



International Journal of Herbal Medicine

Available online at www.florajournal.com



E- ISSN: 2321-2187
P- ISSN: 2394-0514
IJHM 2015; 2 (5): 46-54
Received: 17-01-2015
Accepted: 20-03-2015

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The catalogue of medicinal plants used in the region of El Jadida

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Abstract

This ethnobotanical study of medicinal plants was carried out in 2014 in El-Jadida area that has led to the development of a catalog of medicinal plants which has all the informations about the therapeutic uses practiced by the local population. A total of 204 people (plants' users, herbalists and traditional healers) participated in this survey using stratified random sampling techniques. The study of medicinal flora showed a floristic richness of 70 species belonging to 69 genera and 37 families, with a predominance of Lamiaceae and Apiaceae (12.85%), Asteraceae (7.14%) and Fabaceae (5.71%).

Keywords: Medicinal plants, ethnobotany, flora, traditional herbal medicine.

1. Introduction

The soothing and analgesic values of plants have always been appreciated by humans. Indeed, throughout the centuries, the use of medicinal plants was designed to overcome the suffering and make man healthier [1].

Medicinal plants are still today a source of medical care in developing countries [2]. Today, according to the World Health Organization (WHO), up to 80% of the world population depends on traditional medicine for their needs for primary health care. Because of poverty and the unavailability of modern health services, most people, especially in countrysides, still tend to practice traditional medicine for their common diseases [3]. Moreover, there are significant economic benefits in the development of indigenous medicines and the use of medicinal plants for the treatment of those various diseases [4]. Morocco is one of the Mediterranean countries with an important medical expertise and traditional skills in herbal use [5] which are still a fundamental component in medical care in a traditional way. Thus, people have always had traditional and rich ethnobotanical knowledge thanks to the cultural and ecological diversity of the environment in which they live. According Vandebroek *et al.* [6], this knowledge reflects the wealth of the ecosystems in which indigenous and local communities live: the more vegetation is rich, the more species will be used by the population. However, the information on therapeutic plants are in decline [7] because of the lack of databases and registry, hence the need to inventory their methods of use. In this sense, the Moroccan scientific research is beginning to defend this idea and in favor of an in-depth study of local medicinal plants. Ethnobotany is one of the scientific disciplines who are interested in traditional herbal medicine. It is considered as the science that converts the popular expertise into a scientific knowledge.

Our goal is to achieve an ethnobotanical study in the region of El Jadida to contribute to the knowledge of medicinal plants used in the treatment of various diseases, to establish the catalog of the plants and to collect the maximum information about therapeutic uses practiced by the local population in the region.

2. Materials and methods

2.1. The studied region

El Jadida, which is the capital of the province of Doukkala, is located in the center of Morocco. It lays on the shores of the Atlantic Ocean, between Casablanca and the port of Jorf Lasfar. It is bounded on the north by the Atlantic Ocean, on the east by the rural commune Haouzia, to the south by the town of Oulad Hseine and to the west by the rural district Moulay abdallah [8]. According to GCPH 2004 [9], the total population of the urban commune of El Jadida has increased from 119832 in 1994 to 143419 in 2004, with an average annual growth rate of 1.93%. Our study area belongs to the Sahel Doukkala region, the large

structural unit, Western Moroccan Meseta and more precisely to the plates and plain Doukkala. The area has a coverage of the Mésétien Mesozoic Cenozoic Age of tabular scheme based on a highly folded socle during the Hercynian orogeny base. This area consists of two distinct geological eras, the Precambrian and Paleozoic while the coverage is formed by secondary, tertiary and quaternary lands [10]. The soils of the Sahel Doukkala are skeletal, shallow and are generally sandy or sandy loam. Slopes and dune tops are covered with skeletal soils while depressions and bottomlands contain deeper soils [11]. According Carruesco [12], four soil groups can be distinguished: R'Mel which is a very a poorly developed sand; Hrach which is the stony limestone soil; Tirs which is the vertic soil and Hamri which is either red or fersiallitic soil occupying the consolidated hinterland dunes. The mother rock is a poorly consolidated calcarenite. These soils are characterized by the absence of the upper horizons of carbonates and by the accumulation of iron and clay in depth; soil rests on a hard lapiaz calcarenite without transition. The surface water resources are mainly from Oum Rabie river. The aquifer system consists of heterogeneous aquifers of 20 to 70 m in depth [13]. According to the classification of climates in Morocco [14], El-Jadida area is in the lower bioclimatic semi arid stage. The climate is Mediterranean. The average annual

rainfall is 322 mm, with a rainy, mild winters and hot, dry summers [13]. The average annual temperature is 18.6 °C and the rate of humidity is 75 to 80% [8]. Agriculture in the region is based mainly on gardening and cereal. Livestock is also an important activity for the population; next to agriculture, it is considered an essential complement to the economic development and it is based mainly on sheep and cattle [15].

2.2. Methodology

Ethnobotanical surveys were conducted based on a questionnaire (Appendix I) during the year 2014. A total of 204 surveys were completed. The location of places of ethnobotanical and floristic surveys in the study area was identified by the probabilistic stratified sampling technique [16]. In this work, the sample is divided into 6 layers which correspond to the number of districts of the city of El Jadida (Figure 1). Proceeding by simple random sampling, samples of small numbers (34 people) are then formed for each of the six strata and they are put together to form the aggregate sample (204 people). In this study the main objective is the development of a comprehensive catalog of medicinal plants used in the study area.

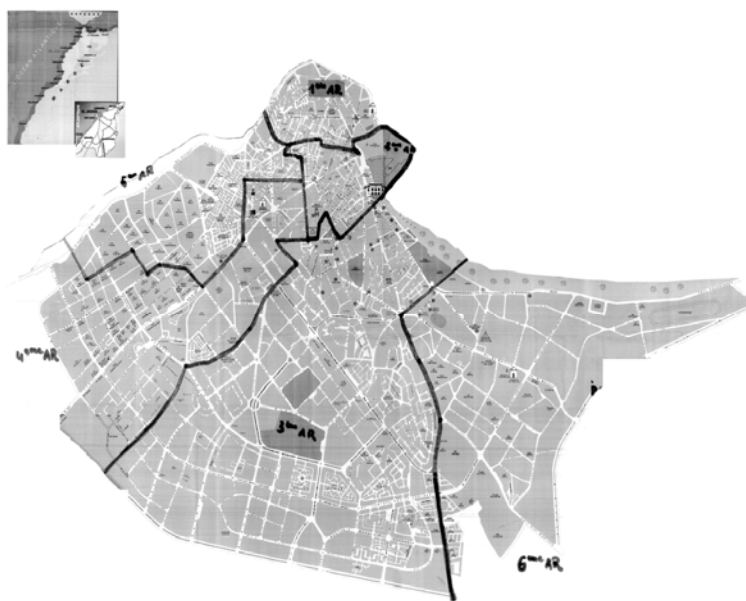


Fig 1: Administrative division of the city of El Jadida

During each interview, we collected all the information about the respondent and the medicinal plants used by the latter. Thus, the profile of each respondent includes age, educational level and family status. The data collected for each plant include its common local name, uses, the part used, the method of preparation and the use.

The determination of wild species has been made in the laboratory with the following documents:

- ❖ “The Practical Flora of Morocco”, [17].
- ❖ “Catalogue of Vascular Plants of northern Morocco, including identification keys” [18].
- ❖ “New flora of Algeria and the southern desert regions” [19].

For food species (spices and condiments), we used other documents:

- ❖ “The traditional Moroccan pharmacopoeia” [20].
- ❖ “Moroccan medicinal and aromatic plants” [21].

3. Results and Discussion

The ethnobotanical surveys conducted in the field have allowed us to develop the catalog of 70 medicinal species divided into 69 genera and 37 families. Among these, the most important families in the region are: Lamiaceae and Apiaceae (12.85%), Asteraceae (7.14%) and Fabaceae (5.71%).

Monographs of these 70 species are listed in an alphabetical order of families, genera and species. Indeed, for each identified plant, we specify the Arabic vernacular name, the local use, other uses complemented by the bibliography.

Table 3.1: The catalog of medicinal plants

Famille	Espèce	Vernaculaire	Utilisation local	Autre Utilisation	Ref
Amaranthaceae	<i>Chenopodium ambrosioides L.</i>	Mkhinza	Fever	Anthelmintic, tonic, astringent, antispasmodic, emmenagogue, eupeptic and digestive.	[22], [23]
Amaryllidaceae	<i>Allium sativum L.</i>	Touma	Cough, cold, asthma.	Antidiabetic activities, coricide, antiseptic, cholagogue, antifungal and antibacterial.	[24], [25]
	<i>Allium cepa L.</i>	Basla	Abscesses maturative, fever.	Diuretic, antiscorbutic, hypoglycemic, anticoagulant and choleric.	[26]
Anacardiaceae	<i>Pistacia lentiscus L.</i>	Drou	The treatment of ailments of the stomach and intestines.	Emmenagogue, astringent, diuretic, analgesic and antipyretic properties	[27]
Apiaceae	<i>Petroselinum sativum Hoffm</i>	Ma'dnous	Kidney stones.	Diuretic, general and nervous stimulant, anti-anemic, appetizer, stomachic, purgative and anthelmintic.	[28]
	<i>Cuminum cyminum L.</i>	Camon	Diarrhea and gastrointestinal disorders.	Carminative, digestive, diaphoretic, galactagogue, stimulant, diuretic and anthelmintic.	[29], [30]
	<i>Ridolfia segetum L.</i>	Tabch	Jaundice.	Stomachic in gastric troubles.	[20]
	<i>Coriandrum sativum L.</i>	Qazbor	Intestinal pain and stomach aches.	Carminative, antispasmodic, stimulant, aphrodisiac and tonic properties. Diuretic, antispasmodic, antispasmodic, carminative, stimulant, emmenagogue and anticoagulant.	[28]; [31]
	<i>Ammi visnaga L.</i>	Bashnikha	The diabetes.	Carminative, digestive, expectorant, galactagogue and stimulant.	[32]; [33]
	<i>ammodaucus leucotrichus Coss</i>	kamoun sofi	Stomach troubles.	Carminative, diuretic and a digestive stimulant.	[34]
	<i>Pimpinella anisum L.</i>	Habat hlawa	the migraine.	Carminative, diuretic and a digestive stimulant.	[30], [35]
	<i>Anethum graveolens L.</i>	Karwiya	Abdominal pain, gastrointestinal disorders, and as an aperitif.	Antispasmodic, spasmolytic, anti-emetic, digestive, expectorant, galactagogue and stimulant.	[29], [27]
	<i>Foeniculum vulgare P.Mill.</i>	Nafae bstani	The treatment of peptic troubles.	Carminative, calming, stimulating, antispasmodic, sedative and stomachic properties.	[36], [31]
	<i>Foeniculum vulgare P.Mill.</i>	Nafae bstani		Expectorant, anti-inflammatory, carminative, diuretic and antispasmodic.	[36], [31]
Asteraceae	<i>Chrysanthemum trifurcatum Desf.</i>	L-gahwan romi	Toothache.	Liver disorders.	[20]
	<i>Chamaemelum nobile (L.)</i>	Babounj	Abdominal pain, digestive disorders and as a sedative.	The treatment of colic and gastrointestinal disorders.	[20]
	<i>Atractylis gummifera L.</i>	Dad	Combined with henna is used as a relaxer of the body.	The treatment of dizziness, headache and difficult births.	[31]
	<i>Artemisia herba-alba Asso.</i>	Chih	Colds, stomach aches, intestinal worms and cough.	intestinal bloating, heartburn, and aerophagia.	[32]
<i>Anacyclus pyrethrum L.</i>	Tiquanducht	Asthma.	Lice and vermin.	[37]	
Brassicaceae	<i>Brassica rapa L.</i>	Laft	Ear infections.	Nutritious, remineralizing, refreshing, emollient, pectoral, diuretic and antiscorbutic.	[38]
	<i>Lepidium sativum L.</i>	Hab rchad	Cough and as a warming agent.	Antiscorbutic, depurative, expectorant and stimulant properties.	[30], [27]
Cactaceae	<i>Opuntia ficus – indica L.</i>	Drag	Asthma.		
Camelliaceae	<i>Camellia thea Link</i>	Atay	Stomach troubles.	Astringent, diuretic, antidiarrheal, stimulant, vasodilator and tonic.	[25], [29]
Capparidaceae	<i>Capparis spinosa L.</i>	Kabar	Colds, and the treatment of female infertility.	Antispasmodic, aperitif, diuretic, emmenagogue, diuretic, tonic and antineuralgic.	[30], [39]
Caryophyllaceae	<i>Herniaria hirsuta L.</i>	Harass lhjar	Kidney stones and cooling.	Diuretic, antispasmodic, astringent and expectorant properties.	[39]
	<i>Corrigiola</i>	Sarghina	Poisoning.		

	<i>telephiifolia Pour.</i>			The relaxation of horses.	[40]	
Cucurbitaceae	<i>Citrullus colocynthis (L.) Schard</i> <i>Cucumis sativus L.</i>	Hadja	Antidiabetic et baldness.	Abortive, diuretic, antitumor and antihemorrhoidal.	[23]	
		Khyar	Anti-task and anti-wrinkle of the face.	Emollient, diuretic, refreshing and worming.	[41]	
Cupressaceae	<i>Juniperus phoenicea L.</i>	Ar'ar	Fever.	Bronchitis.	[40]	
Fabaceae	<i>Ceratonia siliqua L.</i>	Kharoub	The treatment of intestinal disorders.	The diarrhea.	[31]	
		Hamass	Jaundice.			
	<i>Cicer arietinum L.</i>	Arq-sous	The treatment of asthma.	Energetic, diuretic, urinary antiseptic, anthelmintic, emmenagogue, resolvent and stomachic.	[38]	
	<i>Glycyrrhiza glabra L.</i>	Halba	The stomach pains, diabetes and as an aperitif.	Expectorant, diuretic, antitussive, digestive, refreshing, tonic, anti-inflammatory and detoxifying properties.	[27]	
	<i>Trigonella fœnum - graecum L.</i>			Emollient, laxative, tonic and hypocholesterolemic characteristics	[42], [43], [30]	
Fagaceae	<i>Quercus rotundifolia Lamk.</i>	Dbag	The stomach pain.	Tonic and anti-diarrheic agent	[44]	
Juclandaceae	<i>Juglans regia</i>	Swak	Whiten the teeth.	Astringent properties, worming, depurative, tonic, antispasmodic and haemostatic properties	[45], [30]	
Lamiaceae	<i>Ajuga iva (L.)</i>	Chandgoura	Fever and as a warming.	Hypoglycemic, anti-inflammatory and sedative agent.	[46]	
		Z'itra	Fever and cooling.	Stimulant, tonic, stomachic, sedative, antispasmodic, expectorant and antitussive agent.	[47], [32]	
	<i>Thymus broussonetii Boiss</i> <i>Salvia officinalis L.</i>	Salmiya	Stomachaches, colds, diabetes and as hypoglycemic.			
		Mardadouch				
	<i>Origanum majorana L.</i> <i>Marrubium vulgare L.</i>	Mriwa	Asthma, anemia and a sedative.	Sedative, tonic and intestinal antispasmodic.		[20]
		Flio				
	<i>Mentha pulegium L.</i>	Yazir	The cold and as anti-pellicular.	Stomachic action, tonic, antipyretic, expectorant, emmenagogue, sedative heart and diuretic.		[29], [30]
		Manta	Colds and abdominal pain.	To stop milk secretion in women		[30]
	<i>Rosmarinus officinalis L.</i> <i>Satureja calamintha (L.) Scheele</i> <i>Origanum compactum Benth</i>	Zaetar	The stomach pains, intestinal disorders and asthma.	Cholagogue, choleric, antispasmodic, diuretic, antiseptic and healing.		[48], [43]
			The stomach pains.	Tonic qualities, stimulant, expectorant, antispasmodic and stomachic properties.		[31], [30]
		Gastrointestinal disorders, fever, flu and colds.	Antiseptic, anti-inflammatory, expectorant and stimulates the secretion of bile.		[49]	
Lauraceae	<i>Cinnamomum zeylanicum</i>	Qarfa	Asthma, menstrual pains and colds.	Stimulating, eupeptic, carminative, antispasmodic and haemostatic.	[38]	
Linaceae	<i>Linum usitatissimum L.</i>	Zeri't l-kattan	Asthma, affection of the digestive tract, cholesterol, cough and diabetes.	To treat skin diseases.	[27]	
Lythraceae	<i>Punica granatum L.</i>	Romane	The treatment of gastric and intestinal pains.			
Moraceae	<i>Ficus carica L.</i>	Nowart karmouss	Colds and genito-urinary disorders.	Softener, laxative, pectoral, nutritious and stimulating.	[31]	
Musaceae	<i>Musa paradisiaca L.</i>	Banane	To soften the hair.	Very nutritious, mineralizing, invigorating, rickets, scurvy, and anti-asthenic re-calcifying.	[38]	
Myristicaceae	<i>Myristica fragrans Houtt</i>	Gouza	Cold.	Carminative, general antiseptic and intestinal, digestive, appetizer, stimulant and emmenagogue.	[38]	
Myrtaceae	<i>Eucalyptus globulus</i>	Kalitus	Asthma, coughs and bronchitis.	Antibiotic of airway thanks to	[39]	

	<i>Labill</i> <i>Eugenia</i> <i>caryophyllata Thunb</i> <i>Myrtus communis L</i>	Kranfal Rihane	Menstrual pains and stomach troubles. The stomach troubles.	eucalyptol. Spasmodic colic and indigestion. Respiratory diseases, heart and liver disease.	[50] [39]
Oleaceae	<i>Fraxinus dimorpha</i> <i>Coss. & Dur</i>	Issan tire	To warm the body.		
Palmaceae	<i>Phœnis dactylifera</i> <i>L.</i>	Tmar	The respiratory diseases.		
Poaceae	<i>Pennisetum</i> <i>typhoides (Burm)</i> <i>Triticum aestivum L.</i>	Ilane Nakhala	For broken bones ossification and diabetes. The stomach troubles.	Antianemic, emollient, laxative, stimulant and remineralizing.	[36]
Peperaceae	<i>Piper longum L.</i>	Dar felfel	Cough and as a warming agent.	Indigestion and bloating.	[51]
Ranunculaceae	<i>Ranunculus</i> <i>muricatus L.</i> <i>Nigella sativa L.</i>	Wedn halof Sanouj	Painful menstruations, cold and gastric pains. Gastrointestinal pains, asthma, flu and poisoning.	Popular purgative, emetic and anti-poison. Antidiuretic and hypotensive.	[27] [52]
Rhamnaceae	<i>Ziziphus lotus (L.)</i>	Nbag	Gastro-intestinal, respiratory and liver diseases, boils and abscesses.	Anthelmintic and antidiarrheal	[53]
Rosaceae	<i>Rosa damascena</i> <i>Mill</i>	Ward	The constipation, the headaches and to clean the eyes.	The toothaches.	[20]
Rubiaceae	<i>Rubia peregrina L.</i>	Foua	Anemia and intestinal pains.	Diuretic, appetizer, choleric, emmenagogue, laxative and tonic agent.	[30]
Rutaceae	<i>Citrus limon (L.)</i> <i>Burn</i>	Hamad	The headaches.	Astringent, febrifuge, haemostatic, appetizer and mineralizing agent.	[36], [54]
Schisandraceae	<i>Illicium verum</i>	Badiane	Asthma.		
Urticaceae	<i>Urtica pilulifera L.</i>	Harriga	The rheumatism.	aphrodisiac, galactagogue, anti-diarrheal, astringent and hemostatic agent	[55], [32]
Verbenaceae	<i>Aloysia triphylla</i> <i>(L'her.)Britt.</i>	Lwiza	Digestive, sedative and a warming agent.		
Zingiberaceae	<i>Curcuma longa L.</i> <i>Zingiber officinale</i> <i>Rosc.</i> <i>Amomum grana -</i> <i>paradisi L.</i> <i>Alpinia officinarum</i> <i>Hance.</i>	Kharkom Skinjbir gouza rkika Khdanjal	The diarrhea and intestinal pains. Colds, coughs and abdominal pains. Diseases of the digestive. Le rhume, le refroidissement, Colds and painful menstruations.	Anti-tumor, anti-inflammatory and antioxidant. Aphrodisiac The rheumatism and headaches. Aromatic, stimulant, carminative, digestive, anti-emetic, stomachic and antiseptic	[56] [57], [58] [30] [31]
Zygophyllaceae	<i>Zygophyllum</i> <i>gaetulum.</i>	Agaya	The stomach pains.	Colic and gastric diseases in children, antidiarrheal, antispasmodic and anti-inflammatory agent	[40], [59], [60]

4. Conclusion

This work has enabled us to make an inventory of medicinal plants used in the city of El Jadida and gather information about the practical therapeutic uses in this city.

The information collected from questionnaires and floristic surveys conducted in the field have allowed us to develop a catalog of 70 plant species. These taxa are divided into 39 families and 69 genera, with a clear dominance of Lamiaceae family (12.85%).

Finally, it is clear from these conducted ethno-botanical researches that the traditional use of medicinal plants is still popular in this region despite the medical technology revolution.

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Appendix

Questionnaire

Medicinal and herbal plants

Date.....
Région.....
Commune.....
Author.....
Place.....

Informer:

- Age:
- Profession:
- family situation: Single Married
- Sex: Male Female
- Education Level : primary secondary university
- locality : Douar Village city nomad

The rapeutic practices:

- When you feel sick you are addressing:
- A traditional medicine , why: effective cheapest

Acquisition drug ineffective

- A modern medicine , why : effective accuracy

Plant toxicity

If it is both, what is it the first:

Modern medicine Traditional medicine

Plant material:

- Vernacular name :
- Scientific name :

Type of plant:

- Savage Cultivated Adventitious
- Use of the plant:
- Therapeutic cosmetic Other

Technique of harvest:

- Handbook Mechanics
 - Moment of harvest (season):
 - Plant alone Possible association (of plants)
- State of the plant: Fresh Desiccated After treatment

- If desiccated, method of drying:

Exposed to the sun In the shade

- Part used : Stem Flowers Fruits Seed

Bark Rhizome Bulb Sheets

Whole plant Other combinations :.....

- Form of employment : herb tea Powder Essential Oils
- Fatty oils Extracted (dyeing, solution, capsule) :.....
- Mode of preparation: Infusion Decoction Cataplasm raw Cooked Others :.....
- Dose used:
- Pinch handle Spoonful

Precise Dose:

- Quantity in g/glass:.....
- Quantity in g/ liter:.....
- Others :.....

- Mode of administration : Oral Massage Rinsing Slathering

Others :.....

- Posology: number of catch per day :

For the children: Once / day Twice / day 3 times / day Others :.....

For the elderly people: Once / day Twice / day 3 times / day Others :.....

For the Adults : Once / day Twice / day 3 times / day Others :.....

- Duration of use (treatment duration) :

One Day One week One month Until healing .

- Retention method:

Safe from the light Exposed to the light Others :.....

Use:

- Type of disease:
 - Dermatological infections
 - Respiratory affections
 - Cardiovascular affections
 - Genito-urinary affections
 - Osteo-articular affections
 - Metabolic affections
 - Affections of the tract digestive
 - Affections of additional glands of the digestive tract
 - Neurological affections
- diagnosis:

Himself the doctor The herbalist Others :

- Results: healing improvement ineffective