

should be disseminated to rural communities on appropriate cultivation methods for medicinal plants which are in local demand. There is a need to develop a well informed campaign targeted at companies that export African wild plant material for the production of pharmaceuticals to ensure that harvesting of wild stocks takes place on a sustainable basis, or to institute the commercial production of plants from selected cultivated material. More actions are needed to organise public awareness campaigns and information dissemination to medicinal practitioners and others.