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Original Research Article

Ethnobotanical Study of Medicinal Herbs in the Saïss Urban Commune (Region of Fez/Morocco)

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ABSTRACT

Medicinal plants have long been known to improve human health. Despite the development of synthetic chemistry, medicinal herbs are still widely used, thanks to their efficacy and exploitation at all therapeutic levels. An ethnobotanical study of herbal medicines was conducted in Saïss, Fez. The primary objective of this endeavor was to create a comprehensive catalog of medicinal herbs and collect valuable information on their therapeutic uses from the indigenous community in the research area. Employing a questionnaire-based approach, the ethnobotanical research identified 63 distinct species belonging to 30 different types of medicinal herbs. The results of this study showed that the Lamiaceae family is primarily represented by a total of 14 species (22.58%). In ethnobotanical and pharmacological terms, foliage (36%) is the most used part, and decoction (39%) is the most common galenic form. Likewise, digestive (22.50%) and metabolic (18.33%) diseases are the most mentioned among the treated infections.

Keywords: Medicinal herbs, Ethnobotany, Questionnaire, Phytotherapy, Fez region.

Introduction

From the beginning, medicinal herbs were known to improve human health and as a preventive control; they are exploited in various fields, thanks to their therapeutic, cosmetic and chemical properties, pharmaceutical, food and industrial. currently, the use of medicinal herbs occupies a significant place in the lives of residents. [1] Indeed, ancestral knowledge is passed on from one generation to the next, Thus, allowing the preservation of this knowledge, which many cherish, especially older people.[2]

In the last years, scientific research has developed the use of medicinal herbs to the use in the biological fight the practice of essential oils from medicinal herbs to fight against fungal or bacterial agents.[3]

Among the scientific fields focused on traditional phytomedicine, ethnobotany is a discipline that translates traditional knowledge into scientific understanding.[4]

On the other hand, ethnobotanical surveys help to gather and provide a precious source of information ready for scientific exploitation.[5] To complement partial and fragmentary studies that have been carried out throughout Morocco, in particular:[6]

- Contribution to an ethnobotanical study of medicinal herbs in eastern Morocco.[7]
- The traditional Moroccan. Ancient Arabic medicine and popular knowledge.[8]

Nevertheless, the Moroccan medicinal flora continues to remain obscure even today. This is primarily due to the vast number of plant species, as only 356 medicinal species have been identified among the few thousand present.[9]

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In this context, ethnobotanical research was conducted in the region of Fez, particularly the urban commune Saïss, which presents a rather important floristic diversity.[10] In the Fez region, an ethnobotanical study was conducted to compile an inventory of medicinal herbs for treating dermatological conditions. The study focused on identifying and categorizing the different types of herbs, providing instructions for their use, detailing the specific plant parts used, and ultimately creating a comprehensive catalog of the medicinal herbs employed in the area under investigation.

Materials and Methods

Geographical location

Fez, situated in central Morocco, lies approximately 180 km east of Rabat. It is nestled between the Rif Massif and the Middle Atlas, surrounded by forests and the very fertile lands of the Saïss (Figure 1). The urban commune of Fez is divided into six districts: Saïss, Agdal, Fez-Medina, Jnan El Ouard, El Mariniyine, and Zouagha. Saïss is one of the six districts of the city of Fez located within the prefecture of Fez.[11]

Methodology

With the help of 150 questionnaires, ethnobotanical field surveys were carried out during the year 2020.

The ethnobotanical research of medicinal herbs in the region of Fez is carried out on the one hand, according to a sampling plan and, on the other hand, using a questionnaire to identify the problem and to have an overview of the uses and diversity of herbs medicinal of the pharmacopoeia of the studied region.

Sampling

This work adopted a stratified and random sampling design. The aim was to divide the city of Fez into three homogeneous strata, each corresponding to a commune. Sampling 50 people, a total of 150 people at the city level (Table 1).

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Questionnaire
Our method involved using proportional stratified random sampling approach to obtain a more accurate depiction of the region. The sample is composed of 150 people who meet the main characteristics of the population of the Saïss region (distribution according to gender, age, family situation, academic level etc. [12]

The scientific nomenclature for the species was established by referencing the Practical Flora of Morocco Volumes 1, 2, and 3.[13] Proposals of questionnaires for ethnomedical surveys in the Maghreb, Moroccan medicinal and aromatic plants. [14]

Table 1: Survey breakdown by strata

strata	Strata names	Number of surveys
strata1	Saïss	50
Strata2	Fès-Elbali	50
Strata3	Zouagha.	50
	Sample	150

Results and Discussion

According to these surveys, we have differentiated 63 species belonging to 30 botanical families. The catalogue will represent all these plant species (Table 2). The utilization of medicinal plants differs based on gender, with a significantly higher proportion of women using these remedies than men. [15] In the study, 62% of the interviewed women relied on traditional medicine, while only 38% of the male population reported using such remedies (Figure 1).
These results confirm other ethnobotanical studies conducted at the national level, such as the work of Mehdiou and Kahouadji in the Amsittène forest .[16]

Distribution of the sample by gender
In this region, 150 people; Figure 2 shows that our sample comprises 88 women (56%) and 62 men (41.33%) completed the ethnobotanical survey data sheet.

Use of medicinal plants by the level of study
Within the study area, an overwhelming majority of individuals utilizing medicinal plants cannot read or write, comprising 37% of the total.[17] The significant correlation between the usage of medicinal plants and the educational level of the local population is evident in the following percentages: 27% for individuals with primary education, 28% for those with secondary education, and a mere 8% for individuals with a university education (Figure 3). [18]

Part used
The leaf is the most used part in the remedies based on medicinal plants with a percentage (36%), the fruits and the whole plant are of the same importance (13.66%), seed (7.5%), the flowers and the stems represent the same percentage (6%), the roots and the aerial part represents the same percentage (4.5%) and the other parts used (the bark, bulb, capitulum, rhizome) are represented by a rate of (9%) (Figure 4). [19]
The frequent utilization of leaves can be attributed to both their ease and rapidity of harvesting and their pivotal role as the site of photosynthesis and occasional storage of secondary metabolites that confer the plant's biological properties.[20]

Mode of preparation
Various preparation methods are employed to streamline drug administration, including decoction, infusion, powder, fumigation, poultice, and maceration. Users consistently seek the most straightforward technique for preparing phytomedicines.
Decoction (39%), infusion (24%), and powder (21%) are the most used preparation methods (Figure 5). Decoction enables the extraction of the most potent components while mitigating or eliminating the harmful effects of specific formulations. [21]

The dose used
In Figure 6, it is evident that significant percentages of users (60%) disregard the recommended doses and fail to acknowledge the potential toxicity of high doses. Meanwhile, the remaining portion (40%) adhere to the prescribed doses and express concern about the potential toxicity associated with the plants.[22]
Diseases and traditional medicine
The results obtained show that most plants are used in the treatment of digestive diseases (22.50%), metabolic disorders (18.33%), respiratory diseases (15.83%), dermatological diseases (12%), [23]and finally for other types of infections (glands annexed to the digestive tract, neurological osteoarticular, genitourinary, cardiovascular) (Figure 7). [24]

Floristic analysis
The floristic analysis of the catalogue allowed us to differentiate 63 species belonging to 30 botanical families (Table 2).

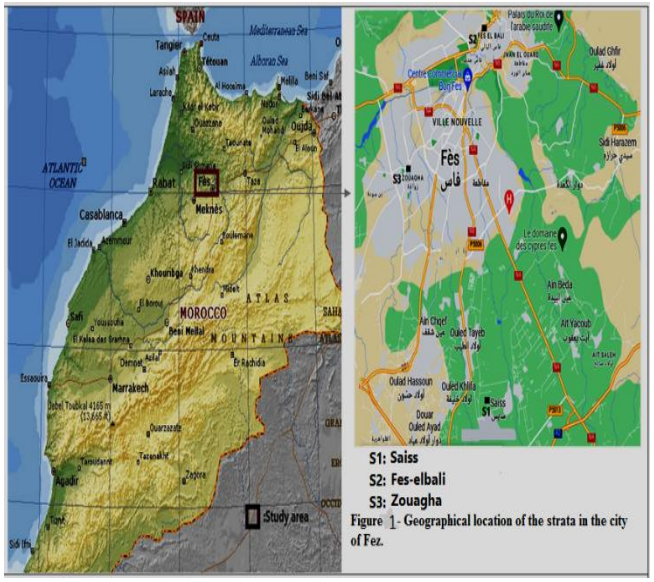

Figure 1: Geographical location of the strata in the city of Fes.

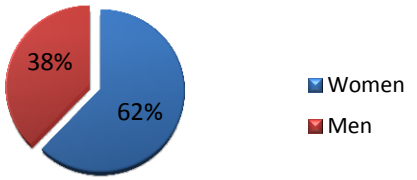

Figure 2: Use plant medicinals by gender

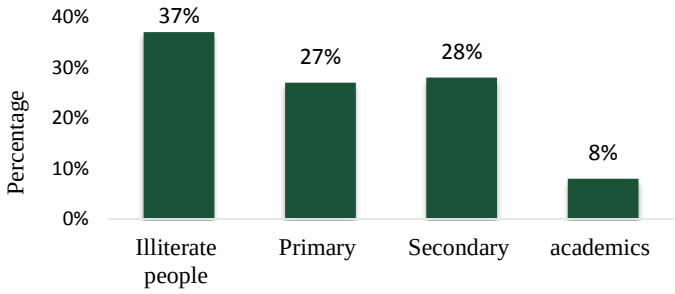

Figure 3: Use of medicinal plants by level of study

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Table 2: Catalog of medicinal plants used by the population of the urban commune Saïss (city Fez in Morocco)

Family (Number of species)	Scientific names	Common name French	Vernacular name	Part used	Preparation
Amaryllidaceae (2)	*Allium cepa*	Onion	Bassala	Bulb	Onion juice, added to fermented
	Allium sativum	Garlic	Toma	Bulb	milk
					Garlic, the date is prepared in the
					form of steamed leather
	Chenopodium ambrosioides	anserine	Mkhinza	Sheets	infusion
Amaranthaceae (2)	*Spinacia olerace*	Spinach	Selq Sabanikh	Sheets	Salad
		Hairy cumin	Canon Es-sofies-	FlowerSeeds	Infusion
			Sofi	Seeds	Decoction
Apiaceae (6)	*Ammodaucus leucotrichus*	Khella	Bachnikha	Seeds	infusion
	Ammi visnaga		Karwiya	Seeds	Infusion
	Carum carvi	Caraway		Leaves	Powder associated with honey
	Cuminum cyminum		kamoun		Decoction
	Foeniculum vulgare	Cumin	Nafaâ		
	Petroselinum sativum	Fennel	Maâdnous		
		Parsley			
Apocynaceae (1)	*Caralluma europaea*	Fingers of God	Ddaghmouss	Racket	Powder associated with honey
Asteraceae (4)	*Artemisia absinthium*	Absinthe	Chiba	Leaf	Decoction
	Artemisia-herba-alba	White wormwood	Chih	Whole plant	//////////
	Inula viscosa	Viscose year	Terrehla	Leaf	Powder
	Matricaria camomilla	German chamomile	Babounje	Flower head	infusion
Brassicaceae (2)	*Brassica rapa*	Turnip	Left	Root	Decoction
	Lepidium sativum	Watercress	Habb er- chad	Seed	Decoction
Cactaceae (1)	*Opuntia ficus-indica*	Cactus	Handya	Flower	Powder associated with honey
Capparidacee (1)	*Capparis spinosa*	Cable	Kabâr	Seed	Decoction
Caryophyllaceae (1)	*Hernairia hirsute*	Hernia	Harass elhajer	Whole plant	Decoction
Fabaceae (5)	*Cassia senna*	Senna of man	Sana harm	Leaves	Herbal tea
	Ceratonia siliqua	Carob tree	Kharoub	Fruits	Decoction
	Medicaga sativa	Alfalfa	Fassa	Leaves	Decoction
	Trigonella foenu graecum	Fenugreek	L-halba	Seeds	Decoction
	Quercus cuber	Cork oak	Ballot	Bark	Decoction
Geraniaceae (1)	*Pelargonium Rosa*	geranuim rosat	atrecha	Sheets	infusion
	Ajuga iva	Bugle	Chendgûra	Sheets	Infusion
	Calamintha officinalis	Calament	Manta	Leaves	infusion
	Lavandula dentata	Lavender	khzama	Whole plant	Decoction
	Lavandula stoechas	Lavender	halhal	Leaf	Decoction
	Marrubium vulgar	stoechade	Marriwta	Leaf	Decoction
	Mentha pulegium	White Marrube	Fliyyo	Whole plant	infusion
	Mentha suaveolens	Mint Pouliot	Marseta	Leaf	infusion
Lamiaceae (14)	*Mentha viridis*	Mint	Na'anaa	Leaf	infusion
	Ocimum basilicum	Mint	lahbaq	Leaf	infusion
	Origanum compactum	bacilic	Za'tar	Leaf	Infusion
	Origanum majorana	Oregano	Merdedûch	Leaf	Infusion
	Rosmarinus officinalis	Marjoram	Yazir	Leaf	Decoction
	Salvia officinalis	Rosemary	Ssâlmiya		Decoction

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	Thymus vulgaris	Sage, officinal Thyme	zaàytra		infusion
Lauraceae (1)	*Persea americana.*	Avocado	Avocat	Leaf	Decoction
Linaceae (1)	*Linum usitatissimum*	Cultivated flax	Zarrî'at l-kettân	Seed	infusion
Lythraceae (2)	*Lawsonia inermis*	Henna	L-henna	Stem	Poultice
	Punica granatum	Pomegranate	Roman	Fruit peel	Decoction
Malvaceae (1)	*Malva sylvestris*	Mallow	L-khobiza	Leaf, stem	Decoction
	Eucalyptus globulus	Eucalyptus	kalibtus	Leaf,	decoction
Mytaceae (3)	*Eugenia caryophyllata*	clove tree	qronfel	flower buds	decoction
	Mytrus communis	Myrtle	Rihan	leaf	decoction
Oleaceae (1)	*Olea europea*	Olivier	Zaytûn	seed	Olive oil, oregano, garlic (syrup)
Poaceae (1)	*Pennisetum typhoides*	Millet	Ïllân	seed	Decoction
Portulacaceae (1)	*Portulaca oleracea*	Purslane garden	Rejla	leat	Decoction
Ranunculaceae (1)	*Nigella sativa*	Nigella	Haba ssawda	seed	Powder associated with honey
Rhamnaceae (1)	*Ziziphus lotus*	Jujube tree	Ssedra(Nbag)	Fruit	Decoction
Rosaceae (1)	*Prunus amygdalus*	Bitter almond tree	Luz harr	Fruit	Powder
Rubiaceae (1)	*Rubia peregrina*	Garance	Fuwwa	Whole plant	decoction
Rutaceae (2)	*Citrus limon*	Lemon tree	El-hammed	Fruit	The juice associated with honey
	Citrus sinencis	Orange tree	Leymon	fruit	
Solanaceae (1)	*Capsicum frutescens*	Bitter pepper	Felfal har	Fruit	infusion
Urticaceae (1)	*Urtica pilulifera*	Nettle	L-hurrîga	Whole plant	Cataplasm
Valerianaceae (1)	*Valeriana celtica*	Celtic spikenard	Ssunbul	Whole plant	decoction
Verbenaceae (1)	*Lippia citriodora*	Verbena	Lwîza	Sheet	herbal tea
Zingiberaceae (2)	*Alpinia officinarum*	Galanga officinale	Khôdenjâl	Rhizome	Powder
	Zingiber officinale	Ginger	Skenjbîr	Rhizome	Powder associated with olive oil

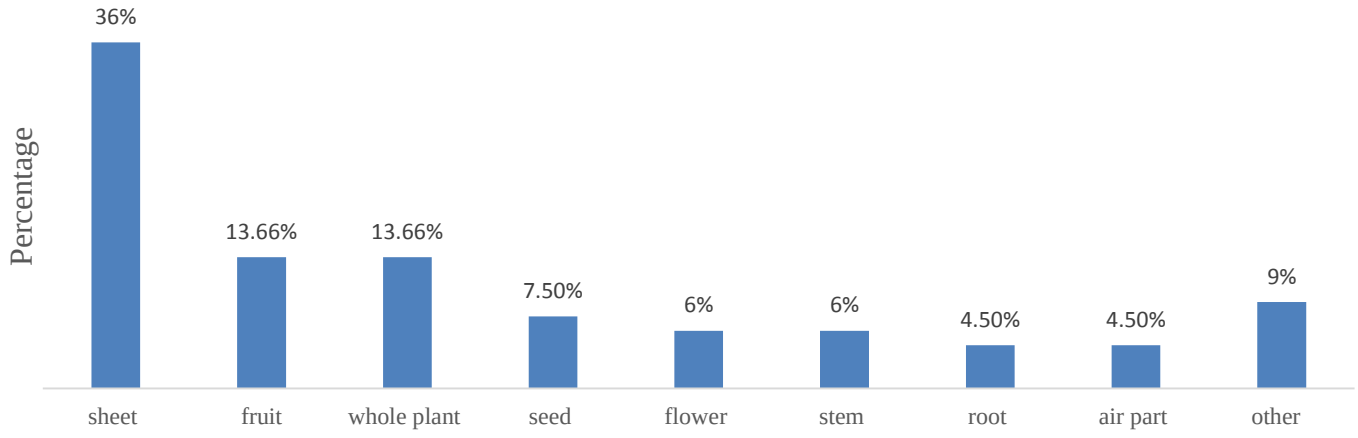

Figure 4: Representes of the pourcentages of the parts usud.

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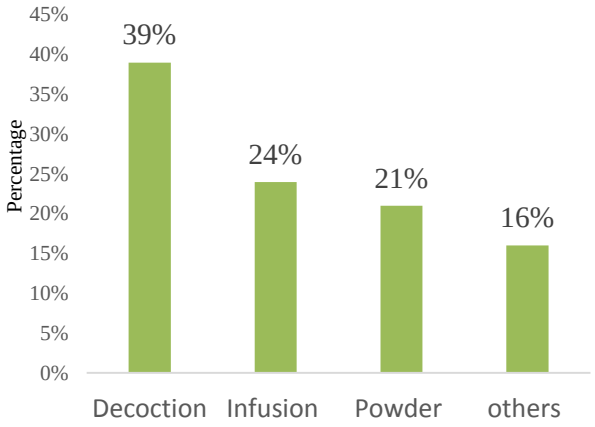

Figure 5:Distribuction of preperation methods

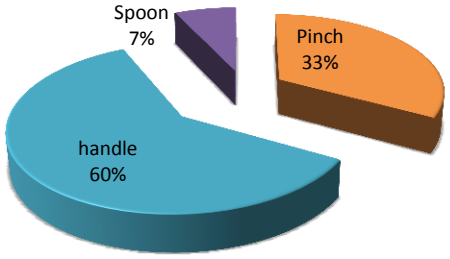

Figure 6: Distribution of users by dose accuracy

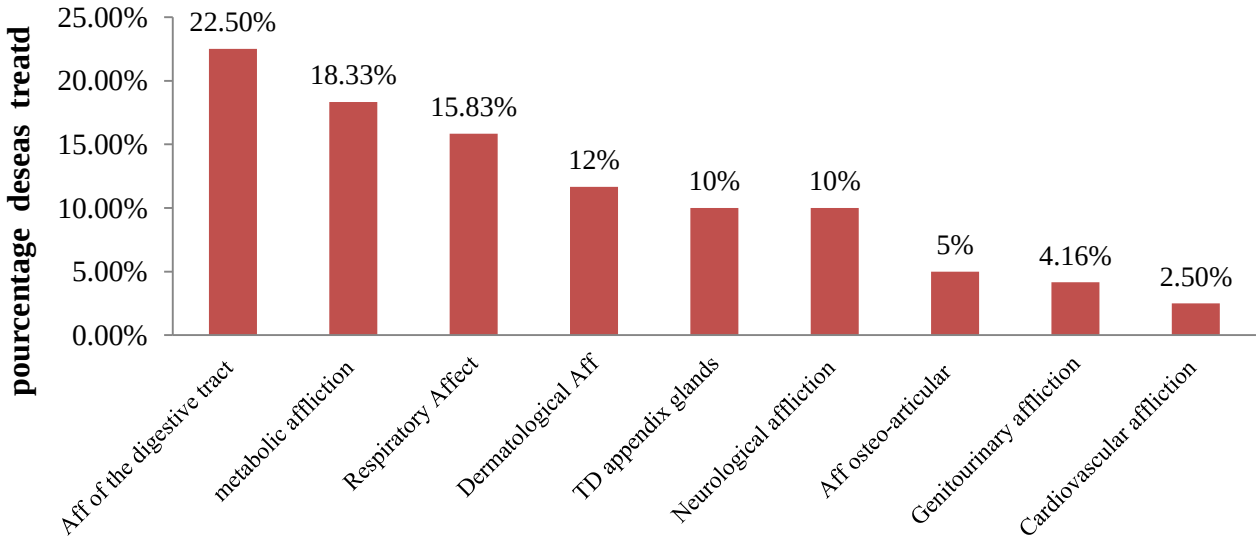

Figure 7: Distributions of diseases treated by medicinal plants

Moreover, the botanical identification showed that among the 30 families recorded, those most represented are *Lamiaceae* (13 species or 20.63%), *Fabaceae* (6 species or 9.52%), *Apiaceae* (6 species or 9.52%), *Asteraceae* (4 species or 6.34%), and *Myrtaceae* (3 species or 4.76%). The other remaining families have only one or two species (31 species or 49.20%) (Table 2). [24]

Conclusion

The ethnobotanical investigation conducted in the urban commune of Saïss (located in the city of Fez) demonstrates the continued prevalence of traditional medicinal plant usage, despite the advancements in medical technology and modern medicine. This study and its findings are expected to emphasize the significance of medicinal plants in treating ailments and assess the potential risks associated with certain toxic plants. Moreover, it promotes a fresh management approach to preserving and safeguarding natural resources. Based on our research and endeavors, we can confidently assert that medicinal plants offer a valuable means of disease prevention.

Conflict of Interest

The authors declare no conflict of interest.

Authors' Declaration

The authors hereby declare that the work presented in this article is original and that any liability for claims relating to the content of this article will be borne by them.

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