

POTENTIALITY OF MEDICINAL FLORA IN TREATING OF SEVERAL DISEASES IN SOME MUNICIPALITIES IN THE HODNA (ALGERIA)

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Abstract: The aim of this study is to identify the medicinal plants used as a traditional pharmacopoeia in the Hodna region. The technique used is based on ethnobotanical surveys and is to collect information from the villagers. The study identified seventy-three (73) species. They are divided into sixty-seven (67) genera and thirty-nine (39) botanical families among which the most dominant are the Lamiaceae (12 species), Apiaceae (8 species) and the Asteraceae with 5 species. The aerial part occupies the first place among the plant organs used. The majority of remedies are prepared as a decoction with a percentage of 43%, followed by an infusion with 29%. We note that a large diversity of diseases treated by its identified plants. The ICF factors ranging from 0.79 to 0.89 for the eight uses categories retained for this study. The results obtained during this contribution constitute a database for subsequent studies aimed at experimentally evaluating the biological and chemical potential of these plants.

Keywords: Medicinal plants, Traditional pharmacopoeia, Diseases, Algeria.

1. Introduction

Medicinal plants are a precious heritage for humanity and more particularly for the majority of poor communities in developing countries who depend on them for their primary health care and subsistence [1]. According to the World Health Organization, more than 80% of the African populations have recourse to medicine and traditional pharmacopoeia to cope with health problems [2]. In Algeria, medicinal plants have been used for centuries to treat various ailments [3,4].

Although Algeria is one of the richest Arab countries with 4000 plant species thanks to its geographical location, its relief, its wide variety of climates and soils [5,6], several ethnobotanical studies have been carried out in different natural landscapes of the countries namely the coastal regions [7], the mountain ranges [8-10], the highlands [11-13], the steppe [14,15] and the Saharan oases [16-18] in order to develop a standard national pharmacopoeia. Indeed, various works have been published on the ethnobotanical knowledge of Hodna, among which we will quote: [19-28].

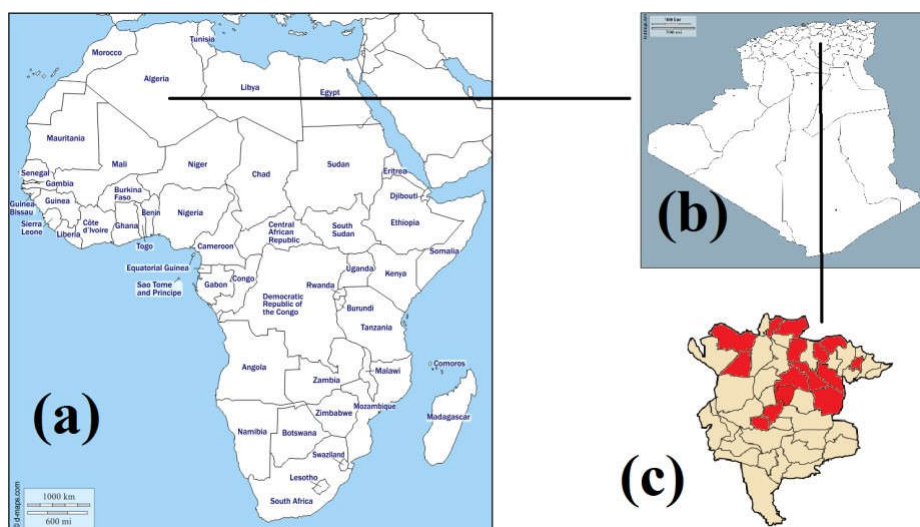
With this objective, this study consists in completing and updating the series of ethnobotanical surveys in this region which presents a fairly significant litho logical, structural and floristic diversity.

2. Materials and Methods ¶

Study area

The study area formed by fifteen municipalities of M'sila province (capital Hodna), which are: M'sila city, Maadid, M'Cif, Ouanougha, Hammam Dalaa, Bou Saada, Ouled Mansour, Mtarfa, Berhoum, Sidi Aissa, Ain El Hadjel, Souamaa, Ouled Madhi, El Hamel and Chellal covering a territory with a total area of 4194 km² (Fig. 1). In general, the climate of the area is continental under Saharan influences, with cold winters. Summers are hot and dry, with low and irregular rainfall.

The relief is spread over contiguous geographical areas, of mountain, plains and high plains, depression which constitutes the chott el Hodna and finally the dunes of aeolian sand.



(a) : African continent map, (b): Algeria map, (c) M'sila map
Fig.1. Location of the study area (in red the sites of ethnobotanical surveys)

Data ethnobotany survey

A series of ethnobotanical surveys was carried out during the year 2016/2017, using 266 questionnaire forms with informants (78 connoisseurs, 11 herbalists, 06 healers) in the Hodna region, through direct interviews with Using a questionnaire, the dialogue was conducted in Arabic or French as appropriate. All surveys describing information on:

- Number of the questionnaire form;
- Date ;
- Study area (district, village) ;
- Informant (name, age, sex, level of education) ;
- Botanical characteristic of the plant (scientific name, vernacular name) ;
- Ethnobotanical characteristic of the plant, used part of the plant ;
- Method of use of the plant (infusion, decoction, etc.);

The diseases treated, and information on the control and prevention of these diseases.

Data analysis

The frequency citation (FC) of each plant cited by the informants was calculated according to the formula [29]:

$$F_C = \frac{\text{Number of citation for the plant}}{\text{Total citation for all plants}} \times 100$$

The Informant Consensus Factor (ICF) level was calculated according to the formula [30]:

$$ICF = \frac{n_{ur} - n_t}{n_{ur} - 1}$$

Where n_{ur} is the number of citations for using each category of diseases and n_t the total number of plants used. The ICF varies between 0 and 1.

3. Results and Discussion

Informant's demographic characteristics ¶

The general analysis of the questionnaires allowed us to confirm the importance of the dependence of the local population on medicinal plants to treat various diseases. A total of 95 informants covering 15/47 municipalities in the region of investigation (connoisseur, healer and herbalist), the results obtained showed that the category of women is more dominant to use medicinal plants than the category of men with a percentage of 55.8% and 44.2% respectively. These values confirm the results obtained in other studies on the use of medicinal plants [17,26,31].

We noticed that the respondents with an age between 18 and 87 years. The age of the informants varies between 20 and 87 years. People over 50 have a frequency of medicinal plant use of 40%, followed by the age groups (40 to 49), (30 to 39) and (20 to 29) with 22.1%, 20% and 17.9%, respectively (Table 2). The results indicate that older people have more herbal

medicine knowledge from personal experience which indeed constitutes a local database. The level of education shows a percentage of 15.8 of the people questioned were of the illiterate

category and the other categories with different levels can read and write (Table 1). The present results coincide with those of Boudjelal *et al.* (2013) and Sarri *et al.* (2014).

Table 1. *The socio-demographic characteristics of the informants*

Characteristics	Number of informants		Percentage (%)
	Male	Female	
Sex			
Male	42	-	44.2
Female	-	53	55.8
Age class			
[20-29]	7	10	17.9
[30-39]	10	9	20.0
[40-49]	8	13	22.1
> 50	17	21	40.0
Educational level			
Illiterate	7	8	15.8
Primary	3	1	4.2
Medium	13	14	28.4
Secondary	6	16	23.2
University	13	14	28.4

Floristic analysis

The seventy three species inventoried are grouped together in two branches (or phylum in Latin), gymnosperms with three species and angiosperms with seventy species divided into two classes, monocots (6 species) and dicots (64 species). All species are distributed in sixty seven genera and thirty nine families were enumerated (Fig. 2) among families the most dominant are the Lamiaceae (12 species), Apiaceae (8 species) and Asteraceae with 5

species. Several studies [26,31,32] affirm a similarity with our study and in the other Mediterranean countries and show that the three families is the most distinguished botanical families in the ethnobotanical field. Whereas Myrtaceae family contain only three species (*Eucalyptus globulus*, *Myrtus communis* and *Syzygium aromaticum*). The other families are represented by two species (10 families) and by one species (25 families) each.

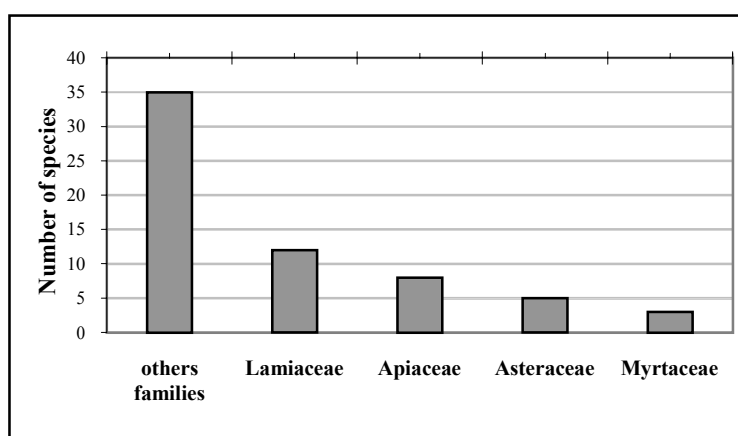


Fig.2. *Number of medicinal species per botanical family*

Most of the medicinal plants identified are herbs (49.3%) followed by shrubs (23.3%),

trees (16.4%) and sub-shrubs with 11% (Fig.3).

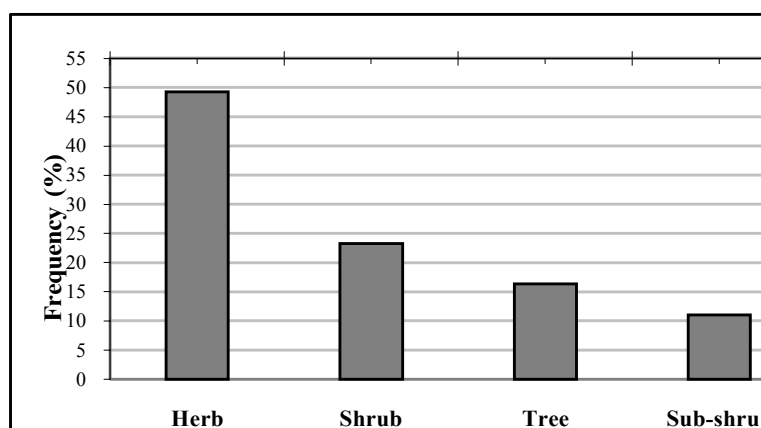


Fig.3. Frequency of morphological types of plants

Use of medicinal plants and therapeutic indications

The traditional uses recommended to treat the various diseases known in this region vary depending on the relative importance of the parts of plants, the method of preparation and administration. The table 2 summarizes in general all the information provided on the traditional use

of medicinal species in our study area such as botanical families, scientific name, vernacular name, part used, treatment, mode of use and citation number.

The species was determined by the guide to the new flora of Algeria in the southern desert [33].

Table 2. Medicinal plants traditional use in some municipalities of the Hodna

Scientific name (Family)	Local name	Part used	Mode of preparation	Therapeutic use
<i>Cuminum cyminum</i> L. (<i>Apiaceae</i>)	Kamoun	Bark	Powder	Slimming
<i>Coriandrum sativum</i> L. (<i>Apiaceae</i>)	Kasbour	Bark	Decoction	Hypotension, urethritis
<i>Ferula assa-foetida</i> L. (<i>Apiaceae</i>)	Heltitte	Bark	Infusion	Soothe the pain
<i>Foeniculum vulgare</i> Mill. (<i>Apiaceae</i>)	Bessebas	Seed, Root	Infusion, Decoction, Maceration	Aerocoly, carminative
<i>Petroselinum crispum</i> (Mill.) Fuss. (<i>Apiaceae</i>)	Maâdnous	Aerial part	Décoction	Cholesterol
<i>Pimpinella anisum</i> L. (<i>Apiaceae</i>)	Habat hlawa	Seed	Powder, Infusion, Decoction	Improve lactation, carminative
<i>Thapsia garganica</i> L. (<i>Apiaceae</i>)	Bounafea	Aerial part, Root	Powder, Pomade, Plaster	Rheumatism, back pain, fractures
<i>Thapsia villosa</i> L. (<i>Apiaceae</i>)	Teffalet	Aerial part	Infusion, Bath	Uterus
<i>Phoenix dactylifera</i> L. (<i>Arecaceae</i>)	Nekhil	Seed	Powder	Sterility
<i>Artemisia campestris</i> L. (<i>Asteraceae</i>)	Touguefet	Whole plant, Aerial part, Leaves, Root	Decoction, Infusion	Diarrhea, intoxication, nervous system, stomach pain, hypotension
<i>Asteriscus graveolens</i> (Forssk.) Less. (<i>Asteraceae</i>)	Al Neghed	Whole plant, Flower	Infusion, Decoction	Stomach
<i>Chamaemelum nobile</i> (L.) All. (<i>Asteraceae</i>)	Babounje	Flower, leaves	Infusion, Bath, Decoction	Vagina inflammation, spasm, hair loss, skin, allergic rhinitis, headache, kidney stones
<i>Dittrichia viscosa</i> (L.) Greuter (<i>Asteraceae</i>)	Mekerman	Leaves	Powder, Decoction	Eczema, intoxication
<i>Lepidium sativum</i> L.	Habb erchad	Seed,	Powder, Bath,	Wounds, cough, chest

(<i>Brassicaceae</i>)		Flowering tops, Aerial part	Pomade, Infusion	pain, carminative, appetizing
<i>Nasturtium officinale</i> (<i>Brassicaceae</i>)	Hab rchad	Seed	Powder	Injuries and fractures
<i>Boswellia carteri</i> Birdw. (<i>Burseraceae</i>)	Loubanne	Gum	Powder	Kidneys
<i>Commiphora myrrha</i> (Nees) Engl. (<i>Burseraceae</i>)	Al Mor	Fruit, Seed	Infusion, Powder	Lactogen
<i>Aloe vera</i> (L.) Burm. F. (<i>Aloeaceae</i>)	Sabar	Leaves (Gel)	Decoction	Suture wounds
<i>Atriplex halimus</i> L. (<i>Chenopodiaceae</i>)	Ghetaff	Leaves, Aerial part	Decoction, Infusion	Cysts, female infertility
<i>Citrullus colocynthis</i> (L.) Schrad. (<i>Cucurbitaceae</i>)	Handel, Haj	Fruit	Powder, Infusion	Rheumatism, carminative, digestion, hypotension
<i>Ecballium elaterium</i> (L.) A. Rich (<i>Cucurbitaceae</i>)	Fe gosse el hemir	Fruit	Decoction	Jaundice, hemorrhoids
<i>Juniperus phoenicea</i> L. (<i>Cupressaceae</i>)	El'ar'ar	Aerial part, Fruit, Leaves	Infusion, Maceration, Decoction, Powder	Stomach, diarrhea, rheumatism, scabies, inflammation of the urinary tract
<i>Ricinus communis</i> L. (<i>Euphorbiaceae</i>)	Kharewaa	Bark, Seed	Maceration, Powder	Gout, hair
<i>Trigonella foenum-graecum</i> L. (<i>Fabaceae</i>)	L'halba	Seed, Flower	Powder, Decoction, Bath	Blood purification, appetizing, skin, slimming, diabetes, obesity, vaginal infection constipation
<i>Quercus ilex</i> L. (<i>Fagaceae</i>)	L'arna	Bark	Bath	Gums
<i>Centaurium pulchellum</i> (Sw.) Druce (<i>Gentianaceae</i>)	Moraret al henech	Aerial part	Infusion	Ague
<i>Globularia alypum</i> L. (<i>Globulariaceae</i>)	Taselgha	Leaves	Infusion, Powder	Nervous system
<i>Illicium verum</i> Hook.f. (<i>Illiciaceae</i>)	Nejmet al beher	Fruit	Decoction	Hypotension
<i>Ajuga iva</i> (L.) Schreb. (<i>Lamiaceae</i>)	Chendguoura, Djeaida	Leaves, Flowering tops, Aerial part, Flower	Bath, Plaster, Decoction, Infusion	Hypoglycemia, headache, fever, stomach, collons, diarrhea, suture sores
<i>Lavandula angustifolia</i> Mill. (<i>Lamiaceae</i>)	Khezama	Aerial part, Leaves	Infusion, Decoction	Pregnancy, tooth decay, intestinal inflammation
<i>Marrubium vulgare</i> L. (<i>Lamiaceae</i>)	Meriout	Aerial part, Leaves	Infusion, Decoction, Fumigation	Ague, allergy, hypoglycemia, stomach
<i>Mentha longifolia</i> (L.) Huds. (<i>Lamiaceae</i>)	Naanaa	Aerial part, Leaves	Infusion, Decoction Bath	Hypotension, flu, headache, carminative, nosebleeds, Ague
<i>Mentha pulegium</i> L. (<i>Lamiaceae</i>)	Fliyo	Aerial part, Leaves	Maceration, Decoction, Powder, Infusion	Hypotensive, carminative, orthopedics, spasms
<i>Ocimum basilicum</i> L. (<i>Lamiaceae</i>)	Hebak	Leaves, Seed	Plaster, Infusion, Powder, Decoction	Tumors, carminative, stimulant, lactogen, acute skin, digestive system
<i>Origanum majorana</i> L. (<i>Lamiaceae</i>)	Berdghouch-	Leaves, Flower	Decoction	Belly pain
<i>Rosmarinus officinalis</i> L.	Aklil djabel	Aerial part,	Infusion,	Flu, hepatic, diuretic,

(<i>Lamiaceae</i>)		Leaves	Decoction	constipation, carminative, hair loss, stomach
<i>Salvia officinalis</i> L. (<i>Lamiaceae</i>)	Miramiya	Aerial part, Leaves	Infusion, Decoction	Uterus, facilitates childbirth, menstrual cycle, hypoglycemia, stomach inflammation
<i>Salvia divinorum</i> Epling & Játiva (<i>Lamiaceae</i>)	Khiyatta	Aerial part, Leaves	Maceration, Decoction, Powder, Plaster, Pomade	Wounds, stomach, wounds, hemorrhoids
<i>Thymus serpyllum</i> L. (<i>Lamiaceae</i>)	Zeaaitra	Aerial part	Decoction	Stomach
<i>Thymus vulgaris</i> L. (<i>Lamiaceae</i>)	Zaa'tar	Aerial part, Leaves	Infusion, Decoction, Maceration	Flu, cold, facilitates childbirth
<i>Cinnamomum cassia</i> J. Presl (<i>Lauraceae</i>)	Qarfa	Bark	Infusion, Decoction	Childbirth, blood clotting, rate
<i>Laurus nobilis</i> L. (<i>Lauraceae</i>)	Rand	Leaves	Plaster, Infusion, Decoction	Nervous system, bee stings, cholesterol, hypotension
<i>Allium sativum</i> L. (<i>Liliaceae</i>)	Toum	Fruit	Infusion	Hypotension
<i>Malva parviflora</i> L. (<i>Malvaceae</i>)	Kobiza	Leaves	Maceration, Bath, Infusion	Respiratory system, carminative, diarrhea
<i>Eucalyptus globulus</i> Labill. (<i>Myrtaceae</i>)	Kalitous	Leaves, Aerial part	Fumigation, Infusion, Powder	Flu, respiratory system, asthma
<i>Myrtus communis</i> L. (<i>Myrtaceae</i>)	Rihan	Leaves, Aerial part	Decoction, Infusion	Carminative, respiratory system, kidney
<i>Syzygium aromaticum</i> (L.) Merr. & L.M. Perry, (<i>Myrtaceae</i>)	Coronffel	Bark	Decoction	Heartbeats
<i>Olea europaea</i> L. (<i>Oleaceae</i>)	Zitoun	Leaves	Decoction, Plaster	Hypoglycemia, hypotension, gum
<i>Pinus pinea</i> L. (<i>Pinaceae</i>)	Debagha	Bark	Powder, Decoction, Infusion	Skin inflammation, cough, stomach
<i>Pinus halepensis</i> L. (<i>Pinaceae</i>)	Esnoubar	Bark, Aerial part	Infusion, Poudre	Stomach, respiratory system, cough
<i>Stipa tenacissima</i> L. (<i>Poaceae</i>)	Halfa	Aerial part	Infusion, Decoction	Diabetes, hypotension, cancer
<i>Punica granatum</i> L. (<i>Punicaceae</i>)	Rouman	Fruit peel, fruit	Decoction, Plaster	Diarrhea, stomach, gum, carminative
<i>Nigella sativa</i> L. (<i>Ranunculaceae</i>)	Haba Asawda	Seed	Infusion, Decoction, Powder	Appetizing, cholesterol, facilitates childbirth, nervous and respiratory system, nosebleed, hair loss
<i>Rhamnus alaternus</i> L. (<i>Rhamnaceae</i>)	Melilez	Aerial part, Leaves	Infusion, Powder	Jaundice, stomach
<i>Zizyphus lotus</i> L. (<i>Rhamnaceae</i>)	Sedra	Aerial part, Leaves	Infusion, Powder	Hair loss
<i>Crataegus monogyna</i> Jacq. (<i>Rosaceae</i>)	Zaaroura	Leaves	Bath	Kidney stones
<i>Prunus mahaleb</i> L. (<i>Rosaceae</i>)	Al Mayaa	Leaves	Plaster	Purulent wounds
<i>Rubus idaeus</i> L. (<i>Rosaceae</i>)	Aligue	Fruit	Decoction	Cancer
<i>Rubia peregrina</i> L. (<i>Rubiaceae</i>)	Fouaa	Root	Bath	Sciatic nerve
<i>Ruta graveolens</i> L. (<i>Rutaceae</i>)	L'figel	Aerial part, Leaves Root	Decoction, Infusion, Powder,	Carminative, abdominal pain,

			Fumigation	auricular, uterine, gum, hypnotic, digestion, urinary tract inflammation, hypotension
<i>Salvadora persica</i> L. (<i>Salvadoraceae</i>)	Siwek nebi	Aerial part	Decoction	Mouth inflammation
<i>Tamarix africana</i> Webb. (<i>Tamaricaceae</i>)	Tarfa	Aerial part	Bath	Uterus, vaginal infections
<i>Thymelaea hirsuta</i> (L.) Endl. (<i>Thymelaeaceae</i>)	Methnan	Aerial part	Decoction	Hair loss, respiratory diseases
<i>Parietaria officinalis</i> L. (<i>Urticaceae</i>)	Fattat al Hajer	Aerial part, Flower	Decoction, Infusion	Urinary tract, kidney stones, stomach
<i>Ulmus campestris</i> L. (<i>Ulmaceae</i>)	Nechem	Aerial part	Infusion	Soothing
<i>Verbena officinalis</i> L. (<i>Verbenaceae</i>)	Tizana	Leaves	Infusion	Carminative, digestion
<i>Vitex agnus-castus</i> L. (<i>Verbenaceae</i>)	Achbet Meriem	Leaves	Decoction, Powder	Infertility, diabetes, blood pressure
<i>Vitis vinifera</i> L. (<i>Vitaceae</i>)	Aneba	Leaves	Infusion	Ague
<i>Zingiber officinale</i> Roscoe (<i>Zingiberaceae</i>)	Skenjbîr	Aerial part, Root, whole plant, Fruit	Infusion, Decoction, Powder	Ague, cancer, flu, kidney, increases memory
<i>Alpinia purpurata</i> (Vieill.) K. Schum. (<i>Zingiberaceae</i>)	Khoudenjal	Flower	Decoction	Flu, hypotension
<i>Curcuma longa</i> L. (<i>Zingiberaceae</i>)	Kourkom	Fruit	Powder	Stomach ulcer
<i>Peganum harmala</i> L. (<i>Zygophyllaceae</i>)	L'harmel	Leaves, Aerial part, Seed, Root	Decoction, Powder, Infusion	Stomach, rheumatism, back pain, joint pain, ovarian cysts, epilepsy, cough

Parts used

The aerial parts are the most used parts with 31.4%, this result is similar to obtained by Carrió and Vallès (2012) for aerial parts (30%), followed by the leaves, seeds, fruits, roots, flowers, barks, flowering tops and gums with respectively 29.5%, 10.5%, 8.6%, 4.8%, 3.8%, 2.9%, 1.9% and 0.9% (Fig. 2).

For some plants all parts (roots, leafs, stems, leaves and seeds) with 5.7% are used to treat, for example, diarrhea and poisoning (*Artemisia campestris*), stomach pains (*Asteriscus graveolens*), influenza and spasms of kidneys (*Zingiber officinale*).

Methods of administration

In this study, eight modes of administration were found (Table 3). These are: infusion (29.9%), this result coincided with those obtained by El-Yahyaoui *et al.* (2015) and Tahri *et al.* (2012) with 29% and 28.87% respectively, decoction (26.8%), powder (21.3%), bath (7%),

maceration (6.3%), plaster (3.9%), fumigation and pomade 2.4% each.

Indeed, more than half (63%) of traditional treatments are taken orally. Then, come the most usual methods by external route (powder, bath, plaster, fumigation and ointment or 37% in all.

It is reported that during this investigation many difficulties were encountered in the field including the reluctance of some informants to give information relating to this investigation and others asked to be paid to answer the questions and give their time.

This makes the questionnaire somewhat incomplete, which clearly shows the lack of knowledge about the traditional treatment of some diseases for other common uses in this region.

Table 3. *Distribution of medicinal plants according to part used and mode of preparation*

Indicator	Indicator	Frequency (%)
Used plant organs	Root	4.8
	Bark	2.9
	Whole plant	5.7
	Flowering tops	1.9
	Aerial part	31.4
	Leaves	29.5
	Flower	3.8
	Fruit	8.6
	Seed	10.5
	Gum	0.9
Mode of preparation	Bath	7
	Decoction	26.8
	Plaster	3.9
	Infusion	29.1
	Fumigation	2.4
	Maceration	6.3
	Pomade	2.4
	Powder	21.3

Citation of use of medicinal plants

The species most cited by informants in this survey are, in descending order of citations (12 to 6 citation): *Ajuga iva*, *Juniperus phoenicia*, *Thymus vulgaris*, *Artemisia harba alba*, *Mentha longilolia*, *Trigonella foenum-graecum*, *Rosmarinus officinalis*, *Lepidium sativum*, *Salvia officinalis*, *Savia divinorum*, *Chamaeme nobile*, *Marrubium vulgare*, *Pinica granatum*, *Nigella sativa*, *Peganum hermala*, *Pinica granatum* and *Artemisia campestris*.

The search for the degree of consensus reveals that 8 categories of diseases widely known in this region reached high values from 0.71 to 0.89 (Table 4): rheumatism (0.89), gynecology and obstetrics (0.85), cardiovascular (0.82), digestive and stomach (0.81), dermatological (0.80), nephrological (0.75), respiratory (0.79), periodontics and teeth (0.71), however the frequency of use of medicinal plants for the treatment of diseases shows a low percentage for all categories and that the best presented category is the digestive and stomach category (10.50%) and the lowest and those of rheumatism, periodontics and teeth diseases (1.94%) each.

Diseases cited by informants in the survey**Table 4.** *Diseases cited by informants and classified into categories*

Diseases category	Types of Affections	Number of use citations ^(*)	Number of taxa	ICF	FC ^(*) (%)
Cardiovascular	Hypertension, hypotension, cholesterol treatment.	113	21	0.82	8.17
Digestive and stomach	Stomach aches, diarrhea, vomiting, carminative, aids digestion, constipation, inflammation of the intestine, hemorrhoids, ulcers,	145	27	0.81	10.50
Dermatological	Skin cleansing, eczema, suture wounds, cysts, acute skin, animal bites, ringworm.	77	16	0.80	2.33
Gynecology and obstetrics and urology	Treatment of urethritis, uterine problems, treatment of female infertility, inflammation of the urinary tract, vaginal infection, contraction of the uterus, pain of the menstrual cycle, induced childbirth, post-fever partum, ovarian cysts.	100	16	0.85	2.33
Nephrological	Kidney stones, kidney pain and spasms	21	6	0.75	2.33

Periodontics and Teeth	Treatment of gum tissue, tooth decay, bad odors, inflammation of the mouth.	15	5	0.71	1.94
Respiratory	Cough, asthma, respiratory system, inflammation of the respiratory tract.	40	9	0.79	3.50
Rheumatism	Rheumatism, back pain, joints,	39	5	0.89	1.94

(*) : By categories

Conclusion

The present results represent a local database which contributes to the enrichment of the national database which is being created by collecting all the national medicinal therapeutic data, as they are currently applied by traditional healers.

The region studied has a very high biodiversity, thus, 73 plant species used in traditional medicine have been identified. Among the 39 families listed, the families of Lamiaceae (12 species), Apiaceae (8 species) and Asteraceae (5 species) are the most represented with a percentage of 34.25.

The aerial parts and the leaves are mainly the organs used; there are many methods of preparation. The traditional medicines offered are administered orally.

The diseases and infections identified in this study affect the digestive system, respiratory system, dermatology, genecology, nephrology, periodontics and teeth.

In addition, these results can be considered as a source of information for researching new herbal active ingredients.

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