

ETHNOBOTANICAL STUDY OF MEDICINAL FLORA IN THE ATRIPLEXAIES PLANTATION OF SAIDA - A HIGH LAND STEPIC CITY OF ALGERIA

BOUCHIKH YAMINA*, LABANI ABDERAHMANE¹, ABBAD ABDELAZIZ², BOUHELOUANE
SLIMANE³, LAKHDARI WASSIMA AND DAHLIZ ABDERAHMANE

Division Ouest and Steppic Agrosystem, INRAA, Sidi Bel Abbes, Algeria

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Abstract

With its Mediterranean climate in the north, arid in the south and the nature of its soil, Algeria possesses a particularly rich medicinal and aromatic plants flora, which are growing wild. An ethnobotanical survey to inventory and identify therapeutic uses of medicinal plants growing on Atriplexaies artificial plantation of Hasba - the city of Saida, commune of Moulay Larbi with local population and herborists. A total of 22 medicinal plants was recorded in the study area which were widespread on the local therapeutic uses of local population and herborists.

Nature is full of resources with benefit virtues to human. Traditional medicine and especially herbal treatments are well developed in Algeria, the use of modern medicine become more attractive and widespread in local population. The preservation of knowledge in traditional practices with medicinal plants constitutes a challenge for the conservation and development of plant genetic resources. The conservation and enhancement of the diversity of plant genetic resources and enrichment of knowledge at traditional practices are one of the prerequisites for sustainable development.

Traditional medicine using plant compounds is widespread in the country. Algerian stepic rangeland are full of plants used by the local population, healers and herborists.

Highlands rangelands in Algeria extend over more than 20 million ha. The majority of these rangelands, 7.5 million ha in 1995, were considered in poor to fair conditions (Bensouia 2003). Several authors have recognized the decline in productivity of rangelands by the decrease of some important range plant species including medicinal plants over the last few decades (Nejraoui 2006).

One basic method of improving these rangelands in the country is the plantation of native and exotic species of *Atriplex*. As *Atriplex halimus* and *A. canescens* are used as medicinal plant, they have been introduced in many thousands hectares of rangelands since more than 20 years (Benabdeli 2008, Benaradj 2010). The advantages of the use of these species lies in their ecophysiological adaptation strategies, their resistance to drought and salinity (Belkhodja and Bidai 2004). Their ability to produce biomass as forage for livestock (Mulas and Mulas 2004) and in addition, their profusely branched root systems play an important role in fighting against soil erosion and desertification (Abbad *et al.* 2004).

Our contribution aim to report all the medicinal plants growing on this artificial planting and used by local population and collect the maximum information related to the use of this plants.

*Author for correspondence. ¹Laboratory of water resources and environment, Saida University. ²Faculty of Science Semlalia, University Cadi Ayyad. ³Haut-commissariat au développement de la steppe, HCDS, Saida.

This ethnobotanical survey in Saida rangelands occupied by the *Atriplex* species was conducted during the period from January to December 2013, in collaboration with local population and herborists. The ethnobotanical survey was made on the basis of a questionnaire including the local name, part used and usage purpose of each plant.

Table 1. *Atriplex* plantation in the different communes of Saida city.

| Commune | Location | GPS coordinates | | <i>Atriplex</i> plantation (ha) | | | |
|--------------|-----------|-----------------|------------|---------------------------------|------|------|------|
| | | | | 2008 | 2009 | 2010 | 2011 |
| Moulay Larbi | Hasba | 000 3 6 12 | 34 30 19 8 | 104 | 26 | 30 | 25 |
| Skhouna | Gnatis | 000 45 23 1 | 34 33 41 1 | 123 | 39 | 25 | 20 |
| Maamoura | Oued Omar | 000 30 39 24 | 34 33 46 8 | 104 | 41 | 30 | 30 |
| Sidi Ahmed | Omerghad | 000 25 11 17 | 34 30 50 1 | 267 | 27 | 18 | 20 |

Our study area “Hasba” is located in “Moulay Larbi” a commune situated in the city of Saida between 34° and 35° of north and 1° and 0° of west (Fig. 1). On the basis of 20 years of climatic database from 1984 to 2005 (National office of meteorology 2006) we could conclude that this area is characterized by a arid climate with a cold winter, with average annual rainfall of 327 mm and a dry period of 7 months from April to October. The rainfall in the area is characterized by a great intra- and inter-variability, and this area is stepic degraded rangeland with *Artemisia herba alba* rehabilitated in 2003 by planting *Atriplex canescens* (Bouhelouane 2012).

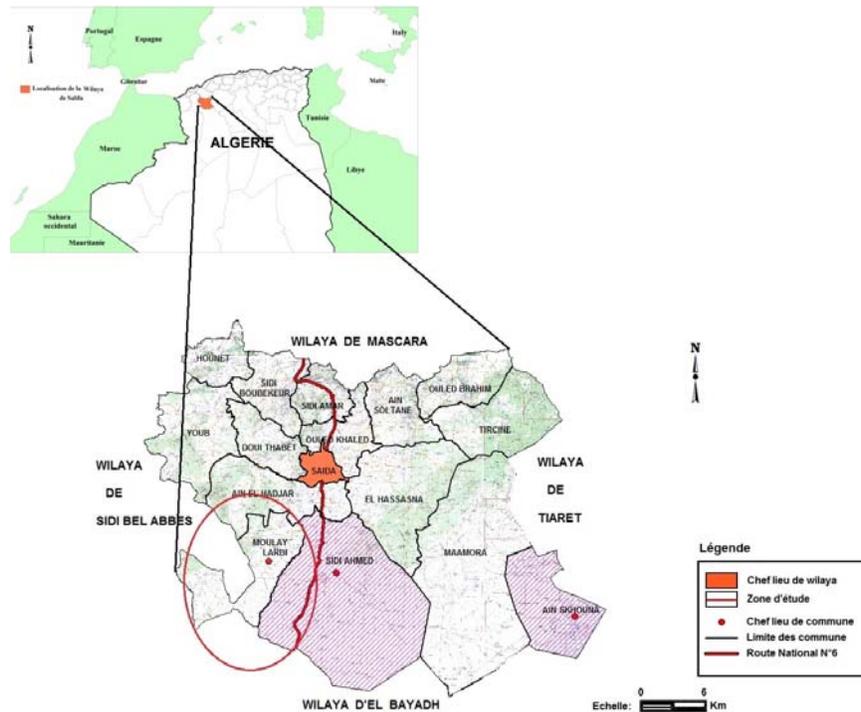


Fig. 1. Localization of study area Moulay Larbi at Saida city, north west Algeria.

Table 2. Medicinal plant flora at Atriplexaies plantations.

| Family | Species | Local name | Used part | Treatment | Recipes |
|----------------|---|-------------------|--------------------------------------|--|-----------------------------------|
| Chenopodiaceae | 1. <i>Atriplex halimus</i> L. | <i>Gief</i> | Aerial part seeds | Antidiabetic, kyst, dental pain, skin disease, tumor disease, stomach pain. | Decoction, infusion, powder. |
| | 2. <i>Atriplex canescens</i> (Pursh) Nutt. | <i>Gief</i> | Leaves Roots | A locally very used plant for prevention against uterine fibroids and breast cancer of women | Decoction |
| | 3. <i>Noaea mucronata</i> (Forssk.) Asch. & Schweinf. | | Root | Inflamed wounds Poulitced, Anti-inflammatory | Decoction, external |
| Asteraceae | 4. <i>Anacyclus cyrtolopidioides</i> (Pomel) Humphries. | <i>Tigantast</i> | Roots | The chewed root or decoction soothes toothache and stimulates these cretion Salvaire. Used in the treatment of spasms, paralysis, and as a tonic analgesic, antiseptic, antispasmodic, fungicidal, tonic. | Infusion |
| | 5. <i>Achillea santolina</i> L. | <i>Chaiyata</i> | Flowers Leaves | Antiseptic, antispasmodic, carminative, expectorant, stomachic, anthelmintic, vulnerary... | Decoction, maceration |
| | 6. <i>Artemisia herba-alba</i> Asso. | <i>Chih</i> | Leafs Flowers Roots | Digestive, antigestralgique, antispasmodic, emmenagogue, stomachic, vermifuge, its roots are given some consensuous disorders; tics, spasms, convulsions and as sedatives. Stimulating the heart, stimulating memory, calming, swelling of the stomach, hyperretention , toxicat higher doses. | Decoction, maceration |
| | 7. <i>Launea nudicaulis</i> (Asso) Pau. | <i>echba</i> | Young Shoots, Leaves, Roots | Its milky material is taken during constipation. Leaves are used to relieve fever in children, itches of skin, cuts, ulcers, swelling, bilious fever, eczema, eruption and rheumatism. | Cosommatation, shewing, decoction |
| | 8. <i>Atractylis humilis</i> subsp. <i>Caespitosa</i> | <i>Addad</i> | Echb | Its roots are used in toothache accelerate healing of wounds and for the treatment of bscesses due to its antimicrobial activity. | Infusion, decoction, pomade |
| | 9. <i>Atractylis serrataloides</i> (Cass.) DC | <i>Haddad</i> | Aerial part | Toxic root. Extraction of latex root "Loubene" | |
| | 10. <i>Onopordon arenarium</i> L. | <i>Feries</i> | Leave, roots | Appetizer, cholagogue, depurative, stomachic, vulnerary, antiparasitic, dermatosis, healing of ulcers Fresh root sare recommended to relieve dental pain. | Consummation, shewing, decoction |
| Papilionaceae | 11. <i>Astragalus criciatus</i> L. | <i>Bousamarra</i> | Buds | Softeners, emetics, emollients, galactogogues | Infusion, decoction, pomade |

(Contd.)

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| Family | Species | Local name | Used part | Treatment | Recipes |
|------------------------------|--|--|-------------------------------------|---|--|
| Poaceae | 12. <i>Bromus rubens</i> L. 13. <i>Hordeum murinum</i> Hudson. | <i>Cheir</i> | Aerial part Seeds | Diuretic Diuretic, digestive, emollient, febrifuge, hypoglycemic, nutritive, restorative, resolutive, sedative, tonic, against ichting. | Infusion Poudre, semolina, sprouted grain, infusion, decoction, poultice. |
| | 14. <i>Schismus barbatus</i> (L.) Thell. 15. <i>Stipa parviflora</i> (Desf.) Röser, Hamasha | Not cited as medicinal Not cited as medicinal | | | |
| | 16. <i>Lygeum spartium</i> L. | Senagh | Entire plant | The juice leaves is recommended for fungal infections of the face. A good remedy against rheumatism, heart pain and déshydrations in children | Infusion, decoction, poultice. |
| Cistaceae | 17. <i>Helianthemum apertum</i> Pers. | Not cited as medicinal | | | |
| Euphorbiaceae | 18. <i>Helianthemum virgatum</i> Pers. 19. <i>Euphorbia falcata</i> L. | <i>Erguiga</i> <i>Lhina</i> | Leaves Entire plant Latex | colon, stomach, astringent Cholagogue, diuretic, the milky juice is recommended against the skin disease(eczema), warts, fungal infections, leaf bath is indicated for toothache, toxic at higher dose | Infusion, poudre Bath decoction shewing external |
| Liliacées Caryophyllaceae | 20. <i>Gagea</i> sp. 21. <i>Herniaria hirsute</i> L. | Not cited as medicinal <i>Fetat elhadjar</i> | Entire plant | Decocted is recommended for kidney stones; however infused is used for gallstones and bladder stones. Inflammation urinary tract, kidney and gallbladder. | Decoction infusion |
| Malvacée | 22. <i>Telephium imperati</i> L. 23. <i>Malva aegyptiaca</i> | <i>Khoubiz</i> | Leaves Leaves, flowers, roots | Antihemorroidal, astringent. Softener, antiseptic, astringent, antitussive, calming, emollient, laxative, pectoral, limiting | Infusion, external Crème, infusion, decoction. |
| Plantaginacea | 24. <i>Plantago albicans</i> L. | <i>Annadam zelfana</i> | Entire plant leaves | Softner, astringent, emollient, laxative | Infusion decoction |
| Lamiacée | 25. <i>Salvia verbenaca</i> (L.) Briquet. | <i>Khiyata</i> | Leaves, flowers | Antiseptic, antispasmodic, antiperspirant, digestive, astringent, carminative, choleric, deterrent, emmenagogue, febrifuge, hypoglycemic, sedative, stomachic, tonic, vulnerary Toxicat higher doses. | Infusion, decoction |
| Valerianaceae | 26. <i>Valerianella</i> sp. | <i>senbel</i> | Leaves, root | Anti-inflammatory, arthritis, depurative, emollient, laxative, vulnerary Tonic, astringent, adaptogenic febrifuge | Fresh consommé decoction |

Once collected from the Atriplexaies of the study area, plant samples were identified with systematic keys (Ozenda 1983, Quezel and Santa 1962-1963) by the taxonomists of the University and Haut Commissariat Développement de la Steppe.

A total of 22 taxa are found to be considered as medicinal plants by local population of Moulay Larbi (Table 2). The Asteraceae family is dominant and the leaves or areal part are mostly used, which is consistent with results of several studies (Allali *et al.* 2008, Azzi *et al.* 2012, Sari *et al.* 2012).

Ethnobotanical survey allowed us to identify a number of processed herbs and diseases showing that the population is highly dependent on these medicinal plants that allow them to treat various diseases (Table 2).

Several preparation methods are used to facilitate the administration of plants to patients. In our study decoction is found on the mostly used preparation. It is often reported that the decoction collects the most active substances and mitigates or cancels the toxic effect of some elements (Sari *et al.* 2012). The medicinal plant species recorded in our area are also used as remedies in other parts of Algeria for example *Atriplex halimus* and *Artemisia herba alba* in this study have a popularity for treating diabetes. Furthermore, other studies conducted in other area of Algeria showed that some plants mentioned in this study have different traditional uses (Allali *et al.* 2008).

There is a socio-economic impact of degraded rangeland soil valorization by the atriplexaies plantations, this plantation provide animal feed for breeder, represent an habitat for small animals like birds and rabbits consumed by local population, conserve soil from desertification, contribute to the proliferation of medicinal plant useful for herborists and local community.

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