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Inventory of Medicinal Plants of the Erg oriental (Ouargla South East of the Algerian)

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Abstract

Algeria by its climate (Mediterranean and arid) and the nature of the soil, has a flora particularly rich in medicinal and aromatic plants, most of which exist in a spontaneous state. It has been made for the purpose know the medicinal plants spontaneous and of gathering all the information concerning the therapeutic uses reported by the local population in the region studied. This study was carried out in the area of Ouargla on the inventory of medicinal plants in different biotopes (Erg, Chott and Hamada). During the spring of 2012, the floristic study has identified 64 plant species of which 20 are medicinal. These species refer to 13 families in which the most important are Poaceae, Astéraceae and Amaranthaceae. These plants are widely used in traditional pharmacopoeia. As a result of the surveys carried out with connoisseurs and the synthesis of bibliographic data, the ethnobotanical study showed that the parts used, the use patterns and the symptoms treated are much diversified.

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Introduction

The Sahara is the largest of the deserts but also the most extreme, that is to say, the one in which the desert conditions reach their utmost bitterness. This is characterized by a high temperature and a wind regime which results in hot and dry currents (Ozenda, 1983).

During centuries and even of the millennia, our ancestors used the plants to relieve their pains, to cure their evils and to bandage their wounds. From generation to generation, they transmitted their simple knowledge and their experiments while making an effort when they it could consign them in writing. Thus, even currently, in spite of the progress of pharmacology, the therapeutic use of the medicinal herbs is very present in certain countries of the world and especially the countries in plants e process of development, in the absence of a modern medical system (Tabuti *et al*., 2003). In effect, there are about 500,000 species of plants on earth, including Quyou (2003) 80,000 have medicinal properties.

The objective of our research work is to characterize the species used in traditional medicine by specifying their biological category, their spatial distribution, the parts used and the symptoms treated.

Materials and methods

General presentation of the study area

The wilaya of Ouargla is located in the South-East of the country covering an area of 163.230 Km². It is limited to the North: by the wilayas of Djelfa, El-Oued and Biskra, to the south: by the wilayas of Tamanrasset and Illizi, to the East: by Tunisia and to the West: The wilaya of Ghardaïa (DPAT, 2012). According to Rouvillois-Bricol, 1976; the town of Ouargla is located at the bottom of a synclinal basin characterized by a very wide sedimentary filling of the valley of Oued M'ya, about 800 km from Algiers (Fig. 1).

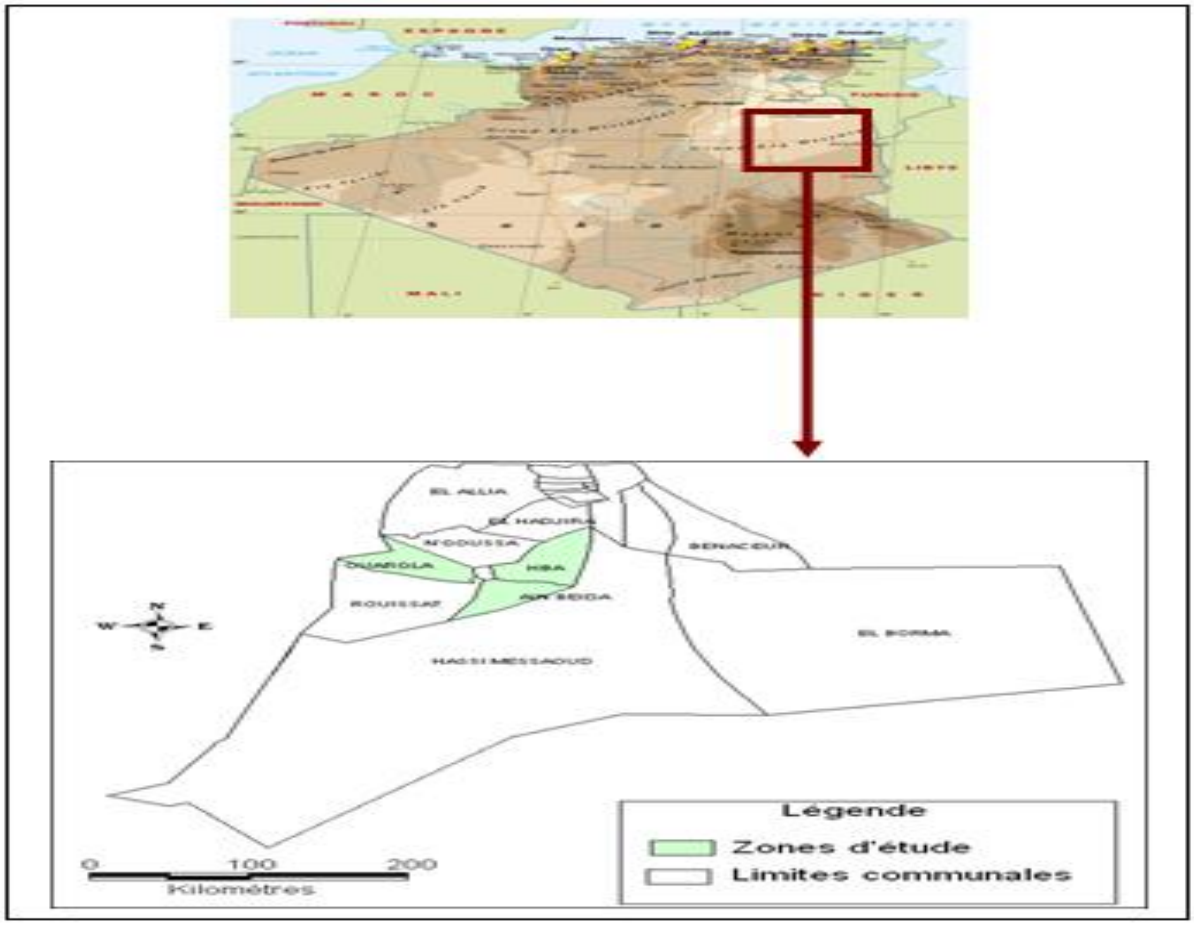

Fig. 1. Geographic limits and administrative boundaries of the wilaya of Ouargla.

The wilaya of Ouargla is characterized by a Saharan climate, with very low rainfall, high temperatures, high evaporation and a weak biological life of the ecosystem (D.P.A.T, 2012).

Choice of areas of Study

We have chosen in our region of study of three areas (HBA, Chott and Ksar), including, the criteria of choice are the diversity of species and the geomorphology (Fig. 1 & 2).

Method of Study

We used subjective sampling. According to Gounot, 1969; this is the simplest and most intuitive form of sampling. The researcher chooses as samples the zones which appear to him to be particularly homogeneous and representative.

We sought to delimit and prospect as many zones as possible in the area under study. For this, three campaigns of land have been program during the years 2012.

Using 100 questionnaires that were prepared and rectified, ethnobotanical surveys were conducted in the study area (Fig. 1 & 2) in order to have the maximum of information concerning the use of medicinal plants by the local population. Scientific nomenclature was determined at the level of the species, using the following documents: Nouvelle flore d'Algérie et des régions désertiques méridionales de Quezel et Santa (1962), Flore du Sahara d'Ozenda (1964, 1983) et Catalogue plantes spontanées du Sahara septentrional algérien de Chehma (2006).

Finally, computer processing was necessary to better analyze the data collected during our ethnobotanical surveys. For this we opted for the simple computer software that allowed us to perform a set of effective operations in a short time.

Results and discussion

Floristic study

The species recorded in the three study areas (HBA, Chott and Ksar), which are of the order 64 species grouped into 23 families.

Table 1. List of species inventoried in the study area.

Families	Species	Families	Species
Amaranthaceae	*Arthrocnemum glaucum*	Ephedraceae	*Ephedra alata*
	Bassia muricata	Euphorbiaceae	*Euphorbia guyoniana*
	Chenopodium murale	Fabaceae	*Astragalus gyzensis*
	Cornulaca monacantha		*Fallopia convolvulus*
	Halocnemum strobilaceum		*Genista saharae*
	Salicornia herbacea		*Melilotus indica*
	Suaeda fruticosa		*Retama retam*
	Traganum nudatum	Frankeniaceae	*Frankenia pulverulenta*
Apiaceae	*Anethum graveolens*	Geraniaceae	*Erodium glaucophyllum*
Astéraceae	*Atractylis delicatula*		*Monsonia Héliotropioides*
	Calendula aegyptiaca	Joncaceae	*Juncus maritimus*
	Carthamus criocephalus	Liliaceae	*Androcymbium punctatum*
	Erigeron bovei		*Asphodelus tenuifolius*
	Ifloga spicata	Malvaceae	*Lavetera crética*
	Launaea glomerata		*Malva aegyptiaca*
	Launaea mucronata	Plombaginaceae	*Limonium delicatulum*
	Launaea nudicaulis	Poaceae	*Aeluropus littoralis*
	Senecio vulgaris		*Bromus madritensis*
	Sonchus maritimus		*Cynodon dactylon*
	Sonchus oleraceus		*Lolium mutiflorum*
Boraginaceae	*Echium pycnanthum*		*Phragmites communis*
	Echium trigorrhizum		*Polypogon monspeliensis*
	Megastoma pusillum		*Schismus barbatus*
	Moltikia ciliata		*Aristida acutiflora*
Brassicaceae	*Diplotaxi pitardiana*		*Aristida plumosa*
	Hutchinsia procumbens		*Aristida pungens*
	Oudneya africana	Primulaceae	*Anagallis arvensis*
Caryophyllaceae	*Paronychia arabica*	Resedaceae	*Randonia africana*
	Spergularia salina	Rhamnaceae	*Zizyphus lotus*
Cistaceae	*Helianthumum lippii*	Tamaricaceae	*Tamarix gallica*
Convolvulaceae	*Convolvulus arvensis*	Zygophyllaceae	*Fagonia glutinosa*
	Cressa cretica		*Zygophyllum album*

Table 2. Inventory, category, symptoms treated and parts used of spontaneous medicinal species inventoried in Ouargla.

Families	Species	Vernacular name	Category	Used parts	Symptoms treated
Amaranthaceae	*Arthrocnemum glaucum*	/	Vivacious	Aerial part	Medicinal
	Cornulaca monacantha	Had	Vivacious	Leaves and branches	Diseases of the liver
	Traganum nudatum	Dammran	Vivacious	Aerial part	dermatoses
Apiaceae	*Anethum graveolens*	Elbassbas	Ephemeral	Leaves and edible seeds	Digestive disorders
Astéraceae	*Ifloga spicata*	Zouadet lekhrouf	Ephemeral	Aerial part	Cutaneous lesions
	Senecio vulgaris	Alkohwane	Ephemeral	Aerial part	Medicinal
Brassicaceae	*Oudneya africana*	Hennet l'Ibel	Vivacious	Aerial part	Cutaneous lesions
Cistaceae	*Helianthemum lippii*	Reguig	Ephemeral	Aerial part	Cutaneous lesions
Ephédraceae	*Ephedra alata*	Alanda	Vivacious	leaves	Influenza
Euphorbiaceae	*Euphorbia guyoniana*	Lebina	Vivacious	Leaves and stems	Snake Bites
Fabaceae	*Genista saharae*	Merkh	Vivacious	leaves	Infection respiratoire
	Retama retam	Rtem	Vivacious	Aerial part	Snake Bites
Malvaceae	*Malva aegyptiaca*	Khobize	Ephemeral	Aerial part	Emollient effect
Poaceae	*Cynodon dactylon*	Njem	Vivacious	Rhizomes and stems	Urinary tract infections
	Lolium mutiflorum	/	Vivacious	leaves	Medicinal
	Phragmites communis	Roseau.	Vivacious	Leaves and roots	Influenza
	Aristida pungens	Drinn	Vivacious	Aerial part	constipation
Résédaceae	*Randonia africana*	Tagtag ou Godm.	Vivacious	Leaves and branches	Scorpion sting
Rhamnaceae	*Zizyphus lotus*	Sedra	Vivacious	Leaves and fruits	Urinary tract infections
Zygophyllaceae	*Zygophyllum album*	Agga	Vivacious	Partie aérienne	Diabetes

The richest families are: Asteraceae with 11 species and Poaceae with 10 species (Table 1). From a spatial point of view, the Erg is the richest and most diversified zones in species and families, and the poorest saline soils (Fig. 3). According to Eliard (1979); the climate with the soil is the environment in which the plant develops. According to Viennot-Bourgin (1960); the flora of the saline grounds always poor and is characterized by the prevalence of the specialized species (halophytes) belonging mainly to the family of Chénopodiaceae.

Fig. 2. Photos representatives of the general views of the areas sampled.

Rate of the medicinal species compared to the inventoried species

Fig. 4 shows that less than half of the inventoried species (34%) are used in traditional medicine. For the inventoried families, we note that the majority present medicinal species (57%) (Fig. 5), for the biological category, 75% of medicinal species are vivacious and 25% ephemeral (Fig. 6). These perennial plants are always available regardless of weather conditions. These values confirm the results obtained in other works on the use of medicinal plants (Chehma and Djebar, 2008).

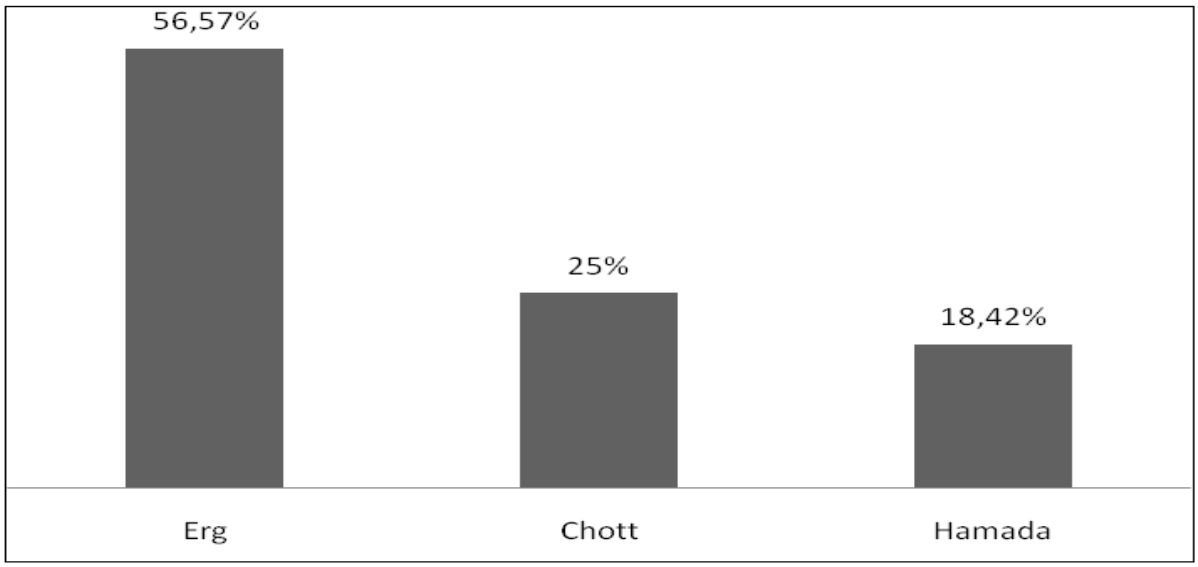

Fig. 3. Percentage of the number of species in the different geomorphologic zones.

Floristic parts used

In total, three (03) parts of medicinal plants listed are used in the Saharan pharmacopoeia of the Ouargla region. These parts are the aerial part, the underground part and the whole plant.

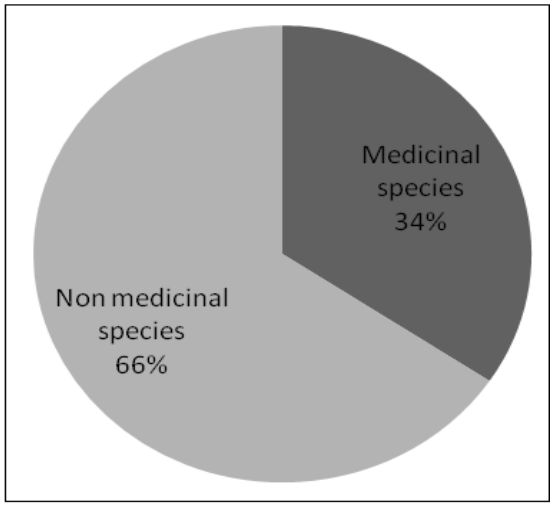

Fig. 4. Percentage of the number of medicinal species relative to the inventoried species.

The importance of use of these parts is varied, having a wide range from 07.61% to 75% (Fig. 7).The results of our investigations show that the air part is used (75%) against, only, 17.39% for the whole plant and 7.61% for the underground part (Fig.7 and Table 2). According to Chehma and Djaber (2008) the air part is used (84%).

Symptoms treated

Traditionally, the Saharan species are used for the treatment of a range of very varied symptoms of which the indigestions, the cutaneous lesions, treatment of the wounds, the punctures of scorpions, the bites of snakes, the fever, of the treatment of the pains of rules, the childbirth difficult, the diabetes, the respiratory affections, diseases of the liver.

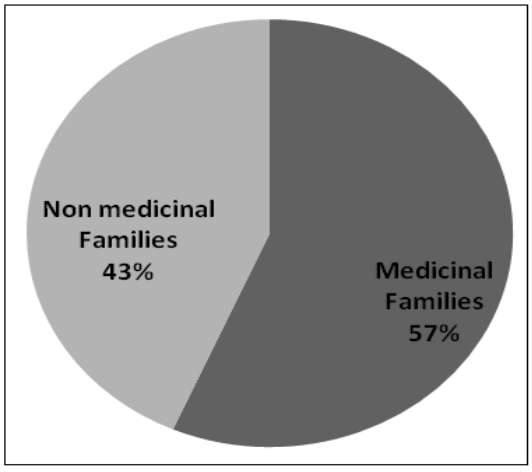

Fig. 5. Rates of medicinal families in relation to families inventoried.

Nevertheless, it should be noted that the symptoms most largely treated are the cutaneous lesions and the infection repertoire respectively accounting for 26.67 and 20% of the whole of the practised uses, followed by the punctures of scorpions and bites of snake, Urinary infections (13.33%) (Fig. 8).

These data are comparable with those accepted by Hammiche and Gueyouche (1988) which note that the digestive problems, the dermatoses and the punctures of scorpions are the treatment dominant.

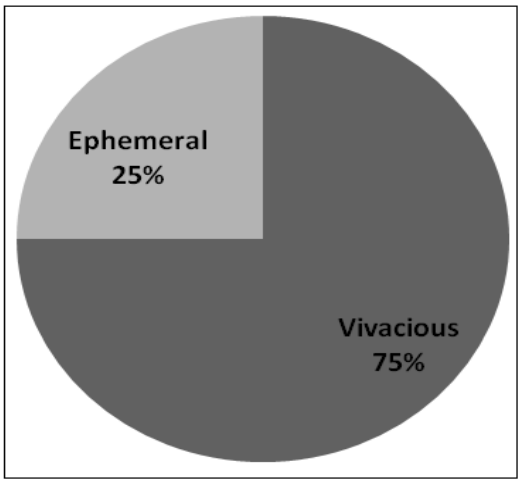

Fig. 6. Rate of medicinal species by biological category.

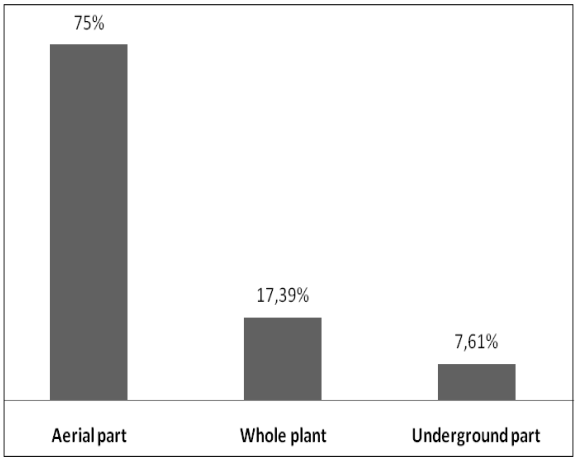

Fig. 7. Floristic parts used in traditional medicine.

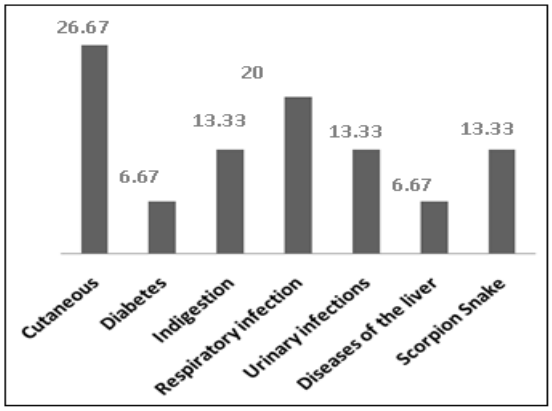

Fig. 8. Percentage of species used in traditional medicine according to the different symptoms treated.

Conclusion

Through this contribution on the inventory of the medicinal plants of some biotopes in the area of Ouargla. We have identified 64 plant species of which 20 are medicinal. Results obtained in our work show that less than half of the inventoried species are medicinal, of which the greatest part are Vivacious, one also notes that the aerial part of the plants is used (75%). This study contributes to a better knowledge of the flora of the Ouargla region, it is important to multiply the research on the phytoecological aspect of medicinal plants on all the biotopes.

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References

DPAT. 2012. Annuaire statistique 2011 de la wilaya d'Ouargla. Ed. Minist Finan. Direct. Budget, Alger ; 192 p.

Chehma A. 2006. Catalogue plantes spontanées du Sahara septentrional algérien. Université d'Ouargla, laboratoire de protection des écosystèmes, Ouargla, 148 p.

Chehma A, Djaber M. 2008. Les espèces médicinales spontanées du Sahara septentrional algérien: distribution spatio-temporelle et étude ethnobotanique. Synthesis Review **17,** 36-45.

Eliard JL. 1979. Manuel d'agriculture générale base de la production végétale; Ed J-B BAILLIER. 332 P.

Hammiche V, Gueyouche R. 1988. Plantes médicinales et thérapeutique. 1 partie : Les plantes médicinales dans la vie moderne et leur situation en Algérie, Annales de l'INA El Harrach, Alger, **12(1),** T2,p. 419-433.

Gounot M. 1969. Méthodes d'étude quantitative de la végétation. Ed. Masson et Cie, Paris, 314 p.

Ozenda P. 1983. Flore du Sahara. 2ème Edition. Ed CNRS, Paris, 622 P.

Ozenda P. 1964. Biogéographie végétale .Ed. Doin, Paris, 360 p.

Quezel P, Santa S. 1962. Nouvelle flore d'Algérie et des régions désertiques méridionales. Tome I. 7ème édition. Ed. C.N.R S; Paris, 565 p.

Quyou A. 2003. Mise au point d'une base de données sur les plantes médicinales. Exemple d'utilisation pratique de cette base. Thèse de Doctorat. Université Iben Tofail. Faculté des sciences. Kénitra, Maroc. 110 p.

Rouvillois-Bricol M. 1976. Le pays de Ouargla (Sahara Algérien) variation et organisation d'un espace rurale en milieu désertique. Pub départ. Géog. Paris, Sorbone, 316 p.

Tabuti JRS, Lye KA, Dhillion SS. 2003. Traditional herbal drugs of Bulamogi, Uganda: plants, use and administration. J. Ethnopharmacology **88,** 19-44.

Viennot-Bourgin G. 1960. Rapport du sol et de la végétation,Masson et Cie , Editeurs librarires . Paris, 183 p.