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Traditional Medicine Programmes in Madagascar

Madagascar has inherited a wealth of ethnomedical knowledge. The first medical thesis written by a Malagasy concerned the study of a plant traditionally used as a trial poison in Madagascar (Rasamimanana 1891), and the following two theses were devoted to an inventory of Malagasy medical beliefs and practices (Ramisiray 1901; Ranaivo 1902). Furthermore, a preliminary census of traditional health practitioners in three provinces of Madagascar revealed that there were more than 2000, which can be extrapolated to over 5000 in the whole island.

Madagascar is also endowed with a flora of unique global importance on account of its biodiversity, endemism, and ethnomedical uses. Of approximately 13 000 species present in Madagascar, over 80% are endemic to the island, and about 3500 are reported to have medicinal properties.

The government of Madagascar has shown its political commitment to traditional medicine by supporting, through an interministerial convention, a commission to study regulations on traditional medicine and its pharmacopoeia in Madagascar, which was established in May 1996. This commission was enlarged by decree N°2339/2002 dated 28th August 2002 marking the creation of a National Advisory Committee on Traditional Medicine. The Committee brings together the principal public and private stakeholders in a spirit of partnership. It has recently drafted the national policy on traditional medicine in Madagascar which now will move forward to be validated at the WHO level. The general objective of this traditional medicine policy is to improve access for the population, especially the most vulnerable populations, to quality care and service. Operational objectives are the following:

1. To elaborate a legal, regulatory,

organizational and prescriptive framework for exercising the profession of traditional healer and for using the traditional pharmacopoeia;

2. To promote and reinforce dialogue and partnership between local communities, traditional healers, researchers, and clinicians for the promotion of ethnomedical practices and their scientific investigation;
3. To develop appropriate legislation and regulatory texts, in collaboration with relevant organizations, for access to biological resources and in particular medicinal plants, for the protection of traditional knowledge, and for equitable sharing of benefits arising from the development of traditional practices and the sustainable exploitation of these biological resources, in accordance with the Secure Local Management scheme ("GELOSE") established by the National Department of the Environment and with the Convention on Biological Diversity, of which Madagascar is a signatory;
4. To evaluate ethnomedical practices for their safety, efficacy, and quality, to optimize the use of research results, to follow up patients

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4. To evaluate ethnomedical practices for their safety, efficacy, and quality, to optimize the use of research results, to follow up patients having taken traditional medicine, to promote the cultivation of medicinal plants and the local production of improved traditional medicines, in order to make traditional medicine less empirical and more rational, while preserving as far as possible the values which confer its originality; and
5. To reinforce the systems for information, training, and education on traditional medicine.

Traditional medicine programmes in Madagascar can be divided into two categories: (1) programmes that are coordinated by the Ministry of Health, and (2) programmes that are carried out on an institutional basis.

Background Information

The Traditional Health Practitioner Association

The traditional healers created a national association of traditional healers following decree N°221/02/MI/SPAT/ANTA/ as of 3rd June 2002. Two meetings have been held between doctors and traditional healers, attempting to bridge the divide between conventional and traditional medicine.

Institutes involved in medicinal plant research and production in Madagascar

Institut Malgache de Recherches Appliquées (MIRA)

The Institut Malgache de Recherches Appliquées (IMRA) was created in 1958 by Professor Albert Rakoto-Ratsimamanga, former Research Director at the Centre National de Recherche Scientifique, and pioneer of the scientific re-search in Madagascar. At its inception, *IMRA* was a non-governmental organization, but since 1993 it has been granted status as a Foundation following a government decree. IMRA is by far the best equipped centre in Madagascar for biodiversity conservation and drug discovery from natural products, and has a strong network of collaborations with western institutes. IMRA is a good example on how scientific research could be integrated with health care, conservation, and production. At this point, it has three departments:

1. Department of Research with two areas of activities: (i) discovery of biomolecules in the areas of malaria, cancer, diabetes, immunomodulation, cardiovascular and respiratory diseases, and (ii) analytical analysis. IMRA has a fully equipped section to carry on the biological screening.
2. Department of Production and Export which produces nearly 40 plant-based drugs, nutraceuticals, and cosme-

tics for local uses at affordable prices, and exports *Centella asiatica*, *Drosera ramantacea*, other medicinal plants, and essential oils for commercial purpose. This latter activity is an important source of income for the Institute.

3. Department of Clinics with nearly 30 medical consultations per day. Patients may be treated either with phytomedicines or conventional drugs, or both.

One relevant achievement of IMRA has been the computerized compilation of all ethnomedical uses of Madagascar plants. More than 6000 plants have been recorded with all detailed information. IMRA is also involved in training activities at different levels.

Centre National d'Application de Recherches Pharmaceutiques (CNARP)

The Centre National d'Application de Recherches Pharmaceutiques is a state institution which was created by the First Republic. The inaugural opening ceremony was held in May 1972, but the Centre started functioning in 1977.

The Centre has five departments, reflecting the multidisciplinary and complementarities of the work in medicinal plant research and development:

- Department of Botany/Ethnobotany
- Department of Chemistry
- Department of Pharmacology
- Department of Galenical Pharmacy
- Department of Clinics.

HOMEOPHARMA

HOMEOPHARMA is a private company which was created in 1992 by Dr. Jean Claude Ratsimivony. The areas of activities are homeopathy, phytotherapy, and aromatherapy.

HOMEOPHARMA has a range of products for local uses, namely:

- Homeopathic products
- Essential oils
- Phytomedicines
- Nutraceuticals
- Plant-based soaps
- Anti-insect candle jar
- Creams for massage

Orinasa Fanamboarana Fanafody (OFAFA)

OFAFA is a semi-public institution devoted to the production of bulk imported drugs. It was created in 1981 following an official agreement between the Chinese and the Malagasy Governments. Although it is not involved in production of phytomedicines, the current infrastructure may be adequately used to produce useful phytodrugs.

Programmes under the coordination of the Ministry of Health

In order to achieve the objectives of the national policy on traditional medicine, the strategy has seven parts:

1. To create a technico-legal commission charged with finalizing the texts which have previously been drawn up, and to elaborate new texts following the instructions of the National Policy on Health.
2. To facilitate the creation of traditional healers' associations in order
 - i. To serve as an internal reference system
 - ii. To provide a professional code of ethics with a view to rapidly discrediting charlatans, and
 - iii. To enable dialogue with modern medical practitioners.
3. To solicit the participation of all stakeholders in the elaboration and/or finalization of texts on biological resources, protection of traditional knowledge, and equitable sharing of benefits arising from the development of ethnomedical practices, in accordance with the Convention on Biological Diversity and the model law of the African Union.
4. To create a multidisciplinary scientific committee in charge of all that pertains to:
 - i. Research, training, and information on traditional medicine;
 - ii. Inventory and database building on ethnomedical practices and medicinal and food plants;
 - iii. Design, development, and production of phytomedicines and nutraceuticals; and
 - iv. Conservation and cultivation of medicinal plants.
5. To promote and facilitate the production of phytomedicines and nutraceuticals in appropriate state institutions and private companies.
6. Actively to involve local communities in programs to develop traditional medicine, using participative approaches, so that they are both participants and beneficiaries.
7. To create appropriate mechanisms for local communities to benefit from research results on the potential of their respective regions.

From this strategy, the National Advisory Committee identified three areas of intervention: (1) Malagasy Pharmacopoeia, (2) phytomedicine production, and (3) laws and regulations regarding the practice of traditional medicine.

Malagasy Pharmacopoeia

The objective of the programme is to select the 100 top priority species and to gather all available information. A multi-disciplinary committee composed of medical doctors, pharmacists, scientists, and traditional health practitioners

has been put in place to handle the work.

Plants were selected on the basis of the following criteria:

- Plants of potential or effective economic value;
- Plants for which the current phytochemical/biological investigations may lead to useful applications
- Plants with relevant ethnomedical data

The content of each monograph of the Malagasy Pharmacopoeia comprises:

- Validated botanical name
- Synonyms
- Vernacular names
- Botanical description at macroscopic and microscopic levels
- Geographical distribution and ecological status
- Data on phytochemistry, pharmacology and toxicology
- Identity tests
- Assays for constituents
- References. The expected outcomes are:
- Knowledge of 100 priority species which serves as a basis for the formulation of conservation and valorization programme within the frame of the sustainable uses of the biodiversity for the benefit of health and economy;
- Production of medicinal plants with a "pharmacopoeia label"; and
- Extraction of biomolecules with the perspectives of drug development.

The Malagasy Pharmacopoeia, in both hard copy and digital version, is expected to be completed within two years.

Phytomedicine production

The objective of this programme is the formulation of phytomedicines for local uses and export where appropriate. Basically, this programme is a follow-up of the Malagasy Pharmacopoeia.

Six diseases are targeted in the programme, namely: diarrhoea, malaria, asthma, diabetes, cardiovascular diseases, and AIDS.

A scientific committee was created to coordinate the overall programme. Interested stakeholders are kindly requested to submit a project that will be evaluated by an expert committee. The draft WHO/AFRO guidelines on research and methodology for evaluating the quality, safety, and efficacy of traditional medicines will be recommended for all participants. OFAFA, IMRA, and OFAFA will be in charge of the production of selected phytomedicines,

Laws and regulations of the practice of traditional medicine

A technico-legal committee was created to finalize all texts related to laws and regulations on the practice of traditional medicine. These include:

- Law relative to the production, control, and commercialization of improved traditional remedies in Madagascar;
- Law relative to the recognition of the practice of traditional medicine in Madagascar;
- Decree relative to the organization of the practice of traditional medicine in Madagascar; and
- Law relative to the access to the resources of the biological diversity in Madagascar.

Bioprospecting and drug discovery

Three Institutes are involved in bioprospecting in Madagascar:

- CNARP under the International Cooperative Biodiversity Group (ICBG) program, including Missouri Botanical Garden, Centre National de Recherche pour l'Environnement, Conservation International, NGO MATEZA, Virginia Polytechnic Institute, Bristol Myers Squibb, and Dow Agrosience as partners;
- IMRA collaborating with a pharmaceutical company; and
- Chemistry Laboratory of the Faculty of Sciences under a new ICBG program.

The African Traditional Medicine Day: newly identified programs

Madagascar celebrated the African Day of Traditional Medicine. It was attended by various stakeholders. Participants agreed on the following programmes:

- Evaluation of the efficacy and safety of relevant herbal preparations originating from traditional health practitioners; and
- Evaluation of the efficacy of bone setting.

Relevant results will be presented at the next celebration of the African Traditional Medicine Day.

Conclusions

Madagascar actively took part with Uganda and Ghana in the adoption of the Decade of Traditional Medicine in Africa during the OAU Summit held in Lusaka in July 2001, and participated in the 15th Meeting of the Inter-African Expert Committee on African Traditional Medicine and Medicinal plants in Arusha in January 2002 for the drafting of a decade plan of action.

The overall goal of the programs on traditional medicine in Madagascar is an improved conservation, management, and sustainable uses of Madagascan medicinal plants through a multi-sector partnership at national and regional levels, with the aim of integrating traditional and modern medicine in health care, drug discovery, and poverty alleviation. It is hoped that within the Decade of African Traditional Medicine, relevant achievements will be made by Madagascar through the strong commitment of the Ministry of Health and Family Planning.

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