

MEDICINAL PLANTS POPULARLY USED IN THE RURAL COMMUNITIES OF BEN SROUR (SOUTHEAST OF M'SILA, ALGERIA)

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Abstract

The aim of this article is to investigate medicinal plants in Ben Srouur region of M'sila, province and their use for treating several diseases in traditional medicine. The traditional and local uses of collected plants were questioned through semi-structured interviews with local informants and practitioners. The obtained data allowed to identify 84 species belonging to 37 botanical families with dominance of Lamiaceae (11 species), Asteraceae (8 species), Fabaceae (7 species) and Apiaceae (6 species). The most used parts of the plant are leaves (43%), aerial parts (21.7%), stems (9.6%) and seeds (7.7%), respectively. Decoction (37.87%), infusion (27.51%), powder (11.31%), maceration (5.48%) and raw (6%) are mode of traditional preparation of the medicinal plants by the local people. According to the results, used plants in Ben Srouur region can be as a potential source of useful drugs.

Key words: Ben Srouur, M'sila, investigation, medicinal plants, traditional preparation.

INTRODUCTION

Plants have been used in traditional medicine for several thousand years (Abu-Rabia, 2005). Since the advent of modern allopathic medicine, the use of traditional medicine (including the use of medicinal plants for cure) declined to a considerable extent. However, in recent years, traditional medicine has made a comeback for a variety of reasons such as side-effects and toxicity of modern synthetic drugs, evolution of multi-drug resistance microorganisms, and the inability of modern medicine to find effective cures for a number of diseases. During the last few decades there has been an increasing interest in the traditional use of medicinal plants in different parts of the world (Al-Qura'n, 2005; Gazzaneo et al., 2005; Lev, 2006). Several studies highlight the importance of herbal medicine among indigenous peoples (Tabuti et al., 2003; Kujawska et al., 2017).

Therefore ethnobotanical studies are often significant in revealing locally plant species important especially for the discovery of crude drugs. Thus, documenting the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources. Nowadays, according to the World Health Organization (WHO), as many as 80% of the world's people depend on traditional medicine for their primary healthcare needs. Ethno-medicinal surveys or surveys of medicinal plants used by traditional medicinal practitioners could represent a rich source of data for the knowledge of medicinal plants and the ailments for which they are used. These data can provide the background and save the potential researcher from fruitless research in modern scientific inquiries about the disease-curing properties of any particular plant. The study of medicinal plants in this area has not been realized as fully as that of other traditional communities elsewhere. In this

study, we present information on plant species used as medicines by people that inhabit an important step area. Out of the total flowering plants reported from the world, more than 50,000 are used for medicinal purposes (Govaerts, 2001). The Algerian flora with more than 3139 species (Quézel & Santa, 1962; 1963) is one of the richest of North Africa (Miara et al., 2018). In Algeria, where phytotherapy is an integral part of the local culture, population has an important indigenous knowledge empirically acquired through the generations (Bouasla et al., 2017). Traditional medicine still remains the main resource for a large majority of the people in Algeria in order to treat health problems and a traditional medical consultancy including the consumption of the medicinal plants has a much lower cost than modern medical attention. Recently, there are some works done in Algerian provinces that recorded medicinally important plants (Ould El Hadj et al., 2003; Chehma & Djebar, 2008; Rebbas et al., 2012; Boudjelal et al., 2013; Miara et al., 2013; Benarba et al., 2015; Chermat & Gharzouli, 2015; Hammiche & Maiza, 2015; Meddour & Meddour-Sahar, 2015; Bouchikh et al., 2016; Ouelbani et al., 2016; Bendif et al., 2018; Miara et al., 2018; Souilah et al., 2018; Miara et al., 2019a; 2019b). Despite the existence of a rich ethnic heritage in the region of our interest, only a few

dedicated ethnobotanical studies have been published so far. Recently, various authors (Rebbas et al., 2012; Benderradji et al., 2014; Bounar et al., 2016), independently carried out a study in a few localities of the province of M'sila, reporting the uses of medicinal plants. It is in this context that the present work is part and has the following objectives: to collect as much information about the therapeutic uses practiced in this region, to analyze the results concerning the relationships between medicinal species and types of diseases treated, to identify all the diseases treated, to preserve the medicinal plants used by the local population and to highlight its importance and therapeutic interest by ethno-pharmacology based on drug discovery and biological studies.

MATERIALS AND METHODS

THE STUDY AREA AND ETHNOBOTANICAL INVESTIGATION

The study area of Ben Srour is located in the Southeast of the province of M'sila in the Central North part of Algeria, at 40 km of the largest city nearby Bou Saâda (N 35 °2'25"; E 4° 33'50") (Figure 1). This region has a step ecosystem with arid climate, includes a forest with accentuated relief, and a mountainous area.

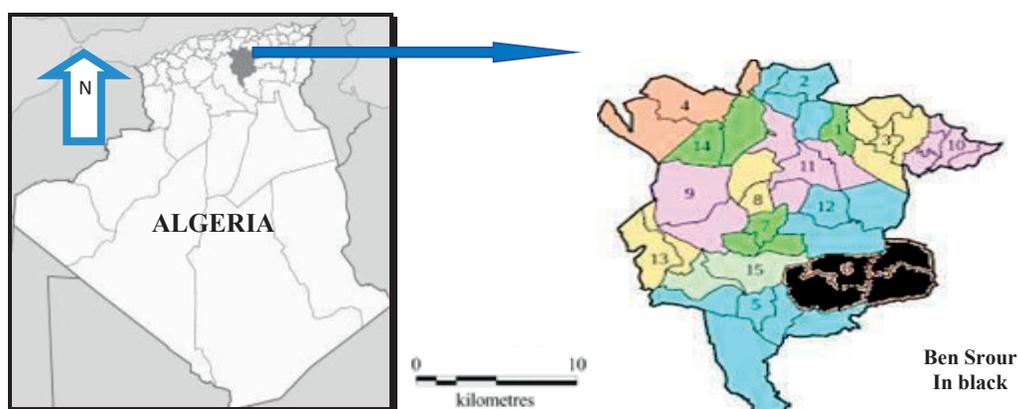


Figure 1. Location of the study area Ben Srour, Central North of Algeria (National Agency for Investment Development, 2015) <http://www.andi.dz/PDF/monographies/Msila.pdf>.

For the study area (Ben Srour, province of M'sila), the population density by commune is shown in Table 1. The structure by sex gives a female population; the sex ratio is 1.04 men for a woman. The nomadic population has always remained located in the south east and in the center of the state. Some municipalities are

practically made up of a nomadic population: Ouled Slimane, Khoubana Ben Zouh, Sidi Hadjres, El Houamed and M'cif.

In general, this region is inhabited by rural population with majority of dwellers being farmers who still continue to practice traditional medicine.

Table 1. Population structure by commune (Ben Srour, province of M'sila)

Commune	Population 2015	Population sex		Density (inhabitant/km ²)	Urban Population	Rural Population
		Male	Female			
Ouled Sliman	7.201	3.672	3.528	23	0	7.201
Zarzour	6.781	3.458	3.323	28	0	6.781
Mohamed Boudiaf	17.611	8.982	8.629	27	0	17.611
Ben Srour	28.084	14.327	13.757	60	24.222	3.862

(National Agency for Investment Development, 2015) <http://www.andi.dz/PDF/monographies/Msila.pdf>.

DATA COLLECTION

The investigation of medicinal plants used within the communities of Ben Srour and the surrounding areas took place between January and May 2017. This study was conducted among randomly selected local people of Ben Srour region (Table 2). 200 people were interviewed using a questionnaire. Oral semi-structured interviews and questionnaires were the tools commonly used for data collection. The plants were collected around the region of the informants and were shown to them to confirm the plant names.

The questionnaire contained information about the interviewed people and their uses of medicinal plants, various data such as local names, conditions and, therapeutic effects, parts of plants used, mode of and administration. To include medicinal plants in this inventory, two inclusion criteria were used: first - only herbal remedies that have been passed down from the oral tradition were taken into account; and second - only the plant species that could be directly identified and collected by the respondent are listed in this article.

Table 2. Distributions of investigations in the communities of Ben Srour

Region	Number of investigation
Ben Srour	100
Ouled Sliman	25
Zarzour	25
Mohamed Boudiaf	50
Total	200

RESULTS AND DISCUSSIONS

Overall 84 plants belonging to 37 botanical families have been documented. Of the 37 families encountered four families clearly dominate the use profile, namely: Apiaceae with 6 species, Fabaceae with 7 species, Asteraceae with 8 species and Lamiaceae with 11 species (Table 4). The plant parts ranged from aerial parts, bulbs, bark, leaves, flowers,

fruits, seeds, roots, resin, rhizome and stems (Figure 2). The parts most used by people in study area appeared to be the leaves and aerial parts. This has also been observed by several authors in different regions of Algeria (Benarba et al., 2015; Chermat & Gharzouli, 2015; Ouelbani et al., 2016; Bouasla and Bouasla, 2017; Miara et al., 2019c). This may be related to the nature of active compounds in these parts. In order to facilitate the administration of the drug, several methods are used, namely decoction, infusion, powder, fumigation, poultice, and maceration. Users are always looking for the simplest method to prepare herbal medicines (Figure 3), the most frequent being the decoction and infusion. The dominance of these modes of preparation was also observed in Constantine by Ouelbani et al. (2016). However, Benarba et al. (2015) reported the dominance of decoction preparation. Among the people questioned, those aged 40-50 years were the most prevalent, at 25%, followed by those aged 50-60 years at 22%, then those aged 30-40 years at 19%, and 20-30 years at 16%, the over 60 year-oldest 11%. The herbalists aged less of 20 years were a moderate 8% of the group (Figure 4). There is also a loss of information on medicinal plants, which could be explained by the mistrust of some people, especially young people, who tend to no longer believe too much in traditional medicine.

Our results are confirmed by the study of Anyinam (1995) who stated that knowledge of medicinal plants and their properties is generally acquired after a long experience accumulated and transmitted from one generation to another. The transmission of this knowledge is currently in danger because it is not always ensured. The questionnaire affected both sexes (male and female). The majority of the people who used the medicinal plants in Ben Srour were female (60%) while only 40% were males, since women often use medicinal plants compared to men (Figure 5). This is

explained by various factors e.g. women are concerned with the treatment (not only of themselves but also of their families), preparation of recipes for care, their responsibility as mothers, providing first aid, in particular for children, all these showing that women are more holders of traditional phytotherapeutic knowledge.

More than half of the people were college graduates (51%). Those are illiterate with no level of study accounted for 25%, while those with a primary or secondary level of education were only 14 and 10% (Figure 6).

The most common users in these surveys are married people (54%), followed by single people (30%), then widowers (13%), and divorced people (3%) (Figure 7).

The unemployed and civil servants constitute the major part of the informants, representing 34.5% and 26%, respectively. People with free work come in third place (8%), and finally herbalists (3% of the people surveyed).

The unemployed make up the majority of users of herbal medicines (35%), because plants are available year-round in their environment, and plants are cheaper compared to pharmacological drugs (Figure 8).

DISEASES THERAPY

The information collected from traditional medical practitioners was summarized (Table 4). Most of the plants in Ben Srouer region were found to be very effective in the treatment of infectious, endocrine system, cardiovascular, and respiratory system diseases, as well, they are used to treat gastrointestinal, and urinary system complications, especially, in hematology, neurology, gynecology, torhinolaryngology and tumors fields.

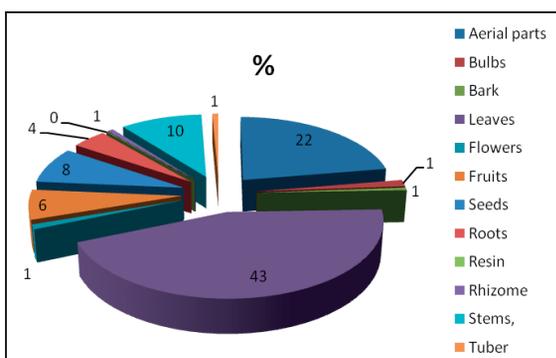


Figure 2. Proportion of plant parts used by local people

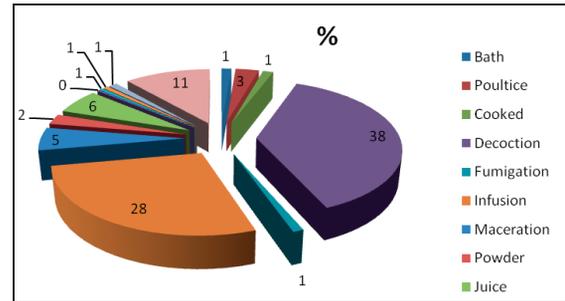


Figure 3. Methods of herbal preparation used by local people

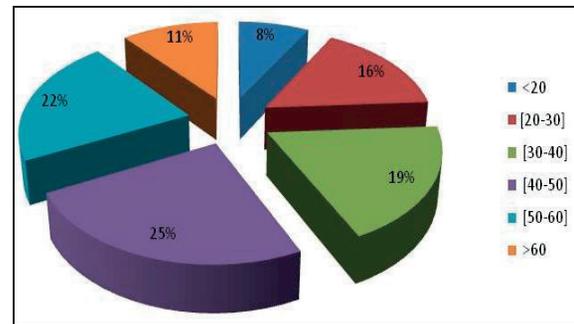


Figure 4. Proportion distribution of users by age

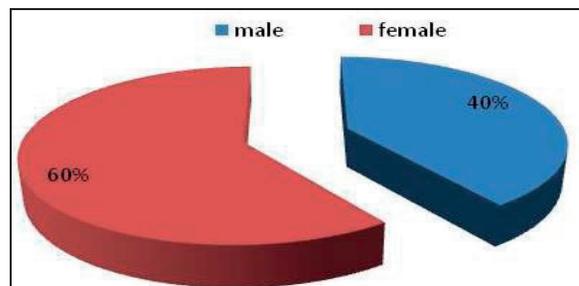


Figure 5. Proportion distribution of users by sex

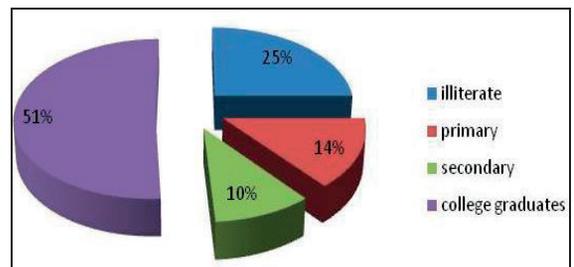


Figure 6. Proportion distribution of users by level of study

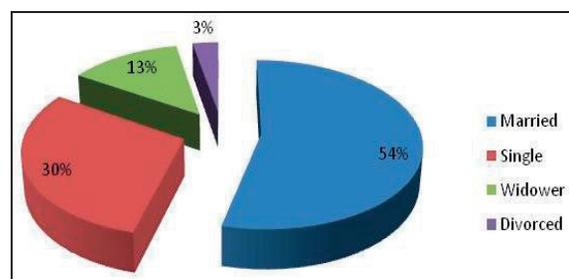


Figure 7. Proportion distribution of users by family situation

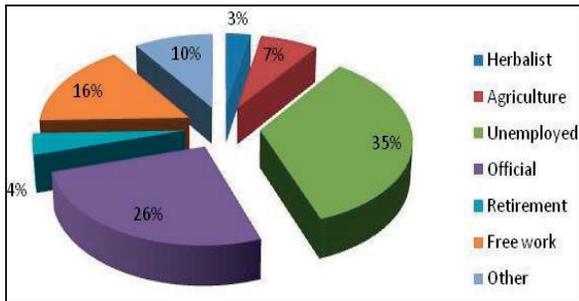


Figure 8. Proportion distribution of users according to profession

TOXICITY OF MEDICINAL PLANTS

The toxicity of the plant can depend on (i) part used, (ii) how the body came into contact with the plant, (iii) the dose to which the organism

was exposed, and various other factors. The interviewed people reported 6 plants that were toxic when used at high doses (Table 3).

In previous study, *Peganum. harmala* L. and *Nerium. oleander* L., were reported as toxic species in Bordj Bou Arreridj region (Miara et al., 2019c). In regard to dosage, the people reported that the dose differed from one plant to another, and should be optimized by taking into consideration several parameters, such as the patient's age, general state of health, previous diseases or presence of any current chronic diseases.

Unfortunately, there was no general agreement on precise dose limits for these plants.

Table 3. Medicinal plants identified with a toxic effect

Plants	Families	Number of informants
<i>Peganum harmala</i> L. (Harmal)	Nitrariaceae	4
<i>Ruta chalepensis</i> L. (Fidjel)	Rutaceae	5
<i>Nerium oleander</i> L. (Defla)	Apocynaceae	22
<i>Urtica urens</i> L. (Horig)	Urticaceae	7
<i>Citrullus colocynthis</i> (L.) Schrad. (Hdadj)	Cucurbitaceae	32
<i>Thapsia garganica</i> L. (Bounafaa)	Papaveraceae	12

FUTURE PERSPECTIVES AND CONCLUSIONS

The ethnobotanical investigation carried out in Ben Srour documented 84 medicinal plant species distributed in 37 families, with the predominance of Lamiaceae, Asteraceae, Apiaceae and Fabaceae. *M. viridis* L., *A. herba-alba* Asso, *J. communis* L., *A. campestris* L., *R. officinalis* L., *P. harmala* L., *A. sativum* L., *T. polium* L. and *A. cepa* L were most commonly used by the indigenous people of Ben Srour region. The above-mentioned medicinal plants in Ben Srour region can be as a potential source of useful drugs. The findings of this review are promising in diseases traditional therapy. Generally, despite the fact that promising information indicate the efficacy of the medicinal plants of the region in the treatment of several diseases, future researches on investigating mechanisms of actions, dosages,

clinical efficacy, and safety of the extracts in diseases treatment are recommended.

ACKNOWLEDGEMENTS

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CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this paper.

AUTHORS' CONTRIBUTION

All authors contributed equally to this work.

Table 4. Medicinal plants used by the local people of Ben Strou region

Scientific names	Local name	Part used	Preparation	Local use
Amaranthaceae				
<i>Atriplex halimus</i> L.	Gtof	Aerial parts, leaves and stems	Decoction	Eczema, scarring and some of skin diseases (dart), thyroid cysts, breast cancer and diabetes
<i>Beta vulgaris</i> L.	Chamandar	Bulbs, roots,	Row and cooked	Anti-anemic, aperitif, digestive, it is recommended in case of asthenia and affections of the liver
<i>Spinacia oleracea</i> L.	Selg	Aerial parts and leaves	Cooked	Anti-inflammatory, diuretic, galactogenic and against constipation
Amaryllidaceae				
<i>Allium cepa</i> L.	El basla	Bulbs	Decoction, row, cooked, compress and infusion	Treatment of infected wounds, bronchitis, constipation, hair loss, lungs and breathing, anti-infectious, anti-inflammatory, anti-rheumatic, diuretic, anti-rheumatic, analgesic, earache, infected wounds, ears, constipation, headache, otitis, kidney disease, intestinal worms, pain, migraine, throat infection, colds, biting insects, hemorrhoids, hypertension and diabetes.
<i>Allium sativum</i> L.	El thome	Bulbs	Decoction, maceration, raw, powder, cooked, fresh and juice	Anti-inflammatory, antiseptic, antispasmodic, lower blood pressure. It liquefies the blood, Febrifuge, hypoglycemic, dewormer, lower cholesterol and blood pressure, toothache, knees, headache, otitis, earache, treats anemia.
Anacardiaceae				
<i>Pistacia lentiscus</i> L.	Dharw	Leaves and fruits	Infusion and decoction	Respiratory and digestive problems, ear inflammation, bronchial tubes and weak breathing, antiseptic, cure diarrhea, deterrent, hemostatic, vulnerable
Apiaceae				
<i>Cuminum cyminum</i> L.	Camoune	Aerial parts, seeds and leaves	Infusion, decoction and powder	Digestive problems, treats inflammations of the urinary, tract anxiety, dyspepsia, gingivitis and other mouth conditions
<i>Foeniculum vulgare</i> Mill.	Besbas	Bulbs, seeds and aerial parts	Infusion, raw and decoction	Used against diarrhea and intestinal gas. useful for colon diseases analgesic, anxiety, aerophagia, abdominal pain, colic, spasms and treat stomach disorders
<i>Thapsia garganica</i> L.	Bounafaa, Derias	Roots	Decoction, powder and cataplasma	Local application against rheumatic pains and the thorax to treat bronchitis
<i>Bunium bulbocastanum</i> L.	talghouda	seeds	Infusion	Intestinal gas, thrombosis and worms
<i>Daucus carota</i> L.	Zroudia	roots	Cooked and juice	Blood pressure
<i>Coriandrum sativum</i> L.	Kosbor	Stems, leaves and seeds	Decoction	Intestinal gas
Apocynaceae				
<i>Nerium oleander</i> L.	Defla	leaves aerial parts aerial parts	Decoction, infusion, powder and cataplasma	Against some skin diseases, respiratory and cardiac disorders
Arecaceae				
<i>Phoenix dactylifera</i> L.	Nakhla	Fruits	Powder and maceration	Against anemia and sexual sterility
Asparagaceae				
<i>Asparagus officinalis</i> L.	Sakoum	Roots	Bath and infusion	Activate kidneys, bladder, inflammation or urinary tract, rheumatic fever, hepatic insufficiency and palpitations
Asteraceae				
<i>Echinops spinosus</i> L.	Tasekra	Leaves	Decoction	Hygiene after child birth
<i>Artemisia campestris</i> L.	Tgofet	Aerial parts, stems and leaves	Powder, decoction and infusion	Diabetes, poisoning, diarrhea, stomach pain, intestinal gas, abdominal pain, hypotension, stomach ulcer, biting, intestinal worms and cough

Scientific names	Local name	Part used	Preparation	Local use
<i>Artemisia absinthium</i> L.	Chedjret meriem	Leaves and stems	Infusion, decoction and powder	Digestive problems, antiseptic, anthelmintic, relaxing, hemorrhoid, difficulty in childbirth, lepers and stomach
<i>Artemisia herba-alba</i> Asso	Chih	leaves, stems and aerial parts	Infusion, decoction, powder, maceration and fumigation	Digestive problems, abdominal pains, liver diseases, abdominal pain, aperitif, antispasmodic, stomachic, emmenagogue, antelmintic, anti-vomiting, dysentery, injuries and relax
<i>Atractylis gummifera</i> L.	Ladad	Roots	Decoction	Rheumatism and abdominal pains, antispasmodic, anti-rheumatism and cephalic
<i>Anthemis nobilis</i> L.	Baboundj	Inflorescences	Infusion, maceration, decoction and bath	Sores, boils, abscesses and skin inflammations, fever, dewormer, stomachic, anti-inflammatory, analgesic, healing, used against fever. relieves wounds, abscesses, cough, anxiety, skin diseases and lung diseases
<i>Cynara cardunculus</i> L.	Khorchaf	Stem	Infusion and raw	Aperitif, stomachic, anemia, cardiovascular disease and stomach debility.
<i>Inula viscosa</i> (L.) Aiton	Magramâne	leaves	Infusion and decoction	cicatrizing action, anti-diarrhea and dewormer ,intestinal worms, rheumatic, intestinal gas, gastric ulcer, lung ailments, headache, analgesic and antiseptic
Brassicaceae				
<i>Brassica rapa</i> L.,	Left	Roots	Juice	Treats cough
<i>Eruca vesicaria</i> (L.) Cav.	Djardjir	Aerial parts	Infusion	Diuretic, aperitif, digestive and stomachic and tonic
<i>Lepidium sativum</i> L.	Haberr, achad	Leaves and seeds	Infusion and cataplastm	Hypoglycemia and rheumatism, depurative, aperitif, dislocation, arthritis, and fractures
<i>Sinapis arvensis</i> L.	Khardel	Leaves	Infusion, maceration and decoction	Stomachic, chronic constipation, inflammation of the lungs and mouth, neuralgic cough and pain
Cactaceae				
<i>Opuntia ficus-indica</i> L. Mill.	Hindi	Leaves Fruits	Decoction, juice and oil	Hair care, anti-diarrheal and headache
Caryophyllaceae				
<i>Spergularia rubra</i> J. Presl. & C. Presl.	Fatat El Hadjer	Leaves	Infusion and decoction	Anti-diarrheal, aperitif, febrifuge, aphrodisiac, aseptic, inflammation of the urinary tract, vesicle, renal calculi, urinary and rheumatism
Cucurbitaceae				
<i>Citrullus colocynthis</i> (L.) Schrad.	Hdadj	Roots, leaves and fruits	Powder and cataplastm	Hemorrhoids, anti-diarrhetic, anti-colic, hepatic and rheumatism
Cupressaceae				
<i>Juniperus oxycedrus</i> L.	Tagga	Leaves	Infusion and powder	Stomachic, diuretic, skin diseases (eczema)
<i>Juniperus phoenicea</i> L.	Aârâr	Aerial parts, leaves, stems and seeds	Infusion and decoction	Anti-parasitic, antiseptic and detergent (treatment of wounds), ulcer, debility, stomach, nausea, Anti-diarrhetic, inflammation, pulmonary diseases, dyspepsia, intoxication and treat diseases of the kidneys
Fabaceae				
<i>Senna alexandrina</i> Mill.	Sanna meki	Aerial parts	Infusion	Constipation
<i>Cicer arietinum</i> L.	Homos	Seeds	Powder	Anemia
<i>Lens culinaris</i> Medik.	El aadas	Seeds	Decoction	Anemia and burns
<i>Glycyrrhiza glabra</i> L.	Erik sous	Roots	Decoction	Rheumatism, asthma, cholesterol and liver disease
<i>Ceratonia siliqua</i> L.	Kharoub	Leaves and fruits	Decoction, raw and powder	Skin spot, analgesics, skin spot, diarrhea and stomach ulcer

Scientific names	Local name	Part used	Preparation	Local use
<i>Retama raetam</i> (Forssk.) Webb & Berthel	Stem	Aerial parts	Infusion and decoction	Skin affections (furuncles), eye irritations, diarrhea, feverish diseases, solitary worms, healing, detergent, diarrhea, sores, feverish and tapeworms
<i>Trigonella foenum-graecum</i> L.	Elhalba	Seeds	Infusion, decoction and powder	Diuretic, galactagogic, hypoglycemic, stomach pains, slimming, aperitif, bronchitis, softening, febrifuge, anti-diarrheal, slimming, use for phobia, anemia, lack of mother's milk
Fagaceae				
<i>Quercus ilex</i> subsp. <i>ballota</i> (Desf.) Sampa.	Kerouch - Ballout	Leaves, fruits and bark (dbagha)	Raw, cooked, infusion, compress, powder and decoction	Anti-diarrhetic, antiseptic, nutrient, tonic, febrifuge, intestinal ulcer, hemorrhages, chapped skin, varicose veins, dermatosis, colic, anorexia and stomach
Lamiaceae				
<i>Thymus munbyanus</i> Boiss et Reut	Jertil	Leaves, stems and aerial parts	Decoction and powder	Anti-diarrheal, feverish, against anorexia, stomach pains and blood pressure
<i>Ajuga iva</i> (L.) Schreb.	Chendgoura	Aerial parts and leaves	Infusion, decoction and powder	Antiseptic, anti-rheumatic, antidiabetic, hypotensive, digestive problems, anti-diarrhetic and treat worms and sores
<i>Lavandula stoechas</i> L.	Mezir Khouzama	Aerial parts and flowers	Infusion, maceration, powder and oil	Antiseptic, antispasmodic, hepatic disorders, carminative, promote appetite, healing, rheumatism, respiratory tract infections, headaches
<i>Marrubium vulgare</i> L.	Merriouat	Leaves	Infusion, decoction and maceration	Liver diseases, respiratory tract, febrile conditions (in young children), antidiabetic, stomachic, tooth pain, aperitif, cough, allergies, blood pressure, rheumatism and burns
<i>Mentha pulegium</i> L.	F'liou	Aerial parts and leaves	Infusion, gargantisme and decoction	Anti-hypertensive, antispasmodic, anti-diarrheal, cold, headache, intestinal gas, gastric disorders, inflammation of the larynx, bronchitis, bad breath and stomach pain
<i>Mentha spicata</i> L.	Naanaa	Leaves, stems and aerial parts	Infusion, powder and decoction	Antiseptic, antispasmodic, digestive, analgesic, anti-diarrheal, antispasmodic, stimulant, cold, aerophagia, hypertension, stomach, anxiety, inflammation of the respiratory tract, gingivitis and other diseases of the mouth intoxication, insomnia, dyspepsia, migraine, neuralgia and stomach abdominal pain
<i>Ocimum basilicum</i> L.	Ahbak	Leaves, stems, flowers and seeds	Infusion, powder and bath	Digestive problems, abdominal pains, stomachic, heart disease, heart disease, treats nervous disease, whooping cough, against nervous and lack of milk for women
<i>Origanum glandulosum</i> Desf.	Zaater	Leaves, aerial parts	Infusion, decoction, and fumigation	Rheumatic pains Rheumatism, hepatic tumors, eczema, digestive, influenza, respiratory problems, against anorexia, microbes in the gut and lungs
<i>Rosmarinus officinalis</i> L.	AKhil mzir	Leaves, stems, flowers, aerial parts	Infusion, decoction, maceration and bath	Hepatic disorders, dyspepsia, intestinal gas, rheumatism, skin and hair affections, leg pain due to fatigue, against cystitis, anti-diarrheal, hypertension, wounds, intestinal worms, weakened stomach, kidneys, colds, irregularity of the menstrual cycle, Alzheimer, diabetes, thrombosis and varicose veins
<i>Teucrium polium</i> L.	Khayata	Flowers, leaves and aerial parts	Infusion, powder, cataplasm and decoction	Diabetes, migraine, anti-inflammatory, deterrent, febrifuge, hypoglycemic, vulnerable, antiseptic, stomach, gastric ulcer, genitourinary infection, burns and intestinal worms
<i>Thymus munbyanus</i> subsp. <i>coloratus</i> (Boiss. & Reut.) Greuter & Burdet.	Zâaitra	Leaves, stems	Infusion	Blood pressure, diabetes, dewormer, stomachic
Lauraceae				
<i>Cinnamomum verum</i> J. Presl	Karfa	Bark	Powder and decoction	Rheumatism, mouth and teeth infections and menstrual cycle irregularity
<i>Laurus nobilis</i> L.	Rand	Leaves	Powder, decoction and infusion	Skin disorders, allergy, aerophagia, rheumatism, indigestion, blood pressure, stomach
Lytraceae				
<i>Lawsonia inermis</i> L.	Henna	Leaves	Powder	Use to treat rheumatism
<i>Punica granatum</i> L.	Romane	Peel of fruit	Infusion, powder, decoction and juice	Mouthwash to treat aphthae, diarrhea, digestive problems Treat hemorrhoids, cysts, anemia, tumor
Malvaceae				

Scientific names	Local name	Part used	Preparation	Local use
<i>Mahua sylvestris</i> L.	Khoubéize, M'djir	Aerial parts	Infusion, decoction, gargling and cataplasm	Tumors, eyes irritations, inflammations, urinary and digestive disorders, skin infections (abscesses, tumors, insect bites, etc.), respiratory conditions (asthma, colds), antiseptic, calming, back pain, rheumatic pain, kidney stones, hemorrhoids, tooth infection insomnia, constipation
Moraceae				
<i>Ficus carica</i> L.	Karma	Fruits	Raw and maceration	Anti-diarrheal, antiasthenic, laxative, nutritive, used to treat anemia, bronchopulmonary diseases and bowel obstructions
Myrtaceae				
<i>Syzygium aromaticum</i> (L.) Merr. & L.M. Perry	Koronfol	Flowers	Decoction and powder	Urinary tract infections, toothache, blood circulation disorders and colds
Nitrariaceae				
<i>Peganum harmala</i> L.	Harmel	Leaves	Decoction, powder and cataplasm	Aphrodisiac and euphoric, analgesics (rheumatic pain, painful periods), aphrodisiac and euphoric, cysts and hemorrhoids
Oleaceae				
<i>Olea europaea</i> L. subsp. <i>europaea</i>	Zitoune	Leaves, fruits and bark	Infusion, raw, cooked, oil and gargling	Hypoglycemic, anti-hemorrhoid, hypotensive, inflammations of eyes. Leaves and bark: febrifuge, hypoglycemic, hypotensive tonics. Fruits: softeners, hemorrhoids, hypocholesteric, hypotensive, laxatives, nutritive, olive oil: treat colds, painful periods, menstrual cycle disorders, pain, gingivitis, heart attack or cardiovascular accidents, anti-diarrheal
Papaveraceae				
<i>Papaver rhoeas</i> L.	Benaâmane, ghoubch	Flowers	Infusion and decoction	Antispasmodic, digestive problems, soothing. Against irritating cough and insomnia
Pedaliaceae				
<i>Sesamum indicum</i> L.	Jeljlane	Seeds	Fresh and oil	Skin irritations (Eczema) and thinness
Pinaceae				
<i>Pinus halepensis</i> Mill.	Snowber	Leaves, resin bark	Infusion, decoction, cataplasm and bath	Respiratory ailment (bronchitis, pneumonia and colds), urinary and parasite problems and wounds
Poaceae				
<i>Zea mays</i> L.	Mais	Beards	Decoction	Blood pressure, intestinal gases, urinary tract diseases, calculi, Rheumatism and obesity
<i>Hordeum vulgare</i> L.	El chaire	Seeds	Infusion, powder and maceration	Diabetes, anemia, tuberculosis, stomach, colon, rheumatism, kidney diseases, urinary tract, diarrhea, kidney and urinary tract diseases
<i>Stipa tenacissima</i> L.	Halfa	Leaves and roots	Infusion and decoction	jaundice, dyspepsia, gallstones, kidney stones chronic ulcers, hair, kidney stones, antidiabetic, slimming, kidney stones, weight loss and cholesterol
<i>Triticum durum</i> Desf.	El gamh	Seeds	Infusion, powder, raw, cooked and decoction	Anemia, growth, pregnancy and lactation, deterrent and Kidney Diseases
Plantaginaceae				
<i>Globularia alypum</i> L.	Tesslegha	Flowers aerial parts	Infusion and decoction	Depurative, diuretic, laxative (depending on the dose, it may become purgative), stomachic and sudorific, rheumatism, kidney disease sciatica anorexia
Ranunculaceae				
<i>Clematis cirrhosa</i> L.	Zenzou	Leaves	Decoction	Rheumatic pains

Scientific names	Local name	Part used	Preparation	Local use
<i>Nigella sativa</i> L.	Saynoudj	Seeds	Decoction	Cough, headache and toothache
Rutaceae				
<i>Citrus lemon</i> (L.) Burm. f.	Laymoun	Fruits and leaves	Juice and decoction	High blood pressure, acne, colds, digestive disorders, fever, stomach weakness, sore throat, anxiety and influenza
<i>Citrus aurantium</i> L.	Tehima	Leaves, flowers and fruits	Juice and decoction	Antispasmodic, against intestinal worms, anxiety, hysteria, colds, anorexia and asthenia
<i>Ruta chalepensis</i> (L.)	Fidjel	Leaves, stems	Infusion, Decoction	Antispasmodic, anti-inflammatory (ophthalmic), diuretic, deworming, breathing problems, Breathing problems. Anti-Diarrhetic, Colon diseases, stomach pains, somnia, painful periods
Rhamnaceae				
<i>Rhamnus alaternus</i> L.	M'liles	Aerial parts	Decoction and infusion	Hepatic jaundice and chlorosis, laxative, fever and anorexia
<i>Ziziphus lotus</i> (L.) Lam.	Sedra	Roots, fruits and leaves	Powder, raw, powder and cataplasms	Pulmonary affections and jaundice. Roots treat pulmonary affections, eczema, fruit with emollient activity, stomach pain, leaves for headache
Rosaceae				
<i>Crataegus azarolus</i> L.	Zaaroura	Leaves and roots	Infusion and raw	Anti-diarrhetic, deworming, intestinal gas, lung Affections and weak heart
<i>Hibiscus sabdariffa</i> L.	El karkadya	Flowers	Decoction and infusion	Anemia, blood pressure
Solanaceae				
<i>Solanum tuberosum</i> L.	Batata	Tuber and leaves	Cataplasms and infusion	Stomach ulcer, bronchitis, skin burns and cough
<i>Capsicum frutescens</i> L.	Felfel har	Fruits	Cooked	Anti-anemic, anorexia, dyspepsia, constipation, analgesic, Anti-inflammatory, Antiseptic
Theaceae				
<i>Camellia sinensis</i> L.	Tai lakhdar	Leaves	Infusion, powder and decoction	The powder used as a suppository inside the anus against hemorrhoids, decoction is recommended against intestinal pain, for headache, kidneys, hypertension, Intestinal gas, colon, insomnia, Obesity and asthenia
Thymelaeaceae				
<i>Daphne genkwa</i> L.	Lazaz	Leaves and fruits	Decoction	Antiseptic, against scabies and hair loss
<i>Thymelaea hirsuta</i> (L.) Endl.	Methnane	Leaves	Infusion and decoction	Dandruff, dewormer and hydragogue
Urticaceae				
<i>Urtica urens</i> L.	Horig	Aerial parts	Decoction	Dewormer, analgesics and flatuositis
Vitaceae				
<i>Vitis vinifera</i> L.	El dalya	Leaves	Decoction	Sunburn, eye inflammation, cephalic and abdominal pain
Zingiberaceae				
<i>Zingiber officinale</i> Roscoe	Zandjabil	Bulbs	Infusion, powder and decoction	Diuretic, stomachic, mixed with pure honey as aphrodisiac, febrifuges, stomachic, headache (Cephalic), anti-fatigue, intestinal gas, unclogging of blood vessels, sinusitis, cancer, painful periods, diabetes, obesity and asthenia

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