

Chapter 7

Herbal Medicine in Chronic Diseases

Treatment: Determinants, Benefits and Risks



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Abstract Phytotherapy as a branch of traditional medicine is one of the most popular remedies in developing countries. Many pharmacological studies have shown the effective effects of some plants in curing or preventing some diseases, such as diabetes and high blood pressure. Herbal medicine is appreciated for several reasons related to the region. In Morocco, it is adopted by a large segment of the population, dominated by women, illiterates and rural residents who are geographically isolated and where poverty is more pronounced. In the absence of political commitment, inappropriate use of plants can lead to serious or even fatal adverse reactions. Efforts have to be made to regulate the sale of these products, qualify service providers and raise consumer awareness.

7.1 Introduction

Used since ancient times, traditional practices treatment for some diseases are receiving increasing attention in the context of care health provision and health sector reform. Authorities, healthcare professionals and general population are struggling to ensure safety, effectiveness, quality, availability, preservation and future development of this type of health care [34].

According to the World Health Organization (WHO), traditional medicine (MT) is defined as “*the sum of all knowledge, skills and practices based on the theories, beliefs and experiences of different cultures, whether or not they are explicable, and which are used in the preservation of health, as well as in the prevention, diagnosis,*

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improvement or treatment of physical or mental illnesses” [35]. It integrates, as a result, both drug therapies involving the use of herbal medicines, parts of animals and/or minerals and non-drug therapies such as Chinese acupuncture, manual or spiritual therapies [34].

The practice of traditional medicine can vary greatly between countries or regions. It is influenced by factors such as culture, history and attitudes. It is widespread in developing countries and it's called complementary or alternative medicine (MC) in developed countries where the care system is based mainly on allopathy.

Among the different traditional practices and beliefs, WHO recalls that herbal medicine remains the most popular. This is common in many countries, particularly in Africa, Asia and America [5].

In Africa, more than 80% of people use traditional medicines and pharmacopoeias to deal with health problems. It is practiced in order to maintain a good health, to prevent or treat diseases, especially chronic ones [3, 15, 20, 24, 35]. The failure of conventional pharmaceutical treatments, the high incidence of adverse effects associated with them caused by their association, their high cost and sometimes the insufficiently health infrastructures, particularly in developing countries, have an impact on a large part of the population worldwide to use traditional or complementary medicines [1].

Thanks to its rich culture and diverse flora, Morocco is one of the Mediterranean countries with a long medical tradition and know-how based on medicinal plants. It has a large area of wild aromatic and medicinal plants (PAM) which amounts to 311 862 ha [22]. These plants take part in the national economy. The annual average revenue of the PAM sales is 5.3 million dirhams for an annual quantity of 33,000 tons. WFPs also provide alternative income to local communities and generate in average some 500,000 working days/year [23].

7.2 Herbal Medicine in the Treatment of Chronic Diseases

Several ethnobotanical studies carried out throughout the kingdom of Morocco stress on the importance of herbal medicine in the Moroccan population. The rate of medicinal plants utilization for the treatment of chronic diseases in general and diabetes in particular (Figs. 7.1 and 7.2) is significant. Similar results are observed in neighboring countries, including Algeria and sub-Saharan Africa [5, 13, 16, 19, 21, 25, 26, 37, 40].

Tafilalt region (south-east of Morocco) seems to be an excellence pole for the practice of phytotherapy. Empirical knowledge has been transmitted verbally over generations and has been enriched by a strategic geographical location between North Africa, the Sahara and the Sahel, as well as historical events and miscegenation of Amazigh, Jewish and Saharan civilizations and Arab-Muslim [7].

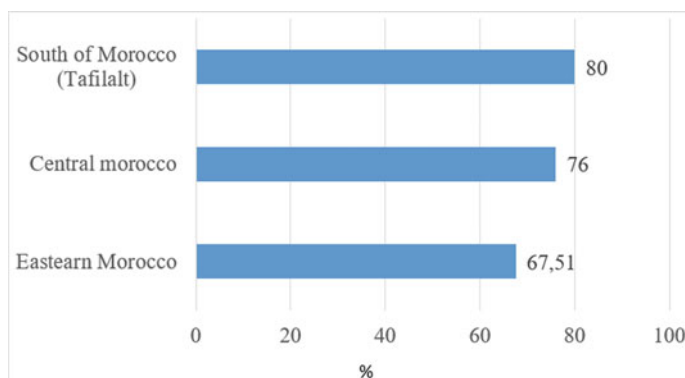


Fig. 7.1 Use of medicinal plants for chronic diseases

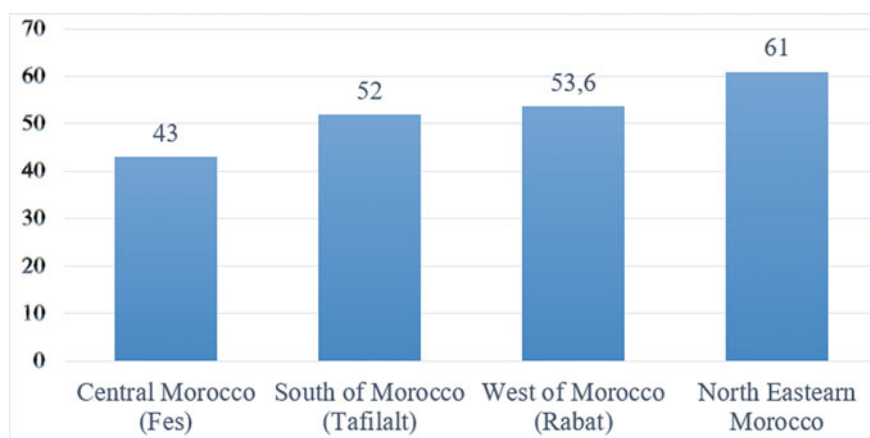


Fig. 7.2 Use of medicinal plants by diabetics

However, according to the latest national survey on common risks of non-communicable diseases [30], the role of traditional medicine in the treatment of chronic diseases is not well demonstrated. The results show that only 3.4% of hypertensive people has already consulted a traditional healer to treat their HTA and 5.3% use traditional medicine without significant difference between the two sexes or between urban and rural areas. Similar values are recorded for diabetics, with values of 5% and 4.9% respectively for those who have ever visited a healer and those who are on traditional therapy. At this level, significant gender and area of residence differences are seen. Women use more traditional remedies and rural citizens are more likely to consult healers (Fig. 7.3).

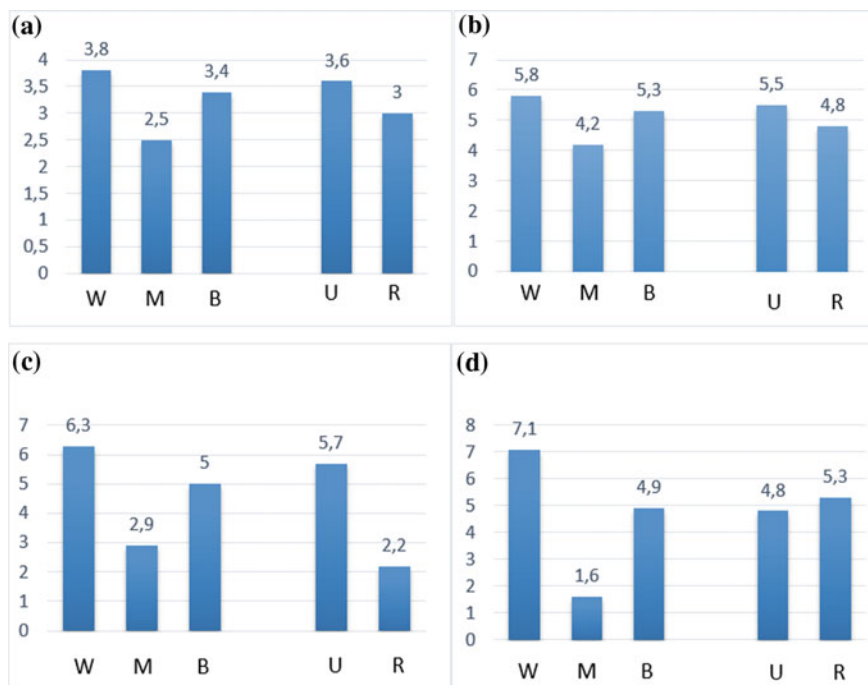


Fig. 7.3 Hypertensive who have already visited a healer (a), hypertensive who use traditional medicine (b), diabetics who have already visited a healer (c) and diabetics who use traditional medicine (d). W: women, M: Men, B: Both, U: Urban, R: Rural

7.3 Demographic and Socio-economic Characteristics of Medicinal Plants Users

Although the data provided by the different surveys are not always ready to be compared and unclear for some parameters, some facts need to be highlighted. Indeed, the majority of ethnobotanical and ethnopharmacological studies undertaken throughout the kingdom show that herbal medicine is adopted by the entire population, regardless of age and level of education, with higher rates of use from adult and illiterate people [9, 13, 18, 26, 27, 37, 40]. According to the same sources, women seem to be more concerned with the use of medicinal plants (Fig. 7.4). This female predisposition, with is also confirmed by the recent Ministry of Health survey [20] can be explained by the fact that women make better use of medicinal properties to relieve the pain of their children and preserve the health of their families trying to avoid heavy material loads, sometimes required by the doctor and the pharmacist [8, 10, 25, 27, 32, 36, 37, 40].

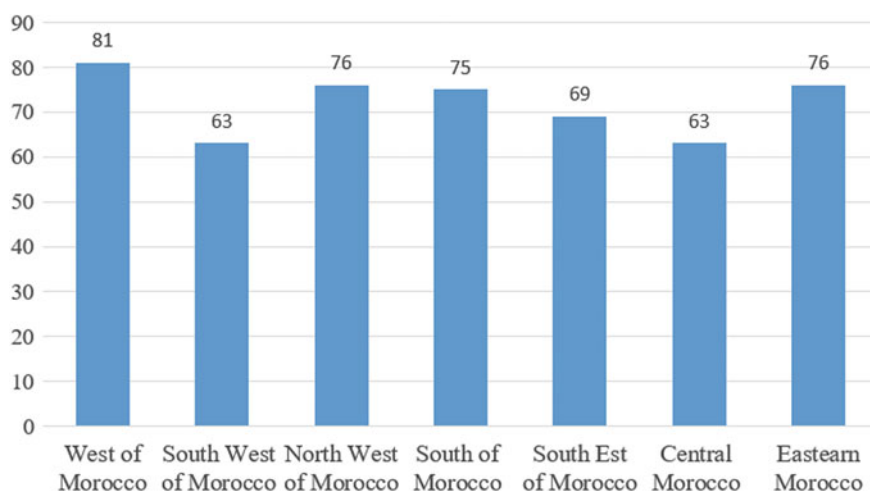


Fig. 7.4 Women's use of medicinal plants

7.4 Reasons Behind Herbal Medicine's Adoption

For several reasons which often associated, herbal medicine is adopted as alternative or complementary medicine to drug treatment. Actually, access to health is open to the entire Moroccan population and even more poorest one, to whom the state provides free primary care. However, geographical isolation areas, limited mean of transport, of healthcare infrastructures and human resources are against the satisfaction of health needs [6]. The case of Tafilalt region (South–East of Morocco) is a good example. Apart from culture and tradition, this region dominated by rural municipalities 109 against 16 urban has the highest poverty rate in the country 21.2% against 8.9% nationally, a negative gap of 12.3 points [31]. The ratios of inhabitants per doctor and per nurse remain relatively high compared to national averages (Table 7.1).

World Health Organization considers that it's unlikely that countries with less than 23 health professionals (doctors, nurses and midwives) per 10,000 population will achieve adequate coverage rates for primary health care interventions [33]. It is therefore obvious that the population of such a region is looking for other care

Table 7.1 Doctors and Nurses resource in the Draâ-Tafilalt Region [29]

	Draâ Tafilalt region	National average
Inhabitants/general doctor	9951	7326
Inhabitants/specialist doctor	8887	3838
Inhabitants/nurse	1158	1091

alternatives especially herbal medicine which is easily accessible and widely rooted in its traditions.

In addition, chronic diseases require to follow a set of mandatory requirements to avoid daily discomfort and resulting complications. Oral antidiabetic drugs, for example, are effective in reducing blood glucose, but are often unable to maintain glucose levels around normal values. In such situation, some patients are sensitive to any cure or remission hope and can easily adopt the herbal medicine [17]. It is also pointed out that the seniority of diabetes is a favoring factor to search for other treatment alternatives, especially herbal medicine [36] of which effectiveness has been appreciated by the majority of its users [2, 21, 25, 26].

7.5 Pharmacological Properties of Medicinal Plants: Case of Antidiabetic Plants

There are about 500,000 species of plants on earth of which 80,000 have medicinal properties and more than 1,200 are inventoried as antidiabetics and are used for their hypoglycemic and antihyperglycemic properties [4, 28]. Some species are considered as a source of the development of antidiabetic medicines. It is the case of metformin which owes its discovery to *Galega officinalis*. The main popular in Morocco are presented in Table 7.2.

In fact, Plants accumulate secondary metabolites which represent an important source of molecules usable by man in particular in pharmacological field [11]. Most of them are promising, but only a small number has been subject of experimental studies and their actions are highlighted [19].

Table 7.2 List of some most used antidiabetic plants in Morocco [11]

Scientific names	Vernacular arabic names
<i>Trigonella foenum-graecum</i>	Halba
<i>Artemisia herba-alba</i>	Chih
<i>Citrullus colocynthis</i>	Hanlel
<i>Olea europaea</i>	Zitoun
<i>Salvia officinalis</i>	Salmiya
<i>Coriandrum sativum</i>	Lkosbr
<i>Nerium oleander</i>	Defla
<i>Marrubium vulgare</i>	Merriwa
<i>Allium sativum</i>	Toum
<i>Prunus amygdalus</i>	Louz lmar
<i>Ziziphus lotus</i>	Nbag
<i>Urtica dioica</i>	Lhariga

Table 7.3 List of some plants with multiple activities

Activity	Plants	References
Antidiabetic and Hypolipidemic	<i>Capparis spinosa</i>	[14]
	<i>Calamintha officinalis</i> <i>Artemisia herba alba</i>	[12]
	<i>Rosmarinus officinalis</i> , <i>Ajuga iva</i>	
	<i>Trigonella foenum-graecum</i>	
Antidiabetic and Hypotensive	<i>Olea europaea</i> , <i>Salvia officinalis</i>	
	<i>Lavandula dentata</i> , <i>Origanum compactum</i>	
	<i>Pistacia lentiscus</i> , <i>Tetraclinis articulata</i>	
	<i>Nigella sativa</i> , <i>Arbutus unedo</i>	
	<i>Eugenia caryophyllata</i> , <i>Centaurium Erythraea</i>	

Several active ingredients have the ability to generate a hypoglycemic action whose mechanism can be different according to the plants. Among the main constituents there are polysaccharides, peptides, alkaloids, glycopeptides, triterpenoids, amino acids, steroids, flavonoids, phenols, coumarins, inorganic ions and guanidine. Some of them are actually hypoglycemic and may have therapeutic potential, while others produce only hypoglycemia as a side effect of their toxicity, particularly liver toxicity [21]. As the case of conventional oral antidiabetic drugs, these molecules stimulate insulin secretion, increase insulin sensitivity, inhibit intestinal absorption of glucose or reduce its production by the liver. It is also stated that effect of a medicinal plant is never the result of a single substance, but rather an interaction of several molecules [10]. Therefore, an entire plant has properties superior to those of its constituents. The same plant can also be used to treat different diseases. This is the case of some species with antidiabetic, hypolipidemic and/or hypotensive activities (Table 7.3). These results should improve the use of medicinal plants and their total extracts in modern herbal medicine.

7.6 Risks Related to the Traditional Use of Plants

Traditional practices of plants that do not respect the rules of use often threatens the consumers quality of live. In Morocco sale of medicinal plants, authorization to exercise this profession and quality control of herbalist are not regulated. Majority of the providers (Herbalists, Aâtars, healers) are aged with a very low education level [3, 13, 16, 25, 26, 40]. In addition, the female trend combined with a high rate of illiteracy may be behind the strong ignorance of toxic potential plants [13, 26].

Interactions between plants and conventional drugs can also produce negative effects such as digestive disorders [21] or a decrease in the effectiveness of treatment that worsens the patient's state of health [39]. Unfortunately, some studies have shown

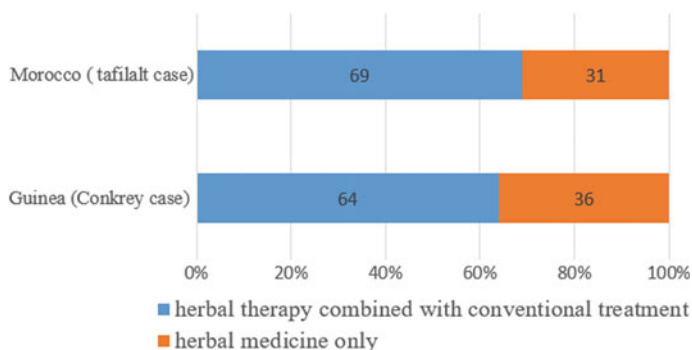


Fig. 7.5 Modes of use of antidiabetic plants

that a large proportion of patients associate herbal medicine with drug treatment [5, 16] (Fig. 7.5).

The problem is further aggravated by the uncontrolled spread of recipes of medicinal plants through social networks, radio... Botanically different species may have the same vernacular name and misuse of plants can be caused by false identification. In its report of 2017, the Moroccan anti-poison center (CAPM) indicates that deficiency of multisectorial involvement, existence of an informal sector, traditional use of treatments, lack of herbalists training or lack of control throughout the chain from production to sale constitute the causes of any intoxication. If doses are exceeded, use of plants can lead to serious intoxication, a risk of complications and even premature death. 197 cases of plant poisoning were recorded in 2017 [38], this number is undeniably inferior to reality.

7.7 Conclusion

Since the 2000s, herbal medicine has known a real expansion throughout the world. Thanks to extensive ethnobotanical and pharmacological research, several species are identified and recognized as having promising effects to cure or prevent certain diseases, including diabetes and hypertension.

In Morocco, the use of medicinal plants is linked to tradition, culture and/or individual needs. This therapy is adopted by a female-dominated population with illiterates and adults tendency. The geographical isolation associated with a high poverty rate also seems to be a determining factor for the practice and adoption of this therapy. In the absence of legislation on medicinal plants, the inappropriate use of plants by such a vulnerable population may lead to serious or even fatal adverse effects. Rigor is required and efforts has to be made to regulate sale of these products, qualify their service providers and raise public awareness of uncontrolled plant use

dangers. Accessible and easy to understand information is essential to guide the consumer in his choices.

At the same time, research evaluating the benefit/risk ratio of medicinal plants and clinical studies must be enhanced in order to take advantage of the different virtues of herbal medicine without fear of sometimes dangerous side effects. To this end, WHO encourages the intensification of scientific research and recommends the evaluation of the safety and efficacy of herbal medicines with a view to standardizing their use and integrating them into conventional care systems. It also requires better communication between providers MT/MC, allopath and patients and the provision of scientific information and advice to the general public [34]. In this way, traditional medicines with assured quality, safety and efficiency are proving to be involved in achieving the goal of giving access to care to all people [35].

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