Medicinal plants used to treat acute digestive system problems in the region of Fez-Meknes in Morocco: An ethnopharmacological survey

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Research

Abstract

Background: In Morocco, acute digestive system problems appear to be a famous daily ill which the most population deal with using medicinal plants. This work aims to inventory the plants used to deal with acute digestive system problems in the region of Fez-Meknes.

Methods: A survey was carried out by means of a semi-structured questionnaire. A total of 423 interviews (108 of them are traditional health practitioners) were conducted. Botanical information about identified plants was carefully collected. Data were analyzed through the relative frequency of citation (RFC).

Results: All respondents informed about the effectiveness of the medicinal plants and confirmed successful multiple uses of them. In total, 50 species belonging to 23 families were reported. The most-reported plant families were Lamiaceae (12 species), Apiaceae (10 species), Fabaceae, and Asteraceae (5 species). The most frequently used plants to treat digestive system acute problems based on their RFC values were: *Foeniculum vulgare* (8.58), *Carum carvi* (5.11) *Glycyrrhiza glabra* (4.56) *Ammondaucus leucotrichus, Trigonella foenum-graecum*, (4.20), *Coriandrum sativum* (4.01). The use of medicinal plants in the acute digestive system problems, according to the interviewed people, concerned six categories: Acute ache, digestion problems, intestinal comfort, bloating, diarrhea, and constipation.

Conclusion: Knowledge of medicinal plants used to treat acute digestive system problems was solid. Indeed, all the local population used medicinal plants as a first choice to deal with it. This study represents

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a useful inventory to preserve and spread this knowledge.

Keywords: Ethnopharmacological survey; Digestive system problems; Medicinal plants; Morocco; Acute ache; digestion problems; intestinal comfort; bloating, diarrhea; constipation.

Background

The use of plants for therapeutic purposes has been known since time immemorial. Ancient mythology shows a keen interest in medicinal plants to treat several diseases (Budha-Magar *et al.* 2020; Malinga *et al.* 2020; Mechchate *et al.* 2020). Although modern medicine is well developed almost everywhere in the world, a sizable proportion of the population in developing countries still relies on traditional practitioners and herbal medicines for their primary care (World Health Organization 2002). Morocco is a country of highly diverse flora with more than 5200 species and subspecies of vascular plants, including 900 endemic plants (Fennane and Ibn Tattou 2012). Aromatic and medicinal plants are represented by over 743 taxa belonging to 101 families and 371 genera, among which 40 taxa are endemic to Morocco (Jamaleddine *et al.* 2017).

The use of herbs as medicines to treat ailments of the digestive tract is widespread. In digestion, food and drink are transported in the digestive tract, broken down into small parts (called nutriments) that the body can absorb and use as energy and building blocks for cells. Digestive diseases are disorders of the digestive or gastrointestinal tract, which interfere with the digestive process that includes ingestion, propulsion, mechanical or physical digestion, chemical digestion, absorption, and defecation (ACOG 2014). Taking into consideration that disorders of the digestive system are usually closely interrelated, the medicinal plants used for treatment tend to be multipurpose and can be used for a variety of digestive symptoms and disorders (Sidhu *et al.* 2007). The present paper aims to identify the medicinal plants used in the region of Fez-Meknes in Morocco for acute digestive problems.

Materials and Methods

Study context

The main focus of this study is to highlight the natural alternatives that people in the Fez-Meknes region use to treat acute digestive problems according to their personal experience. Ethnopharmacological information was obtained from 423 People, 108 of them are traditional health practitioners.

Study area

The study was conducted in the Fez-Meknes region (Figure 1), which covers an area of 40,075 Km² or 5.7% of the national territory, with a population of over 4 million people. This region is located in the Plain of Saiss, halfway between the north and the south of the Kingdom of Morocco. This region includes seven provinces: Boulemane, El Hajeb, Ifrane, Moulay Yaâcoub, Sefrou, Taounate, and Taza (Monographie Générale 2015).

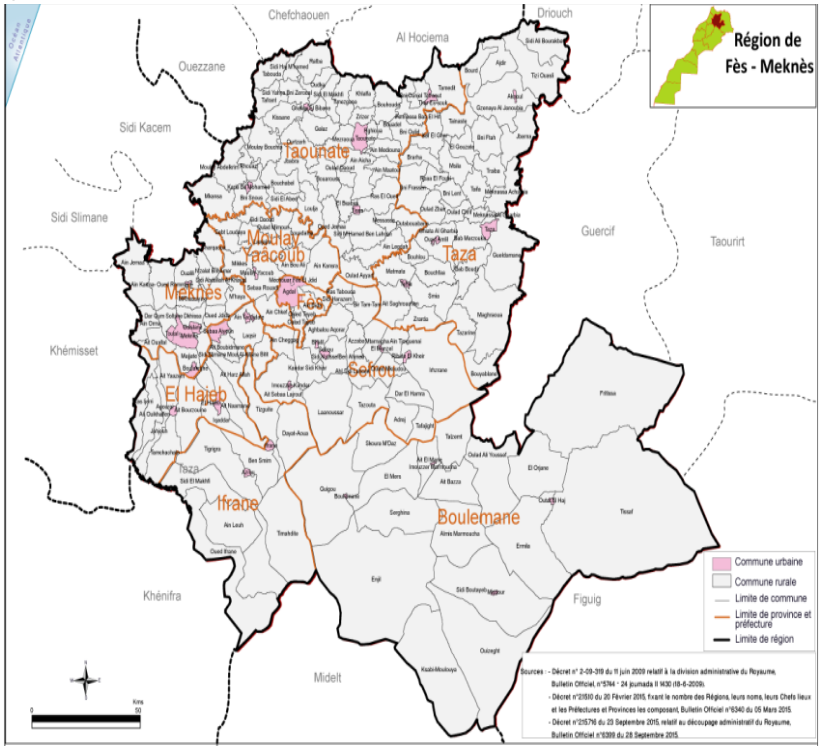

Figure 1. Map of the study area

Ethnopharmacological survey

An Ethnopharmacological survey was conducted from November 2018 to May 2019. The data were collected through a semi-structured questionnaire (Annex A).

Plant identification

To avoid any confusion between local names and scientific names, the interviewers collected all possible knowledge on the confusing species with many samples and photos taken. Respondents were also re-consulted in especially doubtful cases till the final identification of the specie. Identification of botanical names was undertaken in collaboration with Professor Amina Bari (Botanist) and following the "FLORE PRATIQUE DU MAROC" (Practical Flora of Morocco) (Fennane *et al.* 1999). Voucher specimens of each plant have been deposited at the herbarium of the Laboratory of Environment in the Faculty of Sciences Dhar el Mahraz Fez.

Data analysis

Relative frequency of citations

The relative frequency of citation shows the local importance of each species, and it's obtained by dividing the number of informants, who mention the use of the species, also known as the Frequency Citation (FC), by the number of informants participating in the survey (N) (Tardío and Pardo-de-Santayana 2008).

$$RFC = FC\backslash N \quad (0< RFC<1)$$

Statistical analysis

Raw data entries were carried out using Microsoft Excel 2016 for windows. Frequencies were calculated with JASP statistics version 0.9.2.0 for windows, and figures were made with GraphPad Prism version 6.01 for windows.

Results and Discussion

Socio-demographic profile of the interviewers

Table 1 displays the socio-demographic profile of the interviewers. Among the 423 People interviewed, 147 were men (45,37%) and 177 women (54,63%). All of them use medicinal plants to treat acute digestive system problems. Their age varied between 18 and 89 years. The interviewers were arbitrarily divided into four age groups: < 20 years, 20-40years, 40-60 years, and >60 years (respectively, 11, 145, 121, and 47 persons). For their educational level, 36,11% were illiterate, while 25,62% attended at least primary school. The rest were either secondary (21,91%) or university level (16,36%) of education.

Table 1. Sociodemographic profile of the diabetic patients

Variable	Subgroup	Number	Percentage (%)
Sex	Male	147	45,37
	Female	177	54,63
Age	< 20 years	11	3,40
	20 - 40 years	145	44,75
	40 - 60 years	121	37,35
	> 60 years	47	14,50
Education level	Illiterate	117	36,11
	Primary	83	25,62
	Secondary	71	21,91
	University	53	16,36

Sources of information

Their sources of information varied between other people's experiences (48,5%), traditional health practitioners (45,5%), virtues explored by themselves (3%), the internet (2.4%), and finally books (0.6%), but their most important source was other experiences with 48,5%.

Only a few people count on literature and research to look for their information. Their main source was either the other experiences or traditional health practitioners. This is related to the specialties of our society, when a plant or a formulation is effective, the person using it recommends it to his family and friends, and this how medicinal plant knowledge is spread.

Reasons to use medicinal plants

All interviewed persons noted that medicinal plants were effective and confirmed that by their multiple uses. In addition to their availability, low cost, and almost no side effects.

Inventory of selected medicinal plants and floristic analysis

A total of 50 medicinal plants species belonging to 23 families were recorded. The plants were listed in alphabetical order by families (Table 2). Information such as the vernacular name of plant species, citation, frequency of citations (RFC), parts used, state of the plants, formulation, and preparation, utilization is provided for each species. Families with the most reported plant species were Lamiaceae (12 species), Apiaceae (10 species), Fabaceae, and Asteraceae (5 species) (Figure 2).

The Lamiaceae family is one of the most prominent plant families among flowering plants, with more than 7000 species grouped in 236 genera. This family encompasses many bioactive molecules, which make it an important family in the biological and medical applications (Uritu *et al.* 2018).

Table 2. Inventory of the medicinal plants used for the treatment of digestif system acute ache in the Fez-Meknes region, Morocco

Name of plants Voucher number	Vernacular name	Citation	RFC(%)	Part used / State	Formulation, and preparation	Used for
Anacardiaceae						
Pistacia lentiscus L. BPRN81	Drou	3	0.55	L/F or D	Decoction, handful quantity in 1L of water,	Acute ache; digestion problems
Apiaceae						
Ammi visnaga (L.) Lam BPRN20	Bechnikha	5	0.91	Umbel/F or D	Decoction, handful quantity in 1L of water	Acute ache; digestion problems
Ammondaucus leucotrichus Coss. & Durieu BPRN70	Kamoun Essoufi	23	4.20	S/D	Decoction of powder, handful quantity in 1L of water	Acute ache; digestion problems; bloating
Apium graveolens L. BPRN25	Krafess	3	0.55	AP/F	Juice, variable quantity mix with water	Acute ache; digestion problems
Carum ammoïdes Benth & Hook BPRN89	Nûnkha	3	0.55	AP/D	Decoction, handful quantity in 1L	Acute ache
Carum carvi L. BPRN15	Karwiya	28	5.11	S/D	Powder, 1 Tablespoon	Acute ache; digestion problems; bloating
Coriandrum sativum L. BPRN28	Kassbour	22	4.01	S/D	Powder, 1 Tablespoon	Acute ache; digestion problems; bloating
Cumun cyminum L. BPRN72	Kamoun	13	2.37	S/D	Powder, 1 Tablespoon	Acute ache; digestion problems; bloating and Diarrhea
Foeniculum vulgare Mill. BPRN18	Hebet hlawa	47	8.58	S/D	Powder, 1 Tablespoon	Acute ache; digestion problems; intestinal comfort; bloating
Petroselinum crispum Mill. BPRN30	Maadnouss	4	0.73	AP/F	Juice, variable quantity mix with water	Acute ache; against constipation
Pimpinellla anisum L. BPRN73	Nafea	19	3.47	S/D	Powder, 1 Tablespoon	Acute ache; digestion problems; bloating,
Aristolochiaceae						
Aristolochia longa L. BPRN85	Berraztam	3	0.55	R/D	Decoction of powder handful quantity in 1 L	Acute ache; digestion problems;
Asteraceae						
Artemisia absinthium L. BPRN46	Chiba	4	0.73	AP/F or D	Decoction, handful quantity in 1 L of water	Digestion problems; intestinal comfort

Artemisia herba-alba Asso BPRN16	Chih	5	0.91	AP/F or D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems; intestinal comfort
chamaemelum nobile L. BPRN35	Babounj	12	2.19	F/F or D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems; intestinal comfort; against constipation
Dittrichia viscosa L. BPRN75	Tirrhilane	4	0.73	AP/F or D	Decoction, handful quantity in 1 L	Acute ache; digestion problems
Cactaceae						
Opuntia ficus-indica (L.) Mill. BPRN24	Hendia	2	0.36	Epi/F or D	Juice, variable quantity mix with water	Acute ache; digestion problems; intestinal comfort
Caryophyllaceae						
Corrigiola littoralis L. BPRN76	Serghina	6	1.09	R/D	Decoction, handful quantity in 1 L	Acute ache; digestion problems
Chenopodiaceae						
Chenopodium ambrosioides L. BPRN27	M'khinza	3	0.55	AP/F or D	Juice, variable quantity mix with water,	Acute ache; digestion problems
Ericaceae						
Arbutus unedo L. BPRN88	Assanū	3	0.55	R/D	Decoction of powder handful quantity in 1 L	Acute ache; digestion problems
Fabaceae						
Ceratonia siliqua L. BPRN61	Alkharoub	5	0.91	F/D	decoction of powder, handful quantity in 1L of water	Acute ache; digestion problems; against bloating and diarrhea
Glycyrrhiza glabra L. BPRN78	êrk-es-souss	25	4.56	R/D	Decoction of powder handful quantity in 1 L	Acute ache; intestinal comfort
Senna alexandrina Mill. BPRN79	Sana	18	3.28	L/D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems
Trigonella foenum-graecum L. BPRN45	Helba	23	4.20	S/D	Infusion, handful quantity in 1 L of water soaked overnight; Powder, 1 Tablespoon	Acute ache; digestion problems; intestinal comfort; against bloating and diarrhea
Illiaceae						
Illicium verum (Hook.) F. BPRN80	L-badiane	10	1.82	S/D	Decoction 4-6 pieces in 500 ml	Acute ache; digestion problems
Lamiaceae						
Ajuga iva (L.) Schreber BPRN69	chendgoura	4	0.73	AP/D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems

Lavandula angustifolia (P.) Mill BPRN82	l'khezama	21	3.83	AP/F or D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems, intestinal comfort
Lavandula multifida L. BPRN83	l'khezama	5	0.91	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems; intestinal comfort
Lavandula stoechas L. BPRN56	l'khezama	9	1.64	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems; intestinal comfort
Marrubium vulgare L. BPRN55	Meriwta	4	0.73	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems,
Mentha pulegium, L. BPRN49	Fliou	9	1.64	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache, digestion problems; intestinal comfort
Ocimum basilicum L. BPRN84	Lehbeq	8	1.46	L/F	Decoction, handful quantity in 1 L of water	Intestinal comfort
Origanum majorana L. BPRN74	Merdedouch	6	1.09	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems; intestinal comfort
Origanum compactum Benth. BPRN11	zaater	19	3.47	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems; intestinal comfort
Rosmarinus officinalis L. BPRN37	Azir	21	3.83	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems; intestinal comfort
Salivia officinalis L. BPRN58	Salmia	8	1.46	L/F	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems; intestinal comfort
Thymus vulgaris L. BPRN19	Ziitra	4	0.73	AP/F or D	Decoction, handful quantity in 1 L of water; hydrolates 1 cup	Acute ache; digestion problems; intestinal comfort
Liliaceae						
Allium cepa L. BPRN43	Bassla	7	1.28	Bulb/F	Raw 1 piece	Acute ache; intestinal comfort
Allium sativum L. BPRN52	Touma	5	0.91	Bulb/F	Raw 2-3 pieces	Acute ache; digestion problems; against diarrhea
Linaceae						
Linum usitatissimum L. BPRN57	Zeriat el Ketan	11	2.01	S/D	Powder, 1-4 Tablespoon	Acute ache; digestion problems; intestinal comfort; against bloating and diarrhea
Lythraceae						
Punica granatum L. BPRN65	Reman	1	0.18	Epi/D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems; against diarrhea
Myrtaceae						

Myrtus communis L. BPRN60	Rihane	19	3.47	L/F or D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems, intestinal comfort; against diarrhea
Oleaceae						
Olea europaea L. BPRN12	Zitoune	2	0.36	L/F	Decoction, handful quantity in 1 L of water bread preparation	Acute ache; digestion problems, intestinal comfort
Papaveraceae						
Papaver rhoeas L BPRN54	Belaaman	3	0.55	S/D	Powder, 1-2 Tablespoon	Acute ache
Piperaceae						
Piper cubeba (L.) F. BPRN86	Alkabbaba	21	3.83	S/D	Powder 1 Tablespoon	Acute ache; digestion problems
Ranunculaceae						
Nigella sativa L. BPRN53	Sanouj	21	3.83	S/D	Raw 1 Tablespoon	Acute ache; digestion problems; intestinal comfort; against bloating and diarrhea
Rhamnaceae						
Zyziphus lotus L. BPRN09	Sidra, Nbeg	21	3.83	S/D	Decoction, handful quantity in 1 L of water	Acute ache; digestion problems; intestinal comfort; bloating
Rosaceae						
Rosa damascena Mill. BPRN87	Elward	5	0.91	F/F or D	Hydrolats 1 cup	intestinal comfort
Verbenaceae						
Lippia triphylla (L'Her.) Britt. BPRN77	Lwiza	18	3.28	L/F or D	Decoction, handful quantity in 1 L of water	intestinal comfort
Zingiberaceae						
Elettaria cardamomum L. BPRN71	Qaâqolla	3	0.55	S/D	Decoction of powder 2-3 tablespoon in 500 ml	Acute ache; digestion problems,

F: Fresh; **D**: Dried; **AP**: Aerial part; **S**: Seeds; **R**: Roots; **Epi**: Epicarp; **L**: Leafs; **F**: Fruit

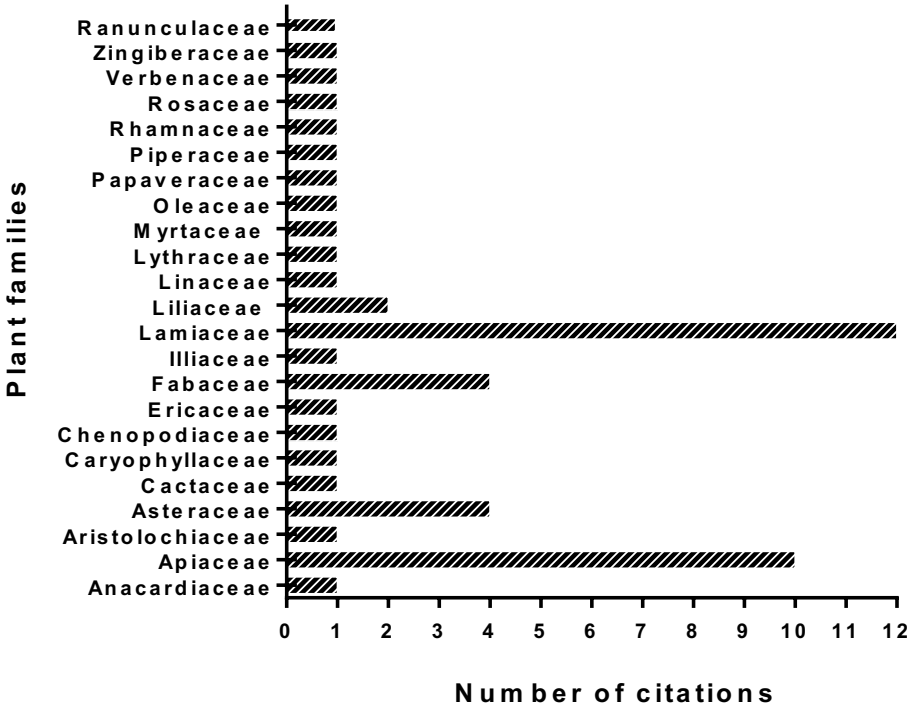

Figure. 2 Plant families of the reported medicinal plants

Apiaceae family consists of 3780 species in 434 genera. it's a family who encompasses a high number of plants with significant utilization to treat illnesses related to digestive, endocrine, reproductive and respiratory systems (Acimovic *et al.* 2015)

Ethnopharmacological indexes

The frequency of citations (RFC) values of collected plant species ranged from 0.23 to 8.41, respectively. The most frequently used plants to treat acute digestive system problems. Their RFC values are: *Foeniculum vulgare* (8.58), Carum carvi (5.11), *Glycyrrhiza glabra* (4.56), *Ammondaucus leucotrichus* and *Trigonella foenum-graecum* (4.20), Coriandrum sativum (4.01).

Foeniculum vulgare Mill. has been known *for its anti-*inflammatory and antinociceptive effects. Indeed, an oral administration of *Foeniculum vulgare* fruit methanolic extract at the dose of 200 mg/kg exhibited inhibitory effects against acute and subacute inflammatory diseases, allergic reactions type IV, and also showed a central antinociceptive effect (Choi and Hwang 2004). The antinociceptive effects of *F. vulgare* are partially mediated by histamine H1 and H2 receptors (Zendehdel *et al.* 2012).

The antinociceptive effect of *Carum carvi* (L.) has been shown for a,b-Epoxy-carvone (EC), a cyclic monoterpene found in the essential oils, that is probably associated with activation of the opioidergic system, which appears to play a role in the antinociceptive activity (da Rocha *et al.* 2013)**.** In addition, the extracted oils exhibited high anti-inflammatory capacity inhibiting nitric oxide (NO) release (Bourgou *et al.* 2019)

The anti-inflammatory and antinociceptive effects of *Glycyrrhiza glabra* (L.) were investigated for its aqueous and ethanolic extracts by using different pain models in swiss albino mice; both extracts exhibited antinociceptive activity by central and peripheral mechanism (Bhandage 2009)

Ammodaucus leucotrichus (Coss. & Durieu), fruits had a strong-anti-inflammatory activity (Bonnefoy 1999), the same effect with essential oil (Mohammedi *et al.* 2018) and the hydroethanolic extracts of the aerial part (Ziani *et al.* 2019)

Trigonella foenum-graecum L. *had an* analgesic and anti-inflammatory activities of the seeds extract (Vyas *et al.* 2008). The leaves also possess anti-inflammatory as well as antipyretic properties in both i.p. and p.o. administration (Ahmadiani *et al.* 2001). They induced an antinociceptive effect through central and peripheral mechanisms (Javan *et al.* 1997), alkaloid and flavonoid content of fenugreek seeds can be responsible for antinociception and anti-inflammatory effects, respectively (Mandegary *et al.* 2012).

Coriandrum sativum L. *has a* modulator effect on pain (Taherian *et al.* 2012), the total extract, polyphenols extract, and essential oil of coriander had a significant analgesic effect. (Haidari *et al.* 2011).

Plant parts used, mode of preparation and administration

Dried plants were the most used compared to fresh plants (61% versus 39%). The aerial part was the most used plant part with a percentage of 34%, followed by seeds (28%), leaves (14%), roots (8%), fruits (6%), bulbs (4%), epicarps (4%) and finally umbels (2%) (Figure 3).

The decoction is the primary preparation made with a percentage of (50%), followed by powder (23%), hydrolats (15%), juice (6%), raw (5%), and finally infusion (1%) (Figure 4).

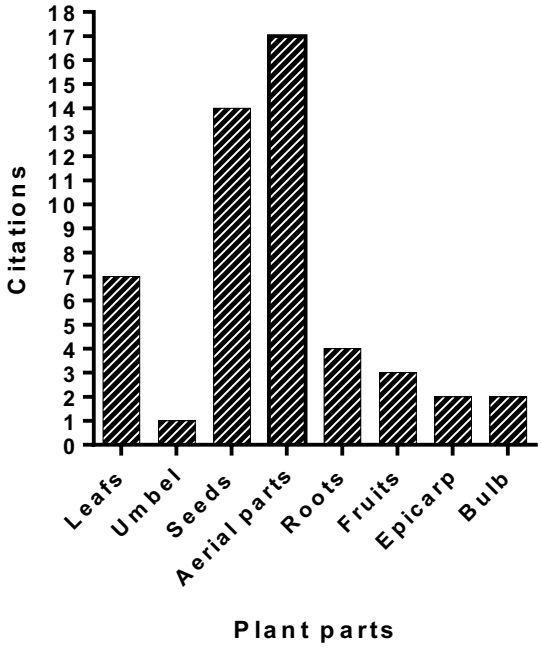

Figure 3. Plant parts used in remedy preparation

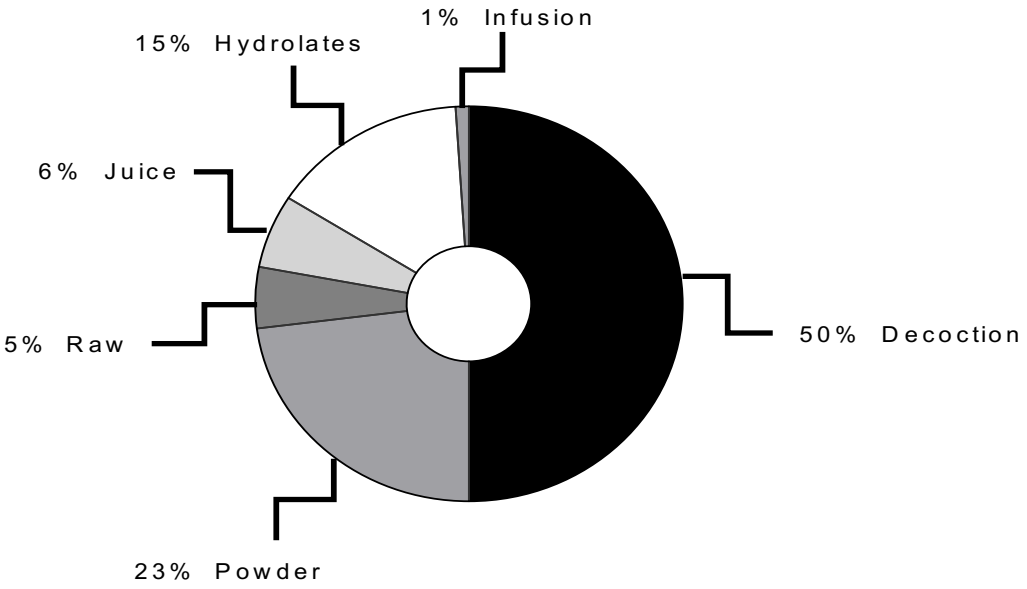

Figure 4. Plant mode of preparation (%)

Acute digestive system problems

According to the feedback from the interviewed population, the acute digestive system problems concerned six categories: Acute ache, digestion problems; intestinal comfort; bloating, diarrhea, and constipation.

From the 50 plants inventoried, the most utilization was for acute aches (94%) and digestion problem (84%) followed by intestinal comfort (50%) and finally, diarrhea and constipation (16 and 4% consequently).

The multiple utilization of a single plant in different categories is from the fact that those categories are related in a manner that if you are attending a digestive system problem, you will probably manifest one or more of those categories at the same time.

Conclusions

This survey is the first work that explicitly highlights the knowledge of acute digestive system problems in the region of Fez-Meknes in Morocco. The interviewers showed confidence and trust when informing about their successful use of the medicinal plant as a first choice for the treatment and were very satisfied. Detailed information about the 50 plants inventoried was carefully recorded to preserve accurately the knowledge about the procedures in the use of these plants. This variety of medicinal plants used to deal with acute digestive system problems shows clearly the importance of plants in the healthcare system in Morocco. The recorded information in the present study may be used as baseline data for future scientific investigations.

Declarations

Ethics statement and consent to participants: All participants provided prior informed consent.

List of abbreviations: N/A

Ethics approval and consent to participate: Before conducting interviews, prior informed consent was obtained from all participants. No further ethics approval was required.

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Conflict of interest: **The authors declare that they have no conflict of interest.**

Authors' contributions: All the authors approved the final manuscript after revision.

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Annex A : Ethnobotanical survey

Université Sidi Mohamed Ben Abdellah- Fès
Modèle-Questionnaire d'Enquête Ethno-pharmacologique
Prof D. BOUSTA

Fiche n° :

Classement (par thème, ordre alphabétique, région ou autre) : …..... ……..

Documents annexées (photos, diapositives, herbiers…) : …….....

1-RENSEIGNEMENT SUR L'INFORMATEUR

- Sexe : Femme……Homme …….

-Age : 18-24 □ 25-34 □ 35-49 □ 49-65 □ 65≥ □

- Origine ethnique : ..... -

- Commune:. ..... -

- Niveau d'instruction : Néant □ Primaire □ Secondaire □ Universitaire □

- Situation familiale : Célibataire □ Marié □

- Métier : Herboriste ……..Guérisseur ……..Autres.....

- Comment vous avez eu ces connaissances ? Lui-même □ Expérience des autres □ Herboriste □ Livres □ Occasionnellement □ Autres □ ……

- Exerce t-il d'autre pratique médicinale traditionnelle ? Si oui, les quels ?
.....

- Que préférez-vous ? les soins médicaux □ Les soins phytothérapeutiques □
-Pourquoi?.....

-Qui consultez-vous en cas de maladie ? : Personnel médical □ Guérisseur □

-Autres :.....

2- RENSEIGNEMENT SUR LE PRATICIEN

Nom :…….Prénom :……..Age : …….

Lieu de Naissance : ……. Lieu d'établissement : …… Appartenance ethnique ou origine régionale:…….. **Qualification et compétence du praticien :**

Niveau d'instruction :……..

Depuis quand exerce t'il le métier de guérisseur ?.....

Qui l'a formé……

S'il s'agit d'un praticien lettré, quels livres de médecine arabe possède-t-il ? Est 'il polyvalent ou exerce une spécialité ?.....

Est -il spécialisé dans le traitement d'une maladie ? ……

A-t-il formé quelqu'un ?.....

2 – RENSEIGNEMENT SUR LE PRODUIT

2-1 Simple :

2.1.1 - Caractéristiques de l'habitat de la plante

Sol : ……..

Relief : .....

Climat : …….

Action anthropique : ……

Aire de répartition : .....

2.2 – Systématique

-Famille: .....

-Genre: .....

-Espèce: .....

2.3 Dénominations locales :…….

.....

Toxicité, effets secondaires : toxicité pour l'homme et/ou le bétail, risque et effets indésirables :

……

Dose……

Mode de préparation :

……
……
……

Autres □ : .....

Posologie :

Pour les nourrissons : 1fois/jour □ 2fois/jour □ 3fois/jour □ Autres □ : .....

Pour les enfants : 1fois/jour □ 2fois/jour □ 3fois/jour □ Autres □ : .....

Pour les Adultes : 1fois/jour □ 2fois/jour □ 3fois/jour □ Autres □ : .....

Pour les personnes âgées : 1fois/jour □ 2fois/jour □ 3fois/jour □ Autres □ : .....

Durée d'utilisation (durée de traitement) :

Un jour □ Une semaine □ Un mois □ Jusqu'à la guérison □

Mode d'administration :

:……

……

Associations : ……

……

Autres informations :

……

……
……

……

2-1 Plante : (Seule)

Parties utilisées : Tige □ Fleurs □ Fruits □ Graine □ Écorce □ Rhizome □ Bulbe □ Latex □

Feuilles □ Plante entière □ Autres combinaisons □ :
.....
.....

État de la plante : Fraîche □ Desséché □

Forme d'emploi : Tisane □ Poudre □ Huiles essentielles □

Lieu de récolte : ……. Lieu d'acquisition:…….....

Produit : local □ sauvage □ local □ cultivé □ importé □

Autres : ……..

Conditions et modalités de la récolte : (saison, période du jour, etc)……...

Autres utilisations médicinales :

.....
.....

2-2 Mixte : (recette)

Parties utilisées : Tige □ Fleurs □ Fruits □ Graine □ Écorce □ Rhizome □ Bulbe □

Feuilles □

Plante entière □ Autres combinaisons □ : .....

.....

État de la plante : Fraîche □ Desséché □

Lieu de récolte des plantes ……..

Lieu d'acquisition :…….....

Produit : local □ sauvage □ local cultivé □ importé □

Autres :……..

Conditions et modalités de la récolte : (saison, période du jour, etc)…….....

Traitement reçu par le produit : (séchage, pulvérisation) ……..

Indications (si celles-ci varient en fonction des parties, faire une fiche pour chaque partie)…….....

Autres utilisations médicinales :

.....
.....