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Flora and ethnobotany of medicinal plants in the southeast of the capital of Hodna (Algeria)

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Received: July 11th, 2015; Accepted: August 10th, 2015

Abstract: Floristic and ethnobotanical studies conducted in the southeast in the capital of Hodna (Bou Saada, El Hamel, Ben Srour, M'Cif, Ain El Melh, Ain Rich, El Houamed, Mohamed Boudiaf, Ain Fares, Ouled Slimane, Zarzour, Oultem and Sidi M'hamed) is to achieve an inventory of medicinal plants and gathering as much information on the therapeutic uses practiced in the study area. Using the 250 question cards, ethnobotanical surveys were conducted in the study area (18 women and 16 men of different ages). The therapeutic uses practiced by local people, have allowed us to identify a number of 41 species of medicinal flora belonging to 24 botanical families and 37 genera, with a relative importance of the family *Lamiaceae*. The majority of remedies are prepared as a decoction, and all diseases untreated, digestive disorders are the most cited diseases.

Keywords: Ethnobotany - Medicinal Plants - M'sila (Algeria) - Questionnaires cards

Introduction

The province of M'sila called capital of Hodna offers a remarkable floristic and ecological diversity, the value of this heritage flora, especially in terms of floristic research studies, ecology, medicinal and ethnobotanical plants is essential (Kaâbeche 1996, Zedam et al., 2015).

This study is a part of a research project on the flora and vegetation of the province of M'sila, targeted point objective is to have a overall inventory of plants, creating a database on traditional medicines and to propose preservation measures of this flora in general and endemic in particular.

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Some information has been the subject of publication especially in the center and north of the province (Sari et al., 2013; Sarri et al., 2014). For this, the present study complements the information in a region characterized by diverse ecosystems: steppe (salts and sands) and forestry and nomad's population impoverished. These criteria have left the local population use medicinal plants that grow naturally or be cultivated in this area for healing.

In brief, these studies aim on the one hand, the realization of a medicinal plant survey through ethnobotanical surveys of indigenous inhabitants, herbalists and healers, on the other hand, make a floristic analysis to better understand the medicinal flora on the botany plan.

Methodology

Study area

The province of M'sila occupies a privileged position in the central part of North Algeria (Fig.1). Overall, it is part of the region of the central highlands and covers an area of 18,718 km^2. The region lies at an altitude of 500 m, located geographically between 34°21'- 36°04'N 3°37'- 5°33'E (Le Houerou, 1995). The study area is located in the southeastern part of the province of M'sila, it includes the following municipalities: Bou Saada, El Hamel, Ben Srour, M'Cif, Ain El Melh, Ain Rich, El Houamed, Mohamed Boudiaf, Ain Fares, Ouled Slimane, Zarzour, Oultem and Sidi M'hamed. The climate of the area of investigation is continental, subject in part to Saharan influences. Summer is very hot and dry, while the winter is cold, with low and irregular rainfall, it is of the order of 100 to 250 mm / year (Le Houerou, 1995; Le Houerou, 2009).

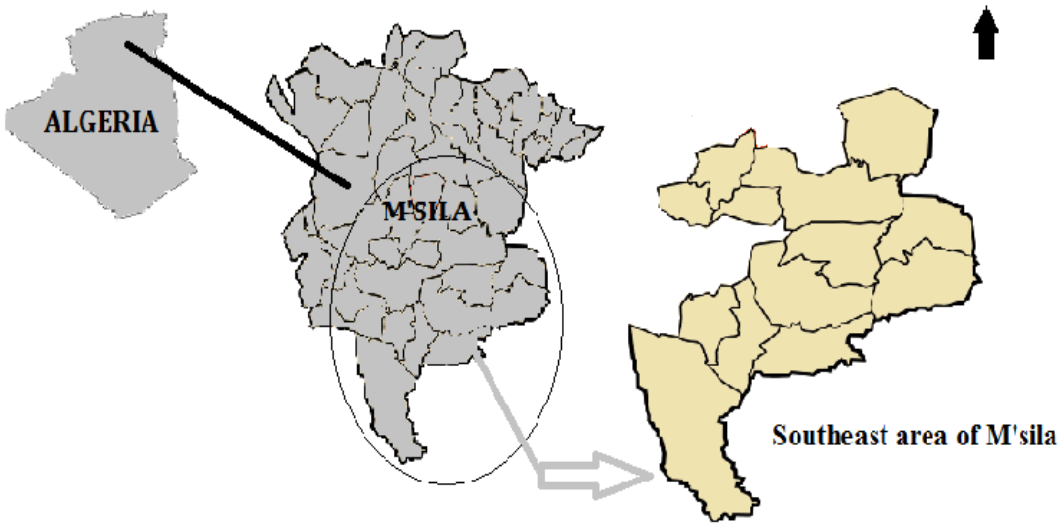

Figure 1: Location of the study area

Materials and methods

The survey was conducted during the 2004/2005 period; the information was gathered on the traditional uses of wild plants and also those cultivated locally. Using 250 question cards (Annex 1) that have been developed, we conducted ethnobotanical surveys on all seven towns selected as the study area in order to have more information on the traditional medicinal plants used by the local population because of their ethnomedicinale knowledge. All investigations described the information about the informant, botanical characteristics of the plant (the scientific name, common name...), ethnobotanical plant characteristics, disease information, and more information on the fight and prevention against the diseases.

Results and discussion

With the floras of Algeria (Maire 1952-1987; Ozenda 1983; Quezel et Santa 1962-1963) and the herbarium of department of natural sciences and life of M'sila University, we identified species collected in the field. Based on the results of ethnobotanical surveys of people (18 women and 16 men of different ages), a list of medicinal species recorded in the investigation area is established.

The results showed that the medicinal species found in the southeastern region of M'sila are among 41 divided into 24 families and 37 genera (Tab. 1). *Lamiaceae* family it was noticed that ranks first of all known species (24%) followed by *Asteraceae* with (10%). Part of the most commonly used plant is the leaves (41%), followed by the aerial parts (20%).

The collected ethnobotanical information confirms the significant dependence of the local population overlooked medicinal plants to treat digestive pathology (32%) with the following aspects (indigestion, constipation, and stomach pain), rheumatism (15%) and diseases of the skin (12%). Oral administration, which includes most of the preparation methods: infusion, decoction, herbal tea, powder, make up the bulk of the preparation and use of herbal drugs in traditional medicine is the recommended (Babba Aïssa 1999; Sari et al. 2012a; Sari et al. 2012b).

The remedies in the study area were mainly prepared as decoction (59%), infusion (34%) and in powder form (18%), oral administration is the most known and most recommended. The used parts are the leaves, respectively (41%) and the aerial parts (stems, fruits and inflorescences) with 20%.

Tab.1: Medicinal species of the southeastern region of M'sila

	Species / Botanical family	Local Name	Part used / Therapeutic use	User mode	Citations
1.	*Ajuga iva* (L.) Schreb. (*Lamiaceae*)	Chendgoura	Leaves / antidiabetic, female sterility, stomach disorders	Decoction, powder	5
2.	*Allium cepa* L. (*Alliaceae*)	El basla	Bulbs / antiseptic, cough	Juice	14
3.	*Allium sativum* L. (*Alliaceae*)	Thoum	Cloves of garlic / antiinfective, hypertension, hemorrhoids	Drops, juice, crus	6
4.	*Artemisia absinthium* L. (*Asteraceae*)	Chadjret meriem	Leaves / digestive disorders, wormer, antiseptic	Infusion, decoction	5
5.	*Artemisia campestris* L. (*Asteraceae*)	Tgofet	Leaves / anti poisonous, menstrual pain, antidiabetic	Infusion, decoction	12
6.	*Artemisia herba alba* Asso. (*Asteraceae*)	Chih	Whole plant / antidiabetic, anti influenza, wormer	Infusion	13
7.	*Bryonia dioica* Jacq. (*Cucurbitaceae*)	Berztoum	Roots / rheumatism, anguish	Powder	4
8.	*Colocynthis vulgaris* (L.) Lud. (*Cucurbitaceae*)	Hadj	Pulp / rheumatism	Cataplasm	3
9.	*Cuminum cyminum* L. (*Apiaceae*)	Kemoun	Seeds / abdominal pains, colon, stomach ulcer	Decoction, infusion	7
10.	*Eucalyptus globulus* Labill. (*Myrtaceae*)	Kalitous	Leaves / anti influenza	Fumigation	6
11.	*Ferula sulcata* Desf. (*Apiaceae*)	Hentit	Leaves / constipation	Tisane	4
12.	*Foeniculum vulgare* (Mill.) Gaertn. (*Apiaceae*)	Besbes	Seeds, bulbs/ antidiarrheal, antispasmodic, carminative	Decoction, powder, condiment	7
13.	*Globularia alypum* L. (*Globulariaceae*)	Tesselgha	Leaves / antidiarrheal, estomac, back pains	Decoction	1
14.	*Hordeum vulgare* L. (*Poaceae*)	Echair	Seeds / stomach upset	Flour	5
15.	*Inula viscosa* (L.) Ait. (*Asteraceae*)	Magramane	Leaves, roots/ diarrhea, rheumatism	Decoction, cataplasm	5
16.	*Juniperus phoenicea* L. (*Cupressaceae*)	Ara-aar	Leaves / abdominal pains, ulcers	Decoction, infusion	13
17.	*Laurus nobilis* L. (*Lauraceae*)	El rand	Leaves / hypertension	Decoction	8
18.	*Lavandula stoechas* L. (*Lamiaceae*)	El khouzama	Leaves / colds, asthma, rheumatism, burns	Fumigation, Infusion, decoction	10
19.	*Marrubium vulgare* L. (*Lamiaceae*)	Temerouit	Aerial part / antidiarrheal, antidiabetic, earaches	Infusion, decoction	10
20.	*Mentha pulegium* L. (*Lamiaceae*)	Fliou	Aerial part / abdominal pains, rheumatism	Infusion, decoction	3
21.	*Mentha spicata* L. (*Lamiaceae*)	Naanaa	Leaves / antispasmodic, digestive, calming	Infusion	5
22.	*Nerium oleander* L. (*Apocynaceae*)	Defla	Leaves / burns, joint pains	Cinder / decoction	5
23.	*Nigella sativa* L. (*Ranunculaceae*)	Sinoudj	Seeds / antispasmodic, anti influenza, wormer	Decoction, powder	5
24.	*Olea europaea* L. (*Oleaceae*)	Zitoune	Oil / otitis, Inflammation, chronic constipation	Oil	5
25.	*Opuntia ficus-indica* (L.) Mill. (*Cactaceae*)	El hendi	Fruits, flowers / diarrhea, antidiabetic	Decoction, juice	1
26.	*Origanum glandulosum* Desf. (*Lamiaceae*)	Zaater	Aerial part / cough, whooping cough, antispasmodic, gastric	Infusion	7
27.	*Paronychia argentea* (Pourr.) Lamk. (*Caryophyllaceae*)	Fetet el hadjar	Aerial part / Calculates vesical and renal, diuretics	Decoction	6
28.	*Peganum harmala* L. (*Zygophyllaceae*)	Harmel	Leaves / rheumatism, teething pains	Decoction	10
29.	*Pinus halepensis* L. (*Pinaceae*)	Snouber	Fruits/ hemorrhoids, tuberculosis, ulcer and pulmonary conditions	Infusion, powder	5
30.	*Punica granatum* L. (*Punicaceae*)	Roumane	Bark / Stomach ache, diarrhea, ulcer	Decoction	7
31.	*Retama retam* Webb. (*Fabaceae*)	Retam	Leaves / anti influenza, diarrhea	Decoction	2
32.	*Rosmarinus officinalis* L. (*Lamiaceae*)	El klil	Leaves / gastric disorders	Decoction, infusion	8
33.	*Rubia peregrina* L. (*Rubiaceae*)	Foa	Leaves / jaundice, anemia	Decoction	3
34.	*Ruta chalepensis* L. (*Rutaceae*)	Fidjel	Leaves / gastrointestinal	Infusion	9
35.	*Salvia officinalis* L. (*Lamiaceae*)	Siwak el nabi	Aerial part / digestive, antispasmodic, wormer	Infusion	3
36.	*Stipa tenacissima* L. (*Poaceae*)	Halfa	Aerial part / Cholestérol, dermatoses, brulures	Powder, decoction	6
37.	*Teucrium pollium* L. (*Lamiaceae*)	Djaida	Leaves / nausea, antidiabetic, ulcer, skin infections	Infusion, decoction	5
38.	*Thymus algeriensis* B. et R. (*Lamiaceae*)	Djertil	Aerial part / hypotensive, wormer, antidiabetic	Fumigation, powder	6
39.	*Trigonella foenum* graecum L. (*Fabaceae*)	Helba	Seeds / antidiabetic, eczema, anguish	Powder, decoction	7

40.	*Zingiber officinalis* Roscoe (*Zingiberaceae*)	Zendjabil	Roots / stomachic, joint disease	infusion	2
41.	*Ziziphus lotus* (L.) Desf. (*Rhamnaceae*)	Sedra	Leaves / fever, eyes diseases	Lotion	3

Conclusion

This study shows that the region southeast of M'sila, allowed us to highlight the important role of the traditional use of medicinal plants. The acquired ethnobotanical information allowed recording 41 species belonging to 37 genera and 24 botanical families.

Most medicinal species are widely used in the treatment of digestive diseases, rheumatism and diseases of the skin. Vegetative organ most used is the leaves and decoction which is the most dominant in traditional herbal medicine mode. Most used by the local population is also noted that species are: *Allium Cepa*, *Artemisia herba alba*, *Juniperus phoenicea*, *Lavandula stoechas*, *Marrubium vulgare* and *Peganum harmala*.

Thus, ethnobotanical surveys collected show that the excess of the traditional use of medicinal flora, whatsoever natural or cultivated in the southeast of the region is linked to the following reasons:

- The remoteness and the reduced existing health centers number.
- Mismatch in some cases modern health structures.
- The magical, religious use.

The results of this study amendment a database of the research project on the flora and vegetation of the Hodna region. Some proposals for local people were sent to protect and enhance this plant heritage in the context of sustainable development outlined by the Algerian state.

Acknowledgment

This work was financially supported by CNEPRU (F05620110004), Algeria. Special thanks to the population of Hodna who shared their knowledge on the use of medicinal plants with us.

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Annex 1: Questionnaire Card

Algerian Democratic and Popular Republic
Ministry of Higher Education and Scientific Research
University Mohamed Boudiaf of M'sila Faculty of Sciences, Department of Natural Sciences and Life

THE QUESTIONNAIRE CARD No……..

SECTION A

Date	**Place**	**Sex**		**Age**	**Level of education**					**Informants**		
		M	F		Illiterate	Primary	Medium	Secondary	Academic	Herbalist	Healer	Knower
……	……											

SECTION B

	Botanical name	**Common Name**	**Names Arabic / Berber / Targui and other**

Use (Type of disease) ***NB : without receipts***									
User mode	Infusion	Decoction	Fumigation	Maceration	Powder	Pomade	Bath	Plaster	other
Part (s) used (s)	Root	Leaf	Fruit	Flower	Seed	Flowery luminaries	Aerial part	Plant whole	Other

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SECTION C

	Botanical name	**Common Name**	**Names: Arabic / Berber / Targui and other**
Associated plants			
Use (Disease type = therapeutic) ***NB : Receipts*** *(mode, period, quantity, nature….)*	…… …… …… …… …… …… …… …… …… …… …… …… …… ……		

The questionnaire card edited and translated in english by SARRI Madani (CNEPRU project: F05620110004).

Arabian Journal of Medicinal and Aromatic Plants
www.ajmap.org ISSN 2458-5920

Vol 1, No 1 (2015)