International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 12 No. 1, 2026
https://theaspd.com/index.php

Traditional and Therapeutic uses of Medicinal Plants by Local Populations of Djebel Medjounes (Algeria)

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Received: 16-06-2025; Accepted: 19-11-2025; Published: 16-01-2026

Abstract
This floristic and ethnobotanical study was conducted in order to make the most complete inventory possible of medicinal plants of Djebel Medjounes and to gather information about the therapeutic uses practiced in the region. Using a questionnaire, ethnobotanical surveys were conducted in the region. The total richness is 65 species belonging to 31 families. The dominant families are represented by Lamiaceae which are the majority, followed by Asteraceae, Apiaceae, Rosaceae, Brassicaceae and others. The majority of plants are therapeutic (70%) belonging to various botanical families, the most important of which is the family Lamiaceae with 6 species. The diseases treated by the 08 most used species are: digestive disorders (stomach aches, abdominal swelling, diarrhea), respiratory problems (cough, asthma, flu), Nervous and mental disorders (against angina, headaches. cough), dermatological problems (tonic, allergies, dandruff) and liver diseases. The most used species by the local population are: rosemary (Rosmarinus eriocalyx), white horehound (Marrubium vulgare), thyme (Thymus munbyanus), mints (Mentha suaveolens, Mentha pulegium) and oregano (Origanum vulgare subsp. glandulosum); the holm oak (Quercus ilex) and the Artemisia (Artemisia herba alba). The surveys conducted have allowed to inventory the medicinal species and to collect the maximum of information about the traditional therapeutic uses. These results can be considered as a source of information for scientific research in the field of phytochemistry and pharmacology.
Key words: *Medjounes- Medicinal species - Ethnobotany - Traditional therapeutic surveys.*

INTRODUCTION

For centuries, medicinal plants have played a crucial role in the treatment of various diseases and health issues. In North Africa, numerous plants are utilized for their healing properties; however, there has been limited research into their use by local communities. Ethnobotanical surveys provide an essential means of gathering and compiling valuable information that can be further explored scientifically.
In Algeria, various researchers have authored scientific publications focusing on phytotherapy and ethnobotany[16,20,21,22,63,68,69,71,87,92,100]. Despite this, significant gaps remain, especially regarding medicinal plants that hold a vital position in the everyday lives of the population. In Djebel Medjounes, situated in the Sétif high plains of northern Tellian Algeria, the practice of using medicinal plants is predominantly found in rural areas, where traditional knowledge is deeply embedded in the cultural memory of the locals.

This study aims to catalog the plants that are still in use today, along with their traditional applications among the local communities in Djebel Medjounes. Recently, however, there has been a notable rise in the commercialization of these plants, marked by the emergence of shops that specialize in selling various plant-derived products.

1. MATERIALS AND METHODS :

1.1. Presentation of the Study Area

The research site is situated within the mountainous regions of the Tellian Atlas, which is part of the North African Mediterranean domain[83]. It is also known as the "Mediterranean Mauretanian" [62]; [66] domain or the "Mediterranean Maghrebian" domain [34]. According to Meddour R. (2010),who provided a detailed analysis of the phytogeographical units in northern Algeria, the area under investigation is classified within the Maghreb-Tellian domain, specifically in the Tello-Constantinian sector and the Biban-Guelma district [72].

Djebel Medjounes is typically found at altitudes ranging from 1200 to 1400 meters in the Tellian Atlas, where it is predominantly covered by sclerophyllous oak forests, thriving in semi-arid bioclimatic conditions. The average minimum temperature values, which range from 0.78 to 3.92, indicate that this region falls within the meso-Mediterranean zone [85].

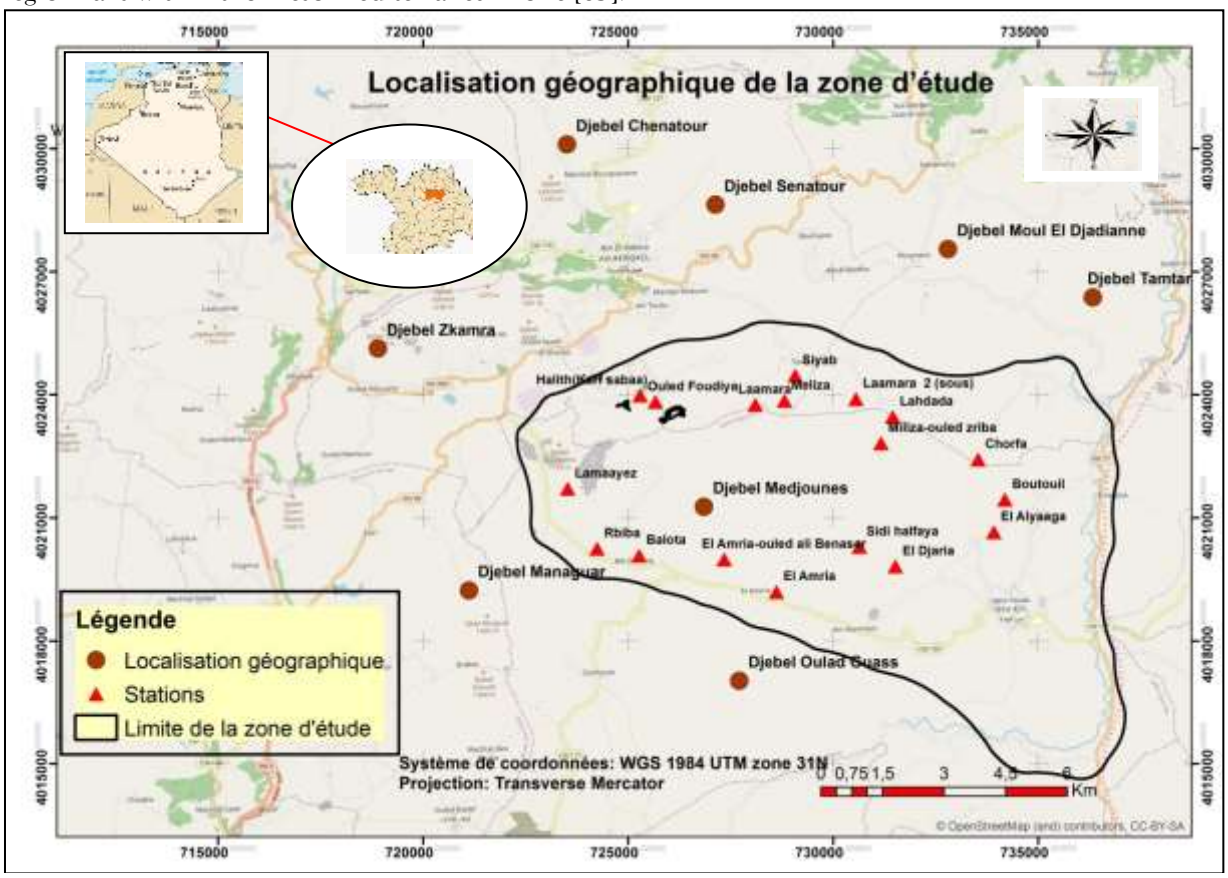

Fig.1. The geographical setting of the study area is illustrated (Gourari B., 2020).

Plant species were scientifically identified using the references Nouvelle Flore d'Algérie [84] and Flore de l'Afrique du Nord [65]. .

The current nomenclature for the documented species was developed in line with the most recent findings presented in the Synonymic and Bibliographic Index of the Flora of North Africa [40].

1.2. Survey of the Population

A preliminary survey was carried out within the populations of the following douars: Amria, Balotta, Boutouil, Chorfa, Djaria, El alayga, Laamara, Ouled Ali Benaser, Ouled sabaihi.

To gather information, a questionnaire was designed, and interviews were held in the local dialect. The length of these interactions varied according to the informant's availability, with some evolving into extended discussions lasting around 30 minutes.

The survey took place in April 2018, targeting 100 individuals chosen at random. The questions primarily revolved around the plants that were gathered and their applications. In total, 100 households residing near Djebel Medjounes participated in the study. The respondents, aged between 20 and 80 years and from both genders, were queried about the medicinal plants they commonly used, the contexts in which they applied them, and their preparation techniques.

1.3. Data Processing

The information collected was entered into a database and subsequently processed and analyzed statistically using Excel 2007 software.

2. RÉSULTS AND DISCUSSION

2.1.Population Ssurvey

2.1.1.Informant Data

Most of the surveys were conducted on the southern slope, which can be attributed to the higher population density in that region.

The age of informants ranged from 22 to 80 years, with the highest proportion between 26% and 61%. Both sexes were represented (57% male and 43% female). Educational levels varied : 5% university level, 18% secondary level, 24% illiterate, and 53% primary level. The results were classified according to therapeutic practices, plant use, and disease treatment. All recorded species are presented below in the form of a catalog.

Djebel Medjounes	Number of survey	Localities
Southern slope	63	Ouled Ali Benaser, Ouled sabaihi, Amria, Balotta, Djaria, El alayga
Northern slope	37	Chorfa, Boutouil, Laamara

2.2.Medicinal Plants recorded according to the surveys

Among the 65 aromatic and medicinal plants listed in Table 2, only eight species are most frequently used by the population.

Tabl.2. List of medicinal plants and their uses.

Family	Species	Therapeutic and traditional uses	Use according to informants
Lamiaceae	**Origanum glandulosum (Desf.) Ietsw.**	It is used to relieve oral ailments such as sore throat and toothache, strengthen the immune system, treat urinary disorders and headaches, promote sweating and detoxification, relieve fever, menstrual disorders, infections and joint pain, influenza, cough, dizziness, and hair dandruff.	*
Lamiaceae	**Marrubium vulgare L.**	Used in the treatment of liver diseases, allergies, gallbladder disorders, influenza, respiratory problems such as bronchitis, cough and asthma, diarrhea, intestinal worms, and digestive disorders such as stomach pain, heartburn, bloating, nausea and vomiting.	*
Lamiaceae	**Rosmarinus eriocalyx Jord. & Fourr.**	Used to relieve stomach colic, joint and muscle pain, headaches, menstrual pain, influenza, and digestive disorders such as bloating.	*
Lamiaceae	**Mentha pulegium L.**	Effective against stomach pain, cough and influenza.	*
Lamiaceae	**Mentha suaveolens Ehrh.**	Used to treat digestive disorders such as bloating and lower abdominal pain, headaches and menstrual pain.	*
Lamiaceae	**Thymus munbyanus Boiss. & Reut. subsp. munbyanus**	Used against tonsillitis, cough, colds, influenza, headaches, digestive problems such as abdominal bloating; it is depurative and relieves joint and muscle pain.	*
Lamiaceae	**Teucrium polium subsp. capitatum (L.) Arcang.**	Used against vomiting, intestinal pinworms, as a diuretic and tonic. It is also employed against abdominal pain, colic and gastric ulcers [23,24].	

Lamiaceae	**Thymus munbyanus subsp. ciliatus (Desf.) Greuter & Burdet**	Leaves are used against rheumatism and fever and to accelerate wound healing. Thyme decoction or infusion with honey is used against cough, headaches, hypertension and gastritis [57]. The plant also treats tonsillitis, colds, abdominal meteorism and endocrine gland disorders [68].	
Lamiaceae	**Salvia verbenaca L.**	Used against fever and to facilitate digestion. Externally, it is effective for dental and gum care. Fresh leaves are used as first aid for bites and stings, disinfect wounds and promote healing [19,20].	
Lamiaceae	**Thymbra capitata (L.) Cav.**	Used to treat digestive tract disorders; it is antispasmodic and effective against cholesterol.	
Lamiaceae	**Ajuga iva (L.) Schreb.**	Used against stomach and chest ailments, as a diuretic, to facilitate childbirth and regulate the menstrual cycle. Treats headaches, abdominal pain, intestinal colic and diabetes. Infusion is used against fever, diarrhea and gas [18,87].	
Lamiaceae	**Teucrium pseudochamaepitys L.**	Used as a stimulant, tonic, stomachic, diuretic, antiscrofulous, febrifuge, vermifuge and antiseptic [45].	
Asteraceae	**Anacyclus clavatus (Desf.) Pers.**	Used for skin problems and difficult digestion. Also applied as an anti-inflammatory plaster. Roots are effective against skin infections, especially fungal diseases [80]. Leaves and stems are consumed in salads or compotes and as digestive herbal teas [26], and against digestive disorders and gastric ulcers [79].	
Asteraceae	**Cichorium intybus L.**	Used to facilitate urinary and digestive elimination, promote renal water elimination, support weight-loss diets, and treat digestive disorders such as epigastric bloating, slow digestion, belching and flatulence. Leaves are applied to abscesses and local inflammation. Widely used in traditional medicine [53], with limited data on antibacterial activity [59].	
Asteraceae	**Centaurea pullata L.**	Used with other plants in the preparation of a traditional local dish called “El Hammama” [39]. Exhibits analgesic effects against acetic-acid-induced abdominal pain and may be useful in reducing inflammatory pain [60].	
Asteraceae	**Artemisia herba-alba Asso**	Used to treat tinnitus, diarrhea, stomach disorders such as nausea, vomiting, stomach pain and bloating, headaches and menstrual pain.	*
Asteraceae	**Pallenis spinosa (L.) Cass.**	Used to treat gastrointestinal diseases, infections of the circulatory, oral and respiratory systems, eczema, burns and skin wounds using the flowers [2]. Aerial parts in decoction or infusion are used as antidiabetic remedies [13,14].	

Asteraceae	**Atractylis gummifera L.**	Used to heal abscesses, boils, chancres and scabies. Antidiabetic [52,73,43], used against colds, dizziness, headaches, and to facilitate childbirth [102].	
Asteraceae	**Calendula arvensis (Vaill.) L.**	Used to relieve gastric and intestinal spasms; depurative, emmenagogue and stimulant. Commercial preparations include baby ointments, massage oil, facial creams and soaps [15].	
Asteraceae	**Launaea lanifera Pau**	Recommended against diabetes and gastric pain; sedative [16].	
Asteraceae	**Hyoseris radiata subsp. radiata L.**	Used against colon crises, digestive disorders and bloating [65].	
Asteraceae	**Sonchus oleraceus L.**	Considered depurative. Decoction of dried plant (one cup after each meal) relieves cholesterol, stomach pain and gout attacks [1]. Young plants eaten raw are also depurative [25].	
Apiaceae	**Daucus carota L.**	Daucus carota is used in traditional medicine due to its hypolipidemic, antinociceptive, anti-inflammatory and antioxidant properties [38].	
Apiaceae	**Eryngium bourgatii Gouan**	Used to prepare remedies; diuretic, anti-inflammatory, appetite stimulant and laxative [36].	
Apiaceae	**Eryngium triquetrum Vahl**	The roots, prepared as a decoction, are used against intestinal pain and colds. The root is also given to children to treat tonsillitis [51].	
Rhamnaceae	**Ziziphus lotus (L.) Lam.**	This plant is recommended for various ailments, particularly pulmonary diseases. Jujube fruits and roots are used to treat respiratory tract disorders, bronchial inflammation and jaundice [19]. It is also used against dandruff, making hair softer and shinier, and for improving skin clarity and softness [25].	
Rhamnaceae	**Rhamnus alaternus L.**	Mainly used against hepatitis and hepatic and dermatological complications [27]. Leaves are used as a gargle for tonsillitis [61]. Maceration of dried rhizome in cold water is used for its hypotensive effect [84].	
Thymelaeaceae	**Daphne gnidium L.**	Mainly used as a hair detangler and against dandruff [31]. Fumigation of leaves and stems is used to treat jaundice [95,63].	
Thymelaeaceae	**Thymelaea hirsuta (L.) Endl.**	Used as a hair softener and nourishment [92]. Dried powdered leaves are used to treat skin infections. Also used against cough and constipation [70].	
Rosaceae	**Rosa sempervirens L.**	Used against digestive weakness and stomach cramps; has diuretic properties. Fruit decoction is effective against diarrhea, stomach pain and urinary infections [28]. Infusion of flowers and leaves is used against nervous disorders and insomnia [19].	
Rosaceae	**Crataegus monogyna Jacq.**	Used as an antispasmodic and to regulate blood pressure. Flower or fruit infusion is	

		antidiarrheal and hypotensive. Gargles are used for sore throat [19]. It helps in cardiovascular disorders and regulates heart rhythm [83,23].	
Rosaceae	**Prunus dulcis (Mill.) D. A. Webb**	Fruit powder mixed with milk is applied as a poultice to improve facial skin [80].	
Poaceae	**Triticum turgidum L.**	Used against constipation, intestinal pain and digestive disorders [29].	
Poaceae	**Macrochloa tenacissima (L.) Kunth**	Used to relieve stomach pain and regulate arterial hypertension [68]. Leaves are also used as eye drops for conjunctivitis [38].	
Anacardiaceae	**Pistacia lentiscus L.**	Used against digestive and gastric disorders, stomach ulcers, varicose veins, respiratory ailments and heavy legs [18,61]. Oil friction promotes wound healing [28]. Decoction of leaves or aerial parts is commonly used [31,35,54,100].	
Anacardiaceae	**Pistacia terebinthus L.**	Used against genital diseases and colon disorders. Leaf decoction is used to relieve stomach pain [25].	
Alliaceae	**Allium sativum L.**	Used to reduce blood cholesterol levels, treat hypotension and infectious diseases [91].	
Asphodelaceae	**Asphodelus ramosus L.**	Used to treat otitis, rheumatism and toothache.	
Fagaceae	**Quercus ilex subsp. ballota (Desf.) Samp.**	Used to treat urinary disorders in children, reduce bleeding, pain and itching related to hemorrhoids and abrasions, diarrhea, improve digestion, relieve stomach pain, tonsillitis, nasal congestion and headaches.	*
Rutaceae	**Ruta montana (L.) L.**	Used to treat rheumatism and difficult childbirth; at low doses acts as a stimulant and antispasmodic and is considered beneficial in Parkinson's disease. Externally, it is used for headaches, joint pain and muscle cramps [49,90]. Also used to treat wounds, fungal infections and pediculosis [30].	
Globulariaceae	**Globularia alypum L.**	Used against diabetes, as an antiparasitic for colon disorders, stomachic, and to treat gastric disorders (abscesses and ulcers), diarrhea and menstrual pain. Promotes bile secretion and is also used against eczema, burns and wounds [20,70].	
Papaveraceae	**Papaver rhoeas L.**	Used as a sedative, pectoral, emollient, mildly narcotic, sudorific and expectorant. A mild sedative facilitating sleep in restless children [25,77]. Externally, petal poultices are used for eye pain, and petal infusion as lotion prevents wrinkles and softens dry and sensitive skin [3].	
Capparaceae	**Capparis spinosa**	This plant acts against bacteria of the female genital tract and strengthens hair. The flower buds are used to stimulate appetite and treat stomach pain [28]. The root is used in infusion or decoction to treat arthritis and rheumatism. Externally, the leaves are reputed to soothe insect bites and treat eczema [25].	

Apocynaceae	Nerium oleander L.	Recommended for the treatment of scabies, boils, warts and diabetes [13].	
Moraceae	Ficus carica L.	Used as an anti-asthenic, depurative, diuretic, emollient, laxative, nutritive, pectoral and tonic [15]. Also used against warts and constipation [65].	
Malvaceae	**Malva sylvestris L.**	The plant is used as a soothing, antiseptic, astringent, antitussive, calming, emollient, laxative, pectoral and resolvent agent. Infusion is used to treat abdominal pain, colic, otitis and asthma. In traditional medicine, it is also used in the treatment of female sterility by mixing Malva with Saponaria, Marrubium vulgare, Juniperus phoenicea and Citrullus colocynthis with olive oil and dates, prepared as suppositories [87]. Malva extract stimulates immune defenses [12].	
Lauraceae	Laurus nobilis L.	Used as an antiseptic, aromatic, appetizer, carminative, digestive, parasiticide, sedative, stomachic, stimulant and sudorific. It promotes digestion, reduces flatulence, relieves urinary and dental infections, soothes tonsillitis and contributes to the treatment of influenza-like conditions [25]. Decoction is also used to relieve rheumatism and joint pain [43].	
Urticaceae	**Urtica dioica L.**	Used for hair care and treatment of anemia, jaundice, diarrhea, fatigue, rheumatism, insect bites and scalp care [65].	
Oleaceae	Olea europaea L.	Used as an astringent, diuretic, febrifuge, hypoglycemic, tonic and hypotensive agent, and to treat colic, hemorrhoids and constipation. It facilitates the expulsion of stones [19,61]. Leaf decoction has a hypotensive effect [94].	
Cactaceae	Opuntia ficus-indica (L.) P. Mill	Used in day creams, after-sun products, anti-wrinkle, anti-stretch mark and anti-aging formulations; also antidiarrheal and constipating. Treats stomach and intestinal disorders and diarrhea [19]. Leaf (cladode) poultices relieve rheumatism and muscle pain, while the juice applied to burns and wounds promotes healing [17]. The plant is also used in the treatment of bladder cancer [97].	
Cupressaceae	**Cupressus sempervirens L.**	Infusion of twigs and leaves is used to treat hemorrhoids and urinary incontinence [87].	
Fabaceae	**Calicotome spinosa (L.) Link**	Used for ophthalmic purposes. Infusion or decoction of flowers and leaves is used to treat urinary tract disorders, particularly urinary retention. Powdered plant parts are applied to treat fresh wounds and edema [87].	
Fabaceae	**Retama raetam (Forssk.) Webb**	Used against diabetes and hepatobiliary disorders. Leaf infusion is used to treat abdominal pain, diarrhea, febrile diseases and eye irritation [23]. Powdered aerial parts are used for local treatment of wounds, injuries and skin ulcers [25,74].	

Fabaceae	**Ononis natrix**	Used to treat diarrhea, urinary and rheumatological disorders, jaundice, urinary inflammation and kidney stones. Also exhibits aperitive, anesthetic and antimicrobial properties [87].	
Brassicaceae	**Capsella bursa-pastoris (L.) Medik.**	Used as a vulnerary and against hemorrhages; leaf decoction is particularly employed for these purposes [87,58].	
Brassicaceae	**Sinapis arvensis L.**	Used against constipation.	
Brassicaceae	**Eruca vesicaria (L.) Cav.**	Used against ocular infections and to treat digestive and renal disorders. Considered an excellent stomachic and stimulant; also diuretic and antiscorbutic [46]. Plant juice mixed with fermented milk is used as a treatment for diabetes [47].	
Ranunculaceae	**Ranunculus bulbosus L.**	Steamed roots mixed with honey are administered against kidney stones. Dried and powdered leaves are used as poultices against vaginal colds to stimulate childbirth [31,48].	
Boraginaceae	**Cynoglossum cheirifolium L.**	Leaves are used as astringents against burns and for treating pulmonary infections and tuberculosis. Roots are used as expectorants and antidiarrheals; decoctions relieve joint pain [6,7].	
Illecebraceae	**Herniaria hirsuta L.**	Used against kidney stones [44].	
Illecebraceae	**Paronychia argentea Lam.**	Recommended for hemorrhoids and urinary tract disorders. Used to treat urinary tract and bladder inflammation. Aerial part infusion or decoction is used as antidiabetic, diuretic, and to treat infections, kidney stones and cardiac pain [11,8,55].	
Asparagaceae	**Asparagus acutifolius L.**	Aperitive and diuretic plant [89]. Stems and leaves in decoction are stomachic [58].	
Acanthaceae	**Acanthus mollis L.**	Used to relieve burns.	
Cistaceae	**Cistus creticus L.**	Used against intestinal disorders [89].	

The species Thymbra capitata (L.) Cav., Launaea lanifera Pau, Asphodelus ramosus L., Sinapis arvensis L., and Acanthus mollis L. belong to 31 botanical families, with Lamiaceae being the most dominant (20.63%), followed by Asteraceae (15.87%). Apiaceae, Rosaceae, and Brassicaceae each account for 4.76%. Fabaceae, Rhamnaceae, Thymelaeaceae, Poaceae, Anacardiaceae, and Illecebraceae each represent 3.17%, while the remaining families are represented by only 1.58% (Figure 2).

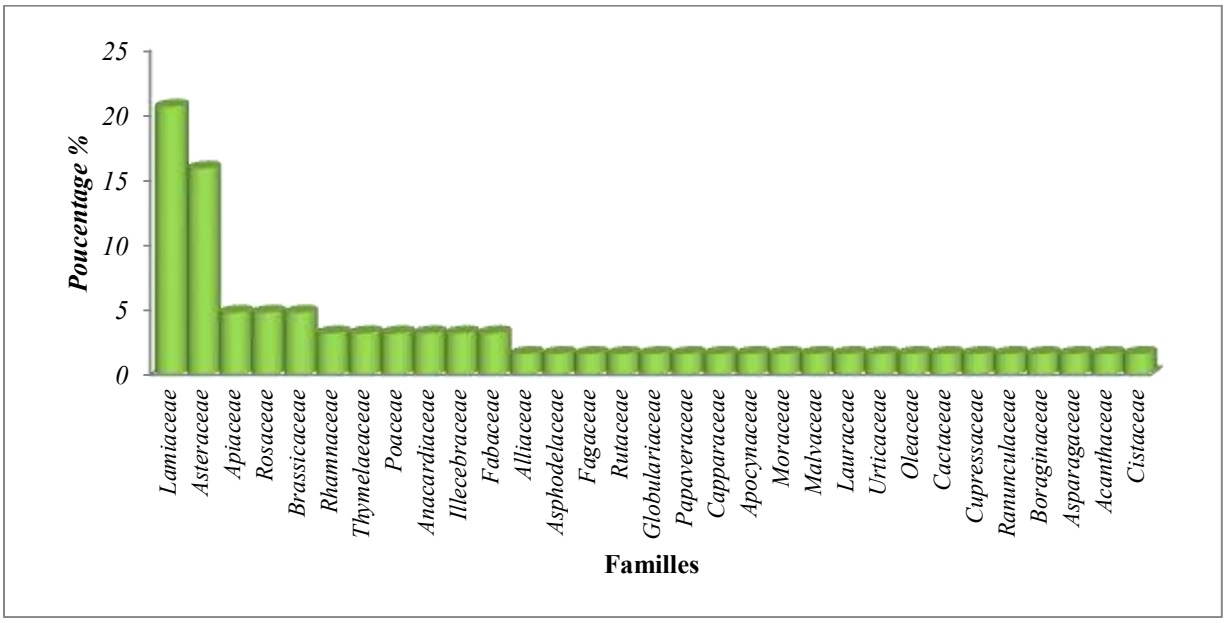

Fig. 2. Percentage distribution of the most commonly used families.

2.3.Users and uses

A variety of plant species are frequently utilized by the community and are marketed by herbalists. These include; Origanum vulgare subsp. glandulosum, Artemesia herba alba, Thymus ciliatus, Mentha suaveolens, Mentha pulegium, Teucrium polium, Quercus ilex, Marrubium vulgare, Ajuga iva.

2.4. Uses of the recorded plants

The various uses reported by the informants for the 65 species are presented in Table 2 and are indicated by an asterisk. The 65 recorded plant species can be classified into three categories of use: therapeutic, cosmetic, and other.

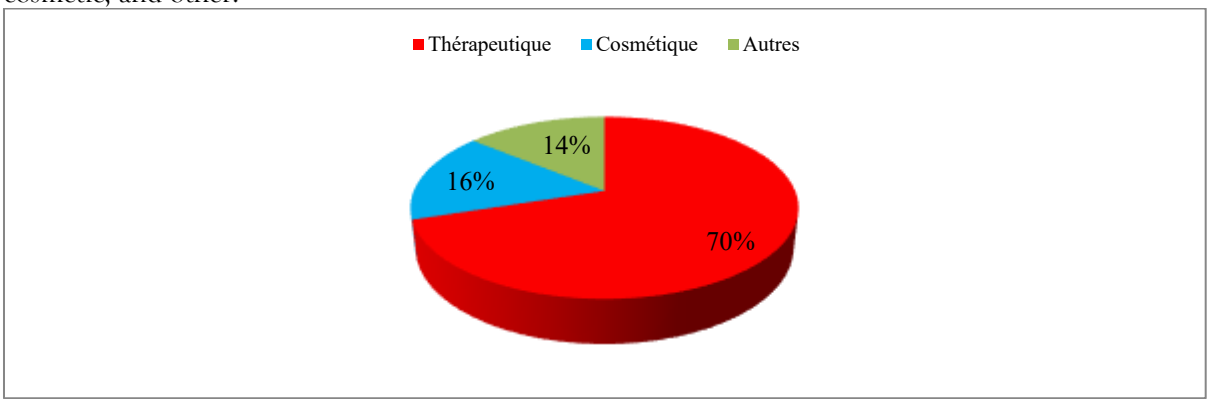

Fig.3. Uses of the recorded plants

2.5.Therapeutic Applications

A significant portion of the plants, approximately 70%, is employed for therapeutic reasons. These belong to various botanical families, with the Lamiaceae family being the most prominent, featuring six species.

Essential oil from rosemary (Rosmarinus eriocalyx) is often used to alleviate joint and muscle discomfort, headaches, menstrual cramps, and digestive issues like bloating. For example, white horehound (Marrubium vulgare) is applied as a poultice for joint and muscle pain relief. Decoctions or herbal teas made from thyme (Thymus munbyanus) are utilized to address respiratory and digestive concerns. Species of mint (Mentha suaveolens, Mentha pulegium) are prepared in various forms, including infusions, decoctions, tinctures, essential oils, chewing gums, and lozenges. Additionally, a decoction of oregano (Origanum vulgare subsp. Glandulosum) is commonly employed to treat urinary infections and digestive problems.Holm oak (Quercus ilex) leaves are used to improve digestion and relieve stomach pain. Artemisia herba-alba essential oil or ointment is applied to treat respiratory infections, insect bites, and itching. The eight most commonly utilized plant species are often employed to treat a variety of ailments, including digestive issues such as stomach discomfort, bloating, and diarrhea ; respiratory conditions like

coughing, asthma, and influenza ; neurological and psychological disorders, which encompass sore throats and headaches ; skin-related issues such as allergies and dandruff ; as well as liver ailments. Numerous species have been analyzed for their bioactive compounds, particularly essential oils, recognized for their various biological properties [75,64,1,76].

2.6.Cosmetic use

Among the plants traditionally used in cosmetics, seven species account for 16% of all documented plants, primarily focusing on hair care. Treatments often involve the maceration of olive oil (Olea europaea) combined with dried and powdered leaves from Nerium oleander, Artemisia herba-alba, and Globularia alypum. Prickly pear (Opuntia ficus-indica) is recommended for addressing hair loss and can also serve as a soothing cream. Additional traditional remedies for skin care include the application of olive oil to combat wrinkles and compresses made from macerated leaves and flowers of Malva sylvestris to alleviate skin inflammation.

2.7.Other uses

A further category of applications represents 14% of the documented plants (Fig. 3), encompassing their use as condiments, food items, and insect repellents.

Dried leaves from the pennyroyal mint (Mentha pulegium) and bay laurel (Laurus nobilis) serve as flavoring agents in cooking. Raw garlic (Allium sativum) is often added to salads. The fruits of the prickly pear (Opuntia ficus-indica), fig (Ficus carica), and holm oak (Quercus ilex) are widely valued and consumed, with some families relying on them as a source of income. Additionally, the dried leaves and stems of the caper (Capparis spinosa) are finely ground into a powder that is utilized as a spray to combat aphids (Aphis gossypii).

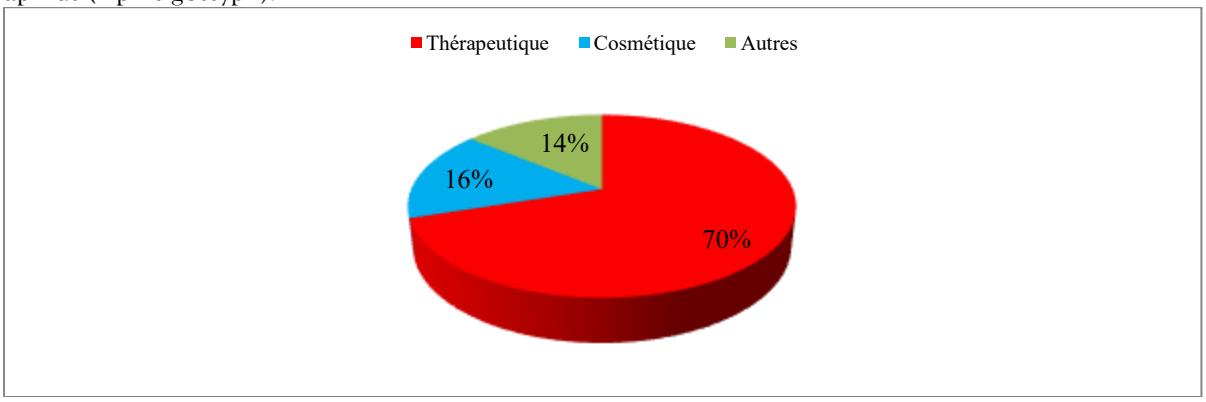

Fig. 3. Use of medicinal plants

2.7.1. Use according to Age

The age group that uses medicinal plants the most often falls between 40 and 60 years, making up 61% of users. This is followed by individuals aged 20 to 40, who represent 26%, while those over 60 years old are the least represented. These findings suggest that younger adults are more inclined to utilize medicinal plants compared to their older counterparts. Currently, the transmission of this traditional knowledge faces significant risks ([101,5]).

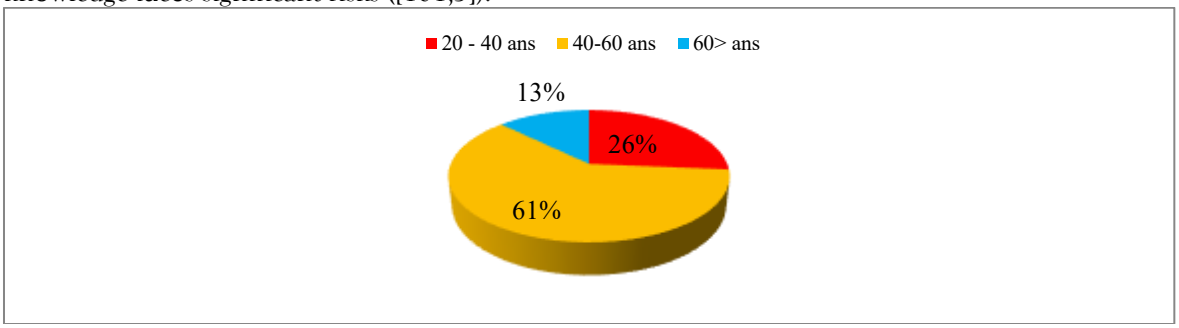

Fig.4. Use by age group

2.7.2.Use by gender

Women lead in usage rates at 57%, while men account for 43%. Typically, women are the primary caretakers in families and are the key bearers of traditional knowledge that has been handed down through generations. These findings support the conclusions of various national ethnobotanical studies [103,50,52,41,98,67,95,31].

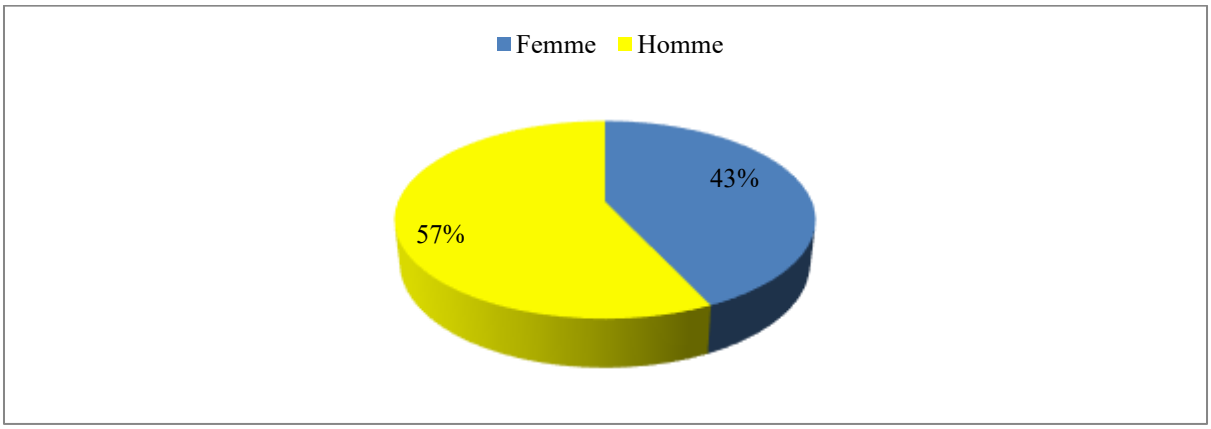

Fig. 5. Use by gender.

2.7.3. Use by educational attainment

Among the participants, those who completed primary education emerged as the most frequent users, comprising 53% of the total. Illiterate individuals represented 24%, while those with secondary education accounted for 18%. Only 5% of users had attained a university education. These results align with those observed in previous studies [31].

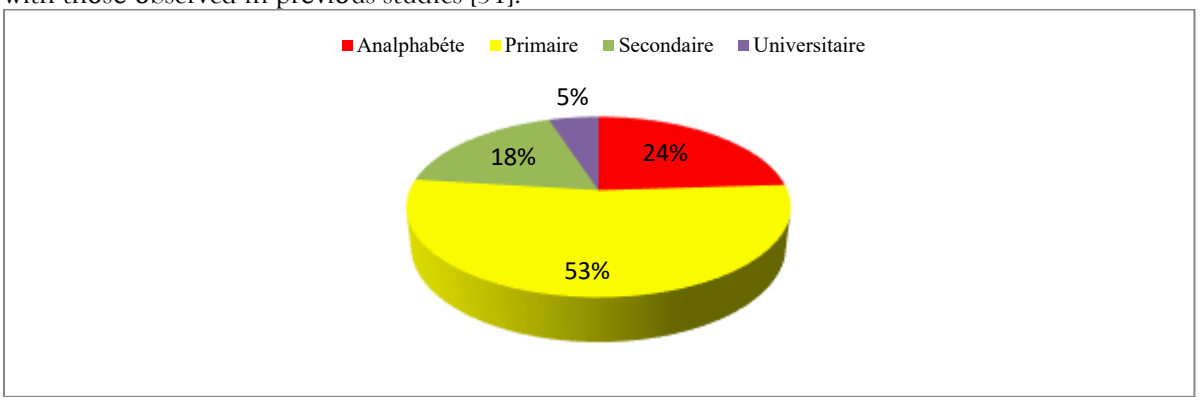

Fig. 6. Use by educational attainment

CONCLUSION

Out of the 65 species identified, only eight have been acknowledged as medicinal plants by the local communities surveyed. This research focused on how the residents of Djebel Medjounes in Algeria utilize medicinal plants. Findings indicate that these plants are commonly employed to address a variety of health issues, with thyme, white horehound, mints, oregano, holm oak, and rosemary being the most frequently mentioned.

While this study sheds light on the use of medicinal plants in the area, additional investigations are necessary to gain a deeper understanding of these practices and assess their therapeutic benefits. Ultimately, the findings could serve as a foundation for future phytochemical studies aimed at discovering new natural active compounds suitable for pharmacological applications. Despite the abundance of medicinal plants in the region, their use among local populations remains somewhat restricted.

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