

ETHNOBOTANICAL STUDY OF THERAPEUTIC PLANTS USED TO TREAT ARTERIAL HYPERTENSION IN THE HODNA REGION OF ALGERIA

SARI Madani^{1,2*}, SARRI Djamel³, HENDEL Noui⁴ and BOUDJELAL Amel⁵

^{1,3,4,5}Department of Natural Sciences and Life, Faculty of Science, M'sila University, 28000 M'sila (Algeria)

²Laboratory of Phytotherapy, Applied to Chronic Diseases, Faculty of Natural Sciences and Life, Ferhat Abbas University, 19000 Sétif (Algeria).

*Corresponding Author E-mail: Mad_sari@yahoo.fr

Received: 30/07/2012; Revised: 24/08/2012; Accepted: 29/08/2012

ABSTRACT

Ethnobotanical investigations were conducted from February 2006 to June 2010 in the Hodna region of Algeria to identify different medicinal plants used in the traditional local pharmacopoeia for the treatment of arterial hypertension. Information was collected through questionnaires and personal interviews (77 males and 8 female). Thirty-five species belonging to 21 families (with a dominance of especially *Lamiaceae* and *Asteraceae*) were encountered during the study. The modes of herbal drug preparation were decoction (48%) and infusion (25%). The most frequently used plant parts were the aerial parts (49%).

Keywords: Arterial hypertension (AHT), ethnobotanical uses, ethnomedicinal survey, medicinal plants.

Cite this article:

SARI Madani, SARRI Djamel, HENDEL Noui and BOUDJELAL Amel (2012), ETHNOBOTANICAL STUDY OF THERAPEUTIC PLANTS USED TO TREAT ARTERIAL HYPERTENSION IN THE HODNA REGION OF ALGERIA, *Global J Res. Med. Plants & Indigen. Med.*, Volume 1(9), 411–417

INTRODUCTION

Arterial hypertension (AHT) is a prevalence major chronic disease among the Algerian population. The high prevalence of AHT among Algerian adults is due to the fact that this disease represents a real public health problem (Temmar *et al.*, 2010). Several scientific studies, conducted both by the Ministry of Health and by academic researchers, to show that this condition affects nearly 35% of adults (Benkhedda *et al.*, 2004). Several endogenous and exogenous factors contribute to the increased incidence of AHT in Algerian society. These include new eating habits (including the excessive consumption of salty and sweet foods, settlement, social environment, genetics and stress (Benkhedda *et al.*, 2004). The goal of this study was to identify medicinal plants used in the treatment of AHT grown in the Hodna region.

MATERIAL AND METHODS

Study area

The Hodna region (M'sila), occupies a position in the central part of Northern Algeria (Figure 1). As a whole, it is part of the central highlands. It covers an area of 18,718 Km² and it is located at an altitude of approximately 500 m, situated between 35°42'07" N 4°32'49" E (Moreau *et al.*, 2005). The climate of the investigation area is continental, due in part to the Saharan influences. Summer is hot and dry while winter is very cold, with low and irregular rainfall in the order of 100–250 mm/year (Le Houerou, 1995). Its geographical position gives this region a unified ecological aspect represented by the predominance of the steppe, which covers 1.2 million hectare (63% of the total area) of the state. The areas used for agriculture accounts 20% of the total area devoted mainly to cereals, arboriculture and market gardening (FAO, 1966).

Figure 1: Location map of the study area (sitesatlas.com)



Ethnobotanical survey

The aimed survey was conducted from February 2006 June 2010 in the Hodna region of Algeria. The plants were collected, dried and

preserved for identification. They were identified using flora of Maire 1952–1987, Quezel and Santa, 1962–1963, Ozenda, 1983 and Babba Aïssa, 1999; verified, characterized and confirmed by professional botanists of the

department. Voucher specimens were deposited in the Herbarium of the department. All investigations described the information about (Figure 2): date, research area (district/village), informants (name/age/sex/educational level), scientific name of plant, local name of plant, part of the plant used, usage purpose of the

plant, dosage, how to use it (decoction, infusion, etc.), usage period of the plant and side effects of the plant. Information regarding the medicinal uses of the plants was obtained from local people through questionnaires (Figure 3).

Figure 2: Questionnaire card of survey

QUESTIONNAIRE CARD N°
SECTION A

Date	Area	Sexe		Age	Educational level					Informants		
		M	W		Illiterate	Primary	Intermediary	Secondary	Academic	Herbalist	Healer	Villager
...	M	W	.....	Illiterate	Primary	Intermediary	Secondary	Academic	Herbalist	Healer	Villager
...

SECTION B

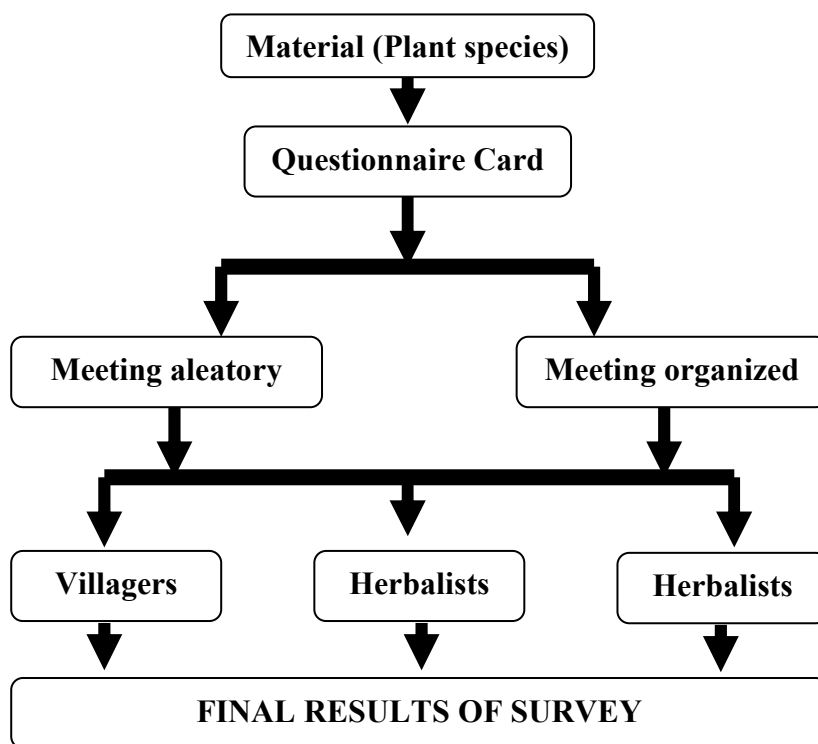
		Botanical name	Scientific name	Names : Arab / Amazigh / Targui or other					
						
Utilization (Type of disease) <i>NB : No recipes</i>		..... ..... ..... .....						
Mode of use	Infusion	Decoction	Fumigation	Maceration	Powder	Cream	Bath	Plaster	Other

Part (s) used (es)	Root	Leaf	Fruit	Flower	Seed	Flowering tops	Aerial parts.	Plant Whole	Other

SECTION C

		Botanical name	Common name	Names : Arab / Amazigh / Targui or other
Plants associated	
Utilization (Type of disease) <i>NB : Recipes (mode, period, amount, nature....)</i>			

Figure 3: Methodological approach of the survey



RESULTS AND DISCUSSION

During the survey, a total of 35 different species of medicinal plant belonging to 21 families and 28 genera were reported to be used for treating AHT disease (Table 1). In terms of number of medicinal plants, the family

Lamiaceae was the highest with 9 species followed by *Asteraceae* with 5 species. A total of 85 personal interviews, comprising of 77 men and 8 women appeared in the present study (Table 2). The age of the informants ranged from 22–92 with an average of 35.20 years for men and 50.54 years for women.

Table 1: Plants traditionally used to treat Arterial Hypertension in the Hodna region of Algeria

Scientific name / Family name	Local (Vernacular) Name	Part used / use citations	Preparation
<i>Ajuga iva</i> (L.) Schreb. (Lamiaceae)	Chendgoura	Aerial parts (10)	Infusion – decoction
<i>Allium sativum</i> L. (Liliaceae)	Thoum	Fruits (2)	Maceration
<i>Aloysia triphylla</i> (L'Hér.) Britton (Verbenaceae)	Vervene	Aerial parts (1)	Decoction
<i>Ampelodesma mauritanicum</i> (Poiret) Dur. and Sch. (Poaceae)	Diss	Aerial parts (1)	Decoction
<i>Arbutus unedo</i> L. (Ericaceae)	Landj	Leaves (1)	Decoction
<i>Aristolochia glauca</i> Desf. (Aristolochiaceae)	Beroustoum	Roots (1)	Powder
<i>Artemisia herba alba</i> Asso. (Asteraceae)	Chih	Aerial parts (3)	Infusion - decoction – maceration
<i>Artemisia absinthium</i> L. (Asteraceae)	Chadjaret meriem	Aerial parts (2)	Infusion

Table 1 (Continued...)

Scientific name / Family name	Local (Vernacular) Name	Part used / use citations	Preparation
<i>Artemisia campestris</i> L. (Asteraceae)	Tgoufet	Aerial parts (3)	Decoction
<i>Citrullus colocynthis</i> (L.) Schrad. (Cucurbitaceae)	Elhadj	Fruits (1)	Bath
<i>Crataegus oxyacantha</i> L. (Rosaceae)	Zaarour	Fruits- leaves (7)	Decoction
<i>Cynara scolymis</i> L. (Asteraceae)	Khorchef	Aerial parts (2)	Decoction
<i>Ecballium elaterium</i> Rich. (Cucurbitaceae)	Fegous el hamir	Fruits (1)	Fumigation
<i>Globularia alypum</i> L. (Globulariaceae)	Tesselgha	Aerial parts (3)	Decoction
<i>Inula viscosa</i> (L.) Ait. (Asteraceae)	Megramène	Aerial parts (2)	Decoction
<i>Juniperus phoenicea</i> L. (Cupressaceae)	Araar	Leaves (1)	Decoction – powder
<i>Laurus nobilis</i> L. (Lauraceae)	Rand	Leaves (10)	Infusion- decoction
<i>Marrubium vulgare</i> L. (Lamiaceae)	Meriouet	Leaves (3)	Infusion - decoction – maceration
<i>Mentha spicata</i> L. em. Huds. (Lamiaceae)	Naanaa	Flowers (5)	Infusion – decoction
<i>Morus nigra</i> L. (Moraceae)	Etoute	Leaves (2)	Infusion-decoction
<i>Myrtus communis</i> L. (Myrtaceae)	Rayhane	Leaves (1)	Infusion
<i>Ocimum basilicum</i> L. (Lamiaceae)	Habek	Aerial parts (2)	Decoction
<i>Olea laperrini</i> B. and T. (Oleaceae)	Ezeboudj	Leaves (6)	Decoction
<i>Olea europaea</i> L. (Oleaceae)	Zitoune	Leaves (4)	Decoction
<i>Origanum glandulosum</i> Desf. (Lamiaceae)	Zaater	Aerial parts (1)	Decoction
<i>Origanum majorana</i> L. (Lamiaceae)	Bardkouche	Flowers (1)	Decoction
<i>Peganum harmala</i> L. (Zygophyllaceae)	Harmel	Seeds(1)	Uction – powder
<i>Pinus halepensis</i> L. (Pinaceae)	Esenouber	Fruit (1)	Infusion
<i>Pistacia lentiscus</i> L. (Anacardiaceae)	Dharou	Aerial parts (1)	Decoction
<i>Quercus ilex</i> L. (Fagaceae)	Balout	Leaves – roots (1)	Decoction – powder
<i>Rosmarinus officinalis</i> L. (Lamiaceae)	Eklil el djabel	Aerial parts (6)	Infusion – decoction
<i>Ruta chalepensis</i> L. (Rutaceae)	Fidjel	Leaves (9)	Infusion- decoction – powder
<i>Ruta montana</i> L. (Rutaceae)	Feliou	Aerial parts (1)	Infusion – decoction
<i>Salvia officinalis</i> L. (Lamiaceae)	Souak enebi	Aerial parts (5)	Infusion – decoction
<i>Thymus ciliatus</i> (Desf.) Benth. (Lamiaceae)	Djertil	Aerial parts (10)	Infusion – decoction

Table 2 : Percentages of respondents in Hodna region according to their age group

Age group (Years)	Number of respondents		Percentage of respondents	
	Men	Women	Men	Women
Youths (20–40)	60	5	70.59%	5.88%
Adults (41–60)	14	2	16.47%	2.35%
Elderly (61–above)	3	1	3.53%	1.18%

Different plant parts (both underground and above ground) such as leaf, root, flowers, fruits and whole plant were determined to be used to treat AHT. The plant parts most commonly used were the aerial parts (49%), leaves (18.37%) and flowers (12.24%). The local people employed a variety of methods including decoction or infusion to prepare remedies for treating different diseases. Decoction and infusion were the predominant methods of preparation. The most frequently used form of preparations were decoction (48%) followed by infusion (25%) and others (23%).

CONCLUSION

In conclusion, this area was the subject of several studies into the valorization of traditional pharmacopoeia (Sari *et al.*, 2011, Sari *et al.* 2012, Hendel *et al.*, 2012) and this study was an addition to previous studies. Thus, the present work was undertaken in order

REFERENCES

- Babba Aïssa F. (1999) Encyclopedia useful plants. Flora of Algeria and the Maghreb. Vegetable substances from Africa, East and the West. Modern Library Rouiba, EDAS, Algiers, Algeria.
- Benkhedda S., Chibane H., Temmar M, Ziari D. (2004) Hypertension in Algeria an epidemiological overview. *Fourteen European meeting on Hypertension*.13–17.

to make an inventory as complete as possible with medicinal plants used to treat arterial hypertension in the Hodna region of Algeria. The results showed 35 species recorded, with maximum representation from the family *Lamiaceae* with nine species. In the viewpoint of ethno-botany and pharmacology, the aerial parts were the most used while decoction and infusion were the most practiced. Furthermore, this study was used to assess knowledge of traditional practices used by the population of Hodna. But it is important to experimentally validate the remedies identified by rigorous scientific protocols.

ACKNOWLEDGEMENTS

We are very much grateful to all the local herbalists, healers and villagers who shared their knowledge on the use of medicinal plants with us. Without their contribution, this study would have been impossible.

- F.A.O (1966). Study agropedological, district of Constantine, Roma, 146–150.
- Hendel N., Larous L., Sari M., Boudjelal A., Sarri Dj; (2012) Place of Labiates in folk medicine of the area of M’sila (Algeria). *Global J. Res. Med. Plants & Indigen. Med.*, Volume 1, Issue 8, 315–322.
- Le Houerou H.N. (1995) Bioclimatology and Biogeography of the arid steppes of North Africa. biodiversity, sustainable

- development and desertisation. *Mediterranean optional*, Serial B, 10.
- Maire R. (1952-1987) Flora of North Africa (Morocco, Algeria, Tunisia, Tripolitania, Cyrenaica and the Sahara). 16 vol., Le Chevalier Publisher, Paris.
- Moreau S., Benziene A.S., Boudjadja A., Gaouar A., Kaabeche M., Moali A., Sellami D. (2005) Plan of management of site of Mergueb. Wilaya of M'sila (Algeria). PROJECT DGF/PNUD-ALG/G35/2005.
- Ozenda P. (1983) Flora of the Northern Sahara. CNRS, Paris.
- Quezel P. and Santa S. (1962-1963) New flora of Algeria and Southern desert regions. 2 Tomes, CNRS, Paris.
- Sari M., Hendel N., Sarri Dj., Boudjelal A., Benkhaled A. (2011) Ethnobotanical and floristic analysis of medicinal plants used in the Southeast region of M'sila. *International Workshop, The Knowledge, the Valuation and Sustainable Management of Natural Resources in Arid Zones*; Nov. 16-17: Biskra, DZ. University of Biskra.
- Sari M., Hendel N., Boudjelal A., Sarri Dj. (2012) Inventory of medicinal plants used for traditional treatment of Eczema in the region of Hodna (M'sila - Algeria). *Global J. Res. Med. Plants & Indigen. Med.*, Volume 1, Issue 4, 97–100.
- Temmar. M., Chibane A., Guendouz N., Bouamra A., Bouafia M.T., Hamida F. (2010) Prevalence of hypertension and cardiovascular risk factors. Study El Menia. 1–18.

Source of Support: Nil

Conflict of Interest: None Declared