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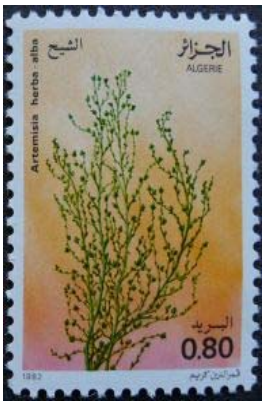

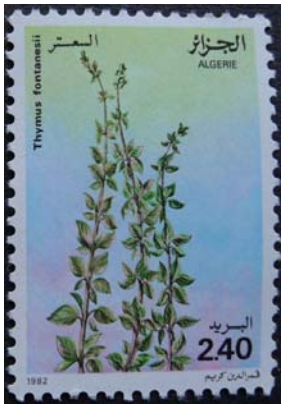

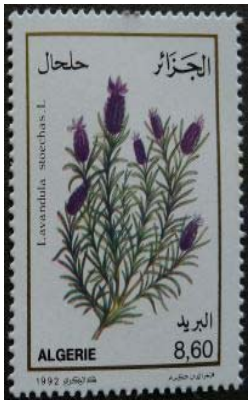

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Ethnopharmacological survey and phytochemical screening of some medicinal Asteraceae of Algerian Sahara

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Abstract - A first report of Asteraceae species census of the Algerian folk medicine, currently used in Sahara for the treatment of illenes is presented. 11 Asteraceae species namely: *Anvillea radiata Coss*, *Artemisia herba-alba*, *Brocchia cinerea*, *Bubonium graveolens*, *Cotula anthemoides*, *Echinops spinosus*, *Launaea arborescens*, *Launaea nudicaulis*, *Launaea resedifolia*, *Scorzonera undulata and Warionia saharae* were selected based on the survey through interviews with local inhabitant, herbalist in the Souk and old women according to our previous works. Ethnopharmacolgical potential and chemical constituents of this species are described.

***Key Words*:** Asteraceae; Ethnopharmacolgy; Chemical; Sahara; Algeria

Introduction

The World Health Organization (WHO) has recognized the potential utility of traditional remedies and strives to preserve the primary health care involving medicinal plants Only a small part of the 400.000 vegetable species known were investigated from phytochemical and pharmacological aspects, and that each species can contain up to several thousands of different components [1, 2].

Algeria with its large area and diversified climate has a varied flora, which is a source of rich and abundant medical matter and, in particular, Sahara part constitutes an important reservoir of many plants which have not been investigated until today. Among this flora, species from Asteracea family have been used in the traditional medicine [1-5].

Asteraceae family, known as the aster, daisy or sunflower family, is one of the largest angiosperm families of dicotyledenous flowering plants. It comprises about 1400 genera and more than 25000 species of herbaceous plants, shrubs, and trees, spread throughout the world, and classified over three subfamilies and 17 tribes [1, 6, 7].

Species of this family widely applied in traditional folk medicine throughout their areas of distribution. Many of them are used in folk medicine as bitter stomachic, anti-tumour, insecticides and against skin diseases [1, 6].

Ethnopharmacology in Sahara

It is well know that ethnopharmacology includes all studies on the relationships between people and plants. An important progress was shown in ethnopharmacology through the world, which can develop different reflections on the use and valorisation of plant resources.

In Algeria, ethnopharmacology works are in their primary steps. Only a few projects have been launched for census and documentation on the uses of plant, despite of the fact that Algeria presents very rich and diverse flora due to her diverse climatic, soil conditions and multiple ecological regions (Tel , Sahara, High lands....). The country has about 3139 species of wild plants of which about 1000 are considered to be medicinally important [8-12].

Research work was carried out in continuation of our project on phytochemical and biological valorization of medicinal plants of the traditional pharmacopeae in southwest Algeria (districts of El Bayadh, Naama, Bechar, Adrar and Tindouf). The ethnopharmacological study includes interviews, observations according to our previous works [5, 8, 9, 13, 14], so, traditional usage data were collected from local people (specialy old women) and tradipraticien (Attar). During these trips different plant species of the Asteraceae family were collected, dried, documented and were identified

All plant species were identified both by Botanist Pr A. Marouf (Oran and Naama University), and with the help of bibliography flora [9-12]. Voucher specimens are conserved at the herbarium of Phytochemistry and Organic Synthesis Laboratory (POSL), under voucher species number [9].

We indicate below the list of identified plants with botanical name, vernacular name, number of voucher specie in the herbarium of the LPSO and traditional use [2, 9, 15, 16].

Anvillea radiata coss (Vernacular name: Neugd) **(CA02/01)**

Used to treat gastric disorders, prepared by decoction of the aerial part of plant and “Chih” (A*rtemisia herba-alba*) in water, used against the allergy by mixture with butter, used also to treat diabetic.

A*rtemisia herba-alba* (Vernacular name: Chih) **(CA99/28)**

Anthelminthic, astringent, stops intestinal bleeding, treat rheumatic pains and useful for curing skin diseases.

Brocchia cinerea (Vernacular name: Guertoufa Beida) **(CA06/02)**

Commonly used to treat gastric disorders, constipation, colics, respiratory diseases, to relieve fever and used as condiment.

Bubonium graveolens (Vernacular name: Tafs) **(CA00/41)**

Used as laxative, antispasmodic, as a remedy in palpitation of the heart, to relieve fever and to treat diabetic and rheumatism.

Cotula anthemoides (Vernacular name: Guertoufa, Ouazwaza) **(CA00/32)**

Used to treat gastric disorders, ulcer, dysmenorrohea, dental exit, to relieve fever and used as condiment.

Echinops spinosus (Vernacular name: Teskra) **(CA00/04)**

Used to treat gastric disorders, colics, to relieve fever and as astringent.

Launaea arborescens (Vernacular name: Oum Lbina) **(CA00/25)**
Commonly used as an antidiarrhoic and antispasmodic, to relieve fever and as a vermifuge and against the vomiting for the children. The latex is applied locally to cure sore throats and in the treatment of furuncles. The powdered root mixed with *Artemisia herba-alba* is taken for diabetes. The plant is appreciated by livestock, mainly by camel

Launaea nudicaulis (Vernacular name: Rghama) **(CA05/01)**
Used to treat gastric burns, pain of stomach, constipation, hemorrhoids, to relieve fever in children, in the treatment of itches of skin, eczema and used like food.

Launaea resedifolia (Vernacular name: Lemkar) **(CA04/03)**
Mainly Used for the treatment of hepatic pains and gastric disorders.

Scorzonera undulata (Vernacular name: Giz) **(CA99/32)**
Stimulant tonic, astringent and used like food

Warionia saharae (Vernacular name: Efessas, Kabar Lemaiz) **(CA02/07)**
An endemic herbaceous medicinal plant represented by only one species which is widely distributed in the south west of Algeria and south east of Morocco. The aerial part of this plant was used in Sahara folk medicine for treating gastrointestinal tracts, icter and as anti-inflammatory.

The present study provides information on the traditional uses of 11 ethnopharmacologically important plants belonging to Asteraceae family. The study covered selected herbalists, old peoples in the most important cities and villages of southwest Algeria.
Local people are using the plants for the basic health and for cure of different diseases. We have observed that generally, women used the medicinal plant more than men. Usually, the most used part is the fresh or dried aerial parts of plant without separating the leaves or the flowers, sometimes the latex is used in the case of *Launaea arborescens* or the roots case of *Echinops spinosus*.
Depending on the investigation achieved in bechar town , we see that the majority of the selected plants treat gastric disorders and the plants are used, essentially in the form of a decoction, or maceration in water for oral treatment. Sometimes plant powder is incorporated into the local butter “Dehane“ to make an ointment used to apply local analgesic, antiparasitic or skin treatment.

Phytochemical screening

Aqueous extraction as the most used herbal preparations is used to extract the active constituents in the plants tissues. Thus, the plant materials were allowed to air dry and pulverized in grinder. 10 grams of the pulverized materials were extracted with 80 ml of water. The water extracts obtained from the 11 selected medicinal Asteraceae species were subjected to phytochemical screening using standard methods to show the classes of bioactive natural compounds in the plants [13, 14, 17-20] (Table 1).

Table 1. Qualitative estimation of the various secondary metabolites

Species	*Fla.*	*Glu.fl.*	*Tan.*	*Sap.*	*Alk.*	*Car.*	*Ste.*	*U.Ste., Ter.*
Anvillea radiata coss	++	++	-	++	+	-	+	+
Artemisia herba-alba	+	+	-	-	-	++	-	++
Brocchia cinerea	++	++	-	+	+	-	-	-
Bubonium graveolens	++	++	-	++	-	++	-	+
Cotula anthemoides	++	+	+	+	+	+	+	+
Echinops spinosus	++	-	+	-	+	-	+	-
Launaea arborescens	+++	++	++	++	-	+	-	+
Launaea naudiculis	++	++	+	+	-	+	-	-
Launaea residefelia	+	-	-	+	-	-	-	-
Scorzonera undulata	++	+	-	+++	-	-	+	+
Warionia saharae	+++	++	-	+++	-	++	-	+

Fla.: Flavonoids, Glu.fl: Glucoside flavonoids, Tan.: Tannins, Sap.: Saponins, Alk.: Alkaloids, Car.: Cardinolids, Ste.: Steroids, *U.Ste., Ter*.: Unsaturated sterol and Terpene
+++ Important presence ++ Average + Weak - Absence

The different extracts of the 11 plants studied gave various classes of bioactive compounds (Table 1). All the plants contained flavonoids, glucoside flavonoids and saponins at different concentrations, while tannins, alkaloid, steroids, unsaturated sterol and terpene were lacking in the majority of species. The interesting cardiac glycosides were present in significant amount in *Artemisia herba-alba, Bubonium graveolens* and *Warionia saharae*.
The presence of some of these bioactive metabolites like flavonoids, glucoside flavonoids, saponins and cardiac glycosides suggests that the plants might be of pharmacological importance and supports the bases for the ethnopharmacological uses by local inhabitant in of southwest Algeria. The presence of these compounds suggests that the plant might have an antimicrobial, antioxidant, antiinflammatory, anticancer activity, cardio-active and diuretic [1, 21-25].

Conclusion

Actually, medicine and pharmacology have evolved from traditional medicine only after thorough chemical and biological screening. The results of the presence of various bioactive compounds in water extracts of the 11 medicinal Asterceae from Algerian Sahara indicate the richness of Sahara species and the importance of local ethnopharmacological knowledge. Finally, in Algerian Sahara, the traditional medicines constitute in fact a very rich heritage, which should be transferred to the younger generations. The data on phytochemùical screening may be valuable in the future for the extraction of purs compounds and for pharmacological studies.

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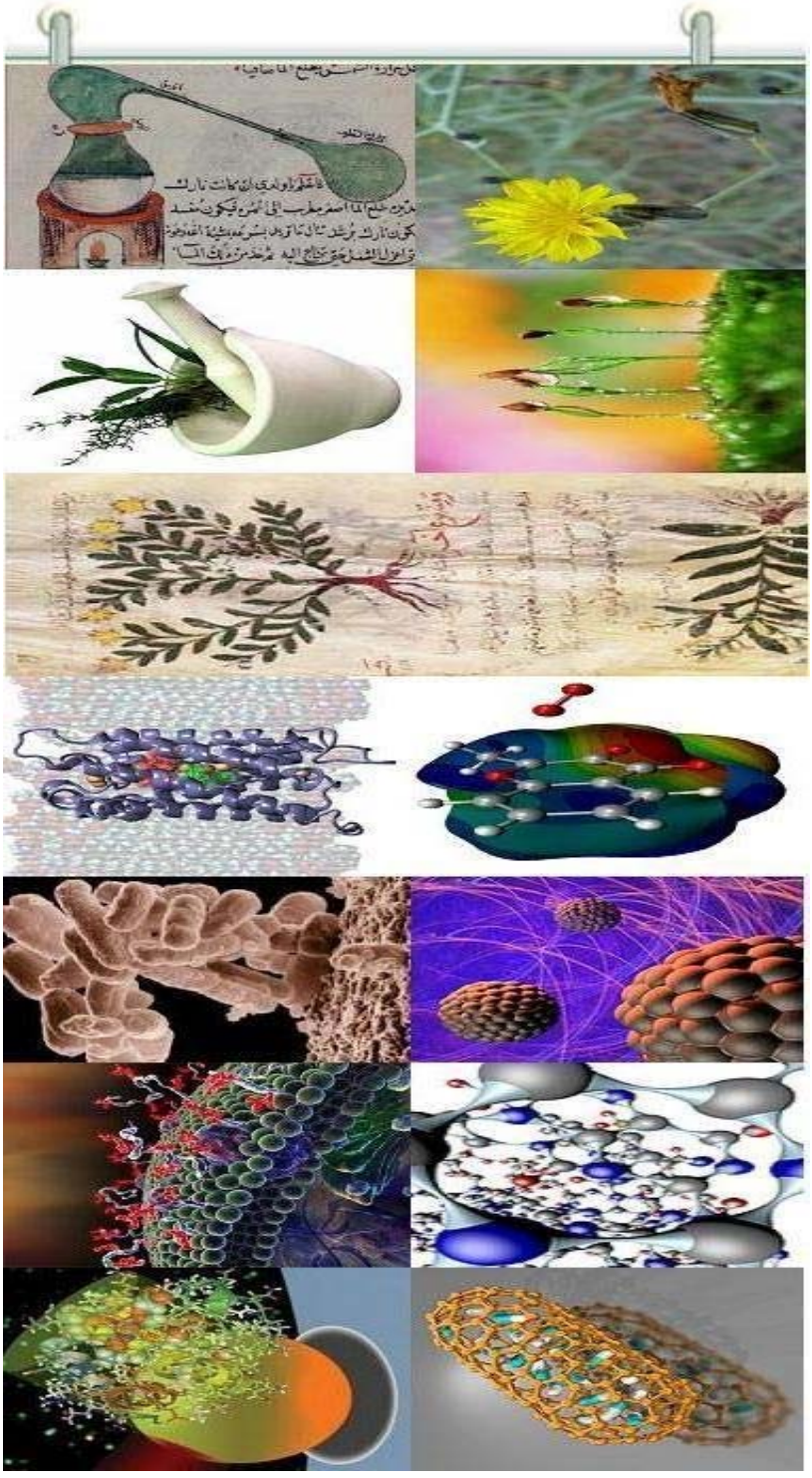

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