



PROMOTING AFRICAN MEDICINAL PLANTS THROUGH AN AFRICAN HERBAL PHARMACOPOEIA

Ameenah Gurib-Fakim¹
Ossy MJ Kasilo²

1 University of Mauritius, Reduit,
Mauritius

2 World Health Organization, Regional
Office for Africa

Corresponding author
Ameenah Garib-Fakim
E-mail fakima@uom.ac.mu

Various resolutions adopted by the World Health Assembly and Regional Committee for Africa call upon Member States, among others things, to develop herbal pharmacopoeias and to develop and apply scientific criteria and methods for proof of safety and efficacy of medicinal plant products. However, only few countries have developed national herbal pharmacopoeias; limited plant species that provide medicinal herbs have been scientifically evaluated for their possible medical applications; and the safety and efficacy data are available for even fewer herbs. Without well documented information on the safety, efficacy and phytochemical characteristics of different compounds, it is difficult for external buyers to assess the likely utility or value of some new raw materials and extracts of African origin. In order to address these lacunae, the Association of African Medicinal Plants Standards is developing an African Herbal Pharmacopeia with trading standards which provide information and technical data on some 50 important medicinal plants. The objective of developing the monographs is to ensure that these plants become visible on the world market. The monographs lay emphasis on the quality control issues, dosage, use, efficacy, pharmacology and safety of important African medicinal plants.

RÉSUMÉ

Plusieurs résolutions adoptées par l'Assemblée mondiale de la Santé et le Comité régional pour l'Afrique demandent aux États membres de développer, entre autres, des pharmacopées à base de plantes, d'élaborer et d'appliquer des critères scientifiques et des méthodes pour prouver la sécurité et l'efficacité des produits à base de plantes médicinales. Cependant, seuls quelques pays ont élaboré des pharmacopées nationales à base de plantes. Ils ont limité les espèces végétales fournissant des plantes médicinales scientifiquement testées pour leurs éventuels usages médicaux. Les données relatives à leur sécurité et à leur efficacité sont disponibles pour un nombre de plantes médicinales encore plus faible. Sans informations bien documentées sur la sécurité, l'efficacité et les caractéristiques phyto-chimiques des différents composés,

il est difficile pour les acheteurs externes d'évaluer l'utilité probable ou la valeur de certaines nouvelles matières premières et certains extraits d'origine africaine. Afin de remédier à ces lacunes, l'Association des normes sur les plantes médicinales d'Afrique est en train d'élaborer une pharmacopée africaine à base de plantes comprenant des normes commerciales qui fournissent des informations et des données techniques sur une cinquantaine de plantes médicinales importantes. L'objectif visant à développer des monographies permet de s'assurer que ces plantes deviennent visibles sur le marché mondial. Les monographies mettent l'accent sur les questions de contrôle de qualité, de posologie, d'utilisation, d'efficacité, de pharmacologie et de sécurité des plantes médicinales importantes d'Afrique.

SUMÁRIO

Várias resoluções adoptadas pela Assembleia Mundial de Saúde e pelo Comité Regional para África solicitam aos Estados-Membros, entre outras coisas, o desenvolvimento de farmacopeias ervanárias e o desenvolvimento e aplicação de critérios e métodos científicos para garantia da segurança e eficácia dos produtos de plantas medicinais. Contudo, apenas alguns países desenvolveram farmacopeias ervanárias nacionais; um número limitado de espécies de plantas que fornecem ervas medicinais foi avaliado cientificamente relativamente às suas possíveis aplicações médicas; e os dados de segurança e eficácia ainda só estão disponíveis para um número reduzido de ervas. Sem informação bem documentada sobre segurança, eficácia e características fitoquímicas dos diferentes compostos, é

difícil aos compradores externos avaliar a provável utilidade ou valor de algumas das novas matérias-primas e extractos de origem africana. De modo a fazer face a estas lacunas, a Associação de Normalização de Plantas Medicinais Africanas está a desenvolver uma Farmacopeia Ervanária Africana com normas de comercialização que proporcionam informações e dados técnicos sobre cerca de 50 plantas medicinais importantes. O objectivo do desenvolvimento de monografias consiste em assegurar que estas plantas se tornem visíveis no mercado mundial. As monografias colocam ênfase nos aspectos de controlo de qualidade, dosagem, aplicação, eficácia, farmacologia e segurança de plantas medicinais africanas mais importantes.

Medicinal plants and plant-derived medicines are widely used in traditional cultures all over the world and they are becoming increasingly popular in modern society as natural alternatives to synthetic chemicals. Many cultures throughout the world still rely on indigenous medicinal plants for their primary health care needs (1).

The importance of medicinal plants in the health care systems in many developing countries has been underscored by various resolutions of the World Health Assembly and WHO Regional Committees. For example, Resolution WHA31.33 on Medicinal plants of 1978 (2) requested WHO to coordinate the efforts of Member States to, among other things, develop and apply scientific criteria and methods for proof of safety and efficacy of medicinal plant products, especially galenicals; international standards and specifications for identity, purity and strength of and to develop methods for the safe and effective use of medicinal plant products, especially galenicals, including labelling containing adequate directions for use, and criteria for use or prescription by various levels of health workers.

Resolution WHA41.19 of 1988 on Traditional medicine and medicinal plants (3) urged Member States to examine the situation with regard to their indigenous medicinal plants; and to take effective measures to ensure their conservation

and encourage their sustainable utilization. That resolution requested WHO to promote inter-country meetings for the dissemination of knowledge and the exchange of experience on the subject; and to collaborate with Member States in the design and implementation of programs for the conservation and sustainable utilization of medicinal plants.

Similarly, resolution AFR/RC50/R5 of 1999 on Essential drugs in the WHO African Region situation and trends analysis (4) requested WHO to support Member States in carrying out research on medicinal plants and promoting their use in the health care delivery systems; while resolution AFR/RC5//R3 of 2000 on Promoting the role of traditional medicine in health systems: A Strategy for the African Region (5) urged Member States to actively promote, in collaboration with all other partners, the conservation of medicinal plants and requested WHO to strengthen WHO Collaborating Centres and other research institutions to carry out research and develop monographs of medicinal plants and disseminate results on safety and efficacy of traditional medicines.

In implementing these policy orientations, some countries, such as Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Guinea, Madagascar, Mali, Mauritius, Nigeria, Senegal, Seychelles and South Africa, have developed monographs of medicinal plants. Similarly, Benin, Cameroon, Chad, Cote d'Ivoire have developed inventories of medicinal plants and documented traditional recipes used for the treatment of malaria and hypertension (Chad), opportunistic infections for people living with HIV/AIDS (PLWA), sickle-cell diseases, diabetes and hypertension (Cameroon and Nigeria). WHO has also developed monographs on some medicinal plants commonly used in developed and developing countries to support WHO Member States in their efforts in this regard (6). Apart from Ghana (7), and Nigeria (9), which have published national herbal pharmacopoeias most countries have not published their work, hence cannot be easily accessed. Other countries have been conducting research on traditional medicines used for the treatment of priority diseases and some of the promising results have been reported in the articles on the overviews of traditional medicine in countries of the African Region and ECOWAS Member States published in this issue.

To date 25% of modern medicines are derived from plants that

have been used by traditional medical practitioners (9). Among the most famous ones are: Taxol (anticancer drug derived from the Yew Tree (*Taxus* sp.) and two anti-leukaemia drugs extracted from the Madagascan Periwinkle (*Catharanthus roseus*). It is a fact that traditional systems of medicine have become a topic of global importance. Although modern medicine may be available in many developed countries, people are still turning to alternative or complementary therapies including medicinal herbs.

Yet, few plant species that provide medicinal herbs have been scientifically evaluated for their possible medical applications. The safety and efficacy data are available for even fewer herbs, their extracts and active ingredients and the preparation containing them. Furthermore, in many countries, the herbal medicines market is poorly regulated and herbal products are often neither registered nor controlled. Assurance of safety, quality and efficacy of medicinal plants and herbal products has now become a key issue in industrialised and developing countries. Recognising the efficacy of herbal remedies, both the general consumer and health care professionals need up to date, authoritative information on the safety and efficacy of medicinal plants.

Tropical and subtropical Africa contains between 40-45.000 species of plant with a potential for development and out of which 5.000 species are used medicinally. It must be emphasized also that the continent already contributes nearly 25% of the world trade in biodiversity. Still there is a paradox: in spite of this huge potential and diversity, the African continent has only contributed 83 of the 1100 blockbuster drugs globally (10).

This may be explained by addressing the constraints that are hampering this industry. It is now being recognized that one of these constraints is the lack of suitable technical specifications and quality control standards for African medicinal plants and extracts. This makes it extremely difficult for buyers whether local or overseas to compare batches of product from different places or from year to year. Lack of trading standards also implies that Good Agricultural and Collecting Practices (11), traceability, and Good Manufacturing Practices (12) are not adhered to. This is in marked contrast with countries in other WHO regions such as China in the West Pacific Region and India in the South East Asia Region where traditional formulations have not only been recorded but are evaluated both at the local and national level and used in their health centres. China, for example,

is able to provide adequate and constantly improving health care coverage for its vast urban and rural population precisely because it harnesses the precious legacy of traditional medicine (13). Consequently, the inability of most countries in WHO African Region to develop their own legacy of traditional medicine, because it is denied official recognition, is partly responsible for the current health care crisis in the Region specifically and the African continent generally.

The pharmaceutical industry has come to consider traditional medicine as a source for identification of bioactive agents that can be used as leads in the preparation of synthetic medicine. However, they are not looking to study the rare plant species; they want to test the most commonly-used species. The valuable medicinal plants are those with the longest track record in the most locations. Many of the more pharmacologically (commercially) interesting medicinal plant species in use around the world are employed in more than one community, and often in more than one country (e.g., *Hoodia* found in Namibia and South Africa), for multiple uses.

The natural products industry in Europe and the United States of America is equally interested in traditional medicine. In Europe and in America where

the phytomedicine industry is thriving, extracts from medicinal plants are sold in a purified form for the treatment and prevention of all of diseases (13). Countries of WHO African countries are at a stage where traditional medicine is considered more for its capacity to generate other medicine than for its own sake. In many cases research undertakings and the commercial use stemming from that research have always relied on information provided by the local communities and in many instances, have hardly benefited from the research results (13,14).

Furthermore without well documented information on the safety, efficacy and phytochemical characteristics of different compounds, it is difficult for external buyers to assess the likely utility or value of some new raw materials and extracts of African origin. Consequently, the level of world trade in Indian and Chinese medicinal plants and extracts is far more extensive than those of the African Region and they occupy a big share of the European and American herbal drugs market.

Nonetheless, in recent years there has been an upsurge in research and development in African universities and research centres on new medicinal products and new medicinal crops. This can be shown in the rapid increase in the number of scientific publications and patents.

However, despite the fact that an estimated 10% of the plant species of the world is found in southern Africa, for example, only a few have been commercialized and the basic scientific information is often not available. Yet, this information is needed to guide the rapidly accelerating commercialization process, especially the selection of superior varieties and the standardization of raw materials (15).

In order to address these lacunas, an African Herbal Pharmacopoeia (AfHP) with trading standards is currently being prepared. This will help not only the potential buyer from Europe or the USA but also the farmer and the seller from countries in WHO African Region and beyond. The AfHP is being prepared by the Association of African Medicinal Plants Standards (AAMPS: <http://www.aamps.org>) (16) and has been funded by the Centre for Development and Enterprise (CDE) of and ProInvest (Brussels). These monographs provide information and technical data on some 50 important medicinal plants including the Madagascan Periwinkle (*Catharanthus roseus*) to the South African Buchu (*Agathosma betulina*) and Pelargonium (*Pelargonium sidoides*), the Namibian Hoodia Cactus (*Hoodia gordonii*) among others. These monographs (see photo showing Pelargonium

sidoides on page 64), whose prime objective is to ensure that these plants become visible on the world market, also lay emphasis on the quality control issues, dosage, use, efficacy, pharmacology and safety of important African medicinal plants. This publication is slated for issuance in August 2010. 📄

REFERENCES

- 1 Farnsworth N, Akerele AO, Bingel AS, Soejarto DD, Guo Z (1985). Bull. WHO, 63, 965-981.
- 2 Resolution WHA31.33 on Medicinal plants. The Thirty-first World Health Assembly,
- 3 Resolution WHA41.19 on Traditional medicine and medicinal plants. The Forty-First World Health Assembly, Geneva, 2-13 May 1988.
- 4 World Health Organization (2000) Essential Drugs in the WHO African Region: Situation and Trend Analysis. Final Report of the WHO Regional Committee for Africa, Windhoek, Namibia, 1999. (Document reference, AFR/RC49/R5).
- 5 World Health Organization (2001) Resolution Promoting the Role of Traditional Medicine in Health Systems: A Strategy for African Countries. World Health Organization. Regional Office for Africa, (Document reference AFR/RC50/R3).
- 6 World Health Organization (1999/2002). WHO Monographs on selected medicinal plants. Volume 1&2. World Health Organization, Geneva.
- 7 The Government of Ghana. The Second Edition of the Ghanaian Herbal Pharmacopoeia, 2007.
- 8 The Government of Nigeria. The First Edition of the Nigerian Herbal Pharmacopoeia, 2008.
- 9 Cragg G, Newmann DJ (2005). Biodiversity: A continuing source of novel drug leads. Pure and Appl. Chem., 77, 7-24.
- 10 van Wyk, B-E (2008). A broad review of commercially important southern African medicinal plants. J. Ethnopharmacol., 119, 342-355.
- 11 World Health Organization (2003). Guidelines on good agricultural and collection practices (GACP) for Medicinal Plants. WHO, Geneva (Document reference, WHO/EDM/TRM/2003).
- 12 World Health Organization (2007). WHO Guidelines on Good Manufacturing Practices (GMP) for herbal medicines <http://apps.who.int/medicinedocs/documents/s14215e/s14215e.pdf> (accessed 30/8/10) ISBN 9789241547161.
- 13 Rukangira (2004) Overview on Medicinal Plants and Traditional Medicine in Africa.
- 14 McGowan, J 2006. Out of Africa: Mysteries of Access and Benefit Sharing <http://www.edmonds-institute.org/outofafrica.pdf> (accessed 30/8/10). Edmonds Institute and African Centre for Biosafety
- 15 Eloff JN (1998). Which extractant should be used for the screening and isolation of antimicrobial components from plants? J. Ethnopharmacol., 60, 1-8
- 16 Association of African Medicinal Plants Standards (AAMPS) available at: <http://www.aamps.org> (accessed on 15 May 2010).