

Medicinal Plants Adopted as Aphrodisiacs by Traditional Gynecologists in the Souss Massa Region

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ABSTRACT

The population of southern Morocco particularly that of Souss Massa uses traditional empirical care, several specialties of traditional medicine exist in the region including women healers considered traditional gynecologists, these women used medicinal plants to treat female genital disorders. This study was carried out in order to collect information on the therapeutic practices and medicinal plants adopted and used by women healers named locally by "ferraga" or "tachrift" and "tagouramt" in the Souss Massa region (Agadir Idaoutanan, Inzegane Ait Meloul and Chtouka Ait Baha), in order to preserve and protect this invaluable inheritance from loss and overlook. Using questionnaires, a series of surveys were conducted during the years 2020-2021, on the one hand, among the population (sample of 279 people) to determine the importance of these women healers in the health sector of the region of these women healers, and on the other hand, a survey was conducted among these women healers to collect the recipes adopted in the treatment of female genital disorders especially infertility and sterility in these situations they prescribe aphrodisiac plants. we recorded 59 species, divided into 28 botanical families, of which the Lamiaceae (15%) and the Apiaceae (12%) are the most widespread, and generally Leaves (35.38%) and seeds (18.48%) are the most used plant parts. These results show that the women healers have a very important place in the health service, especially they have a very interesting knowledge of the treatment of female genital disorders. The plants identified in this study could constitute a data base for further research in the field of phytochemistry and pharmacology.

INTRODUCTION

A woman's life is punctuated by hormonal imbalances that begin at puberty and end after the menopause. These various hormonal changes can be accompanied by more or less serious disorders.^{1,2}

Pregnancy and birth have been at the heart of traditions since ancient times, as they are central to the survival of the community. Over time, each ethnic group has accumulated a number of experiences and practices to promote a successful pregnancy and birth.³

Health Organisation, which states that almost 65% of the world's population have incorporated plants into their primary health care modality. Women use traditional practices for abortifacients, emmenagogue, aphrodisiacs, menstrual cycle disorders, inflammation of the genital tract, female infertility and for post-partum care.⁴

In the Souss Massa region, women frequent traditional healers called ferraga, tagouramt or tachrift who are considered traditional gynaecologists who treat gynaeco-obstetrical disorders using plant-based recipes and traditional practices. Given their privileged place in Moroccan societies, including that of Souss Massa, we conducted this study to collect information on medicinal plants adopted as aphrodisiacs to treat gynaecological disorders in order to preserve this traditional know-how.

MATERIALS AND METHODS

Description of the study area

The region of Souss-Massa is divided into four provinces with two prefectures: Prefecture of

Agadir-Idaoutanane and Prefecture of Inezgane-Ait Melloul as well as the Province of Chtouka-Ait Baha, Taroudant, Tata and that of Tiznit (figure 1). The number of municipalities is 175 including 21 urban and 154 rural, it covers an area of 53,789 km² limited to the north by the region of Marrakech-Safi and to the east by the region of Drâa-Tafilalet, to the south. by the regions of Guelmim-Oued Noun and Lâayoune-Sakia el Hamra and in the West by the Atlantic Ocean.⁵

The region currently has nine hospitals (Table 1), basic health care training consists of 292 establishments, including 243 rural health centers and dispensaries and 49 others in urban areas. In addition to these structures, the region has a private sector made up of 23 clinics and 431 consultation offices. The public health density in hospital beds is 1.630 inhabitants per bed, while public medical supervision is provided by 538 doctors: one doctor for 4.976 inhabitants.⁵ But the problem of inadequate health services still persists (Table 2).

Methods of data collection

Firstly, the study is carried out in the three provinces during 2019-2020 and 2021-2022, the surveys are conducted in the local population (278 questionnaires) to collect the information about traditional medicine: the various specialties, the positioning in the health field and the effectiveness.

Second, a descriptive cross-sectional study on treatment practices based on the use of medicinal plants by women healers was carried out by field survey in the different regions of Agadir, Inzegane-ait Melloul, and Chtouka-Ait Baha (Figure 1- 4).

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Table 1: Distribution of public health establishments, by province and prefecture.⁵

Provinces et prefectures	General hospitals		Specialized hospitals		Total	
	Number	Beds	Number	Beds	Number	Beds
Agadir- idaoutanan	1	570	1	40	2	610
Inzegan-ait melloul	1	310	0	0	1	310
Chtouka ait baha	1	45	0	0	1	45
Total	3	924	2	40	4	965

Table 2: Inadequate health services still persists.

espece	Family	Local name	Part of plant	mode	Administration	Traditional use	Medecinal use
Aframomum melegueta K.Schum.	Zingiberaceae	Lgouza sahraouia	seed	Powder infusion	Vaginal shower	Aphrodisiac	Aphrodisiac ¹⁰
Allium cepa L.	Liliaceae	Azalim,lbasla	seed	Powder	Oral	Aphrodisiac, Infertility	Aphrodisiac, emmenagogue ¹¹
Allium sativum L.	Amaryllidaceae	Ettouma	Bulbe	cooked	Oral	Aphrodisiac	Aphrodisiac ¹²
Anacyclus pyrethurn L.	Asteraceae	Tighicht	Root	Infusion	Oral	Aphrodisiac	Aphrodisiac, Dysmenorrhea ¹² sexual stimulant ¹³
Apium graveolens L.	Apiaceae	lkrafess	Aerial part seed	Raw Powder	Oral Oral	Aphrodisiac	sexual performances, ¹³ Aphrodisiac ¹⁴
Asphodelus microcarpus Salzm. & Viv.	Liliaceae	blalouz	Root	Powder	Oral	Aphrodisiac,	No data
Boswellia carteri Birdw.	Burseraceae	Lban dakar	resine	Fumigation		Infertility	No data
Bunium alpinum	Apiaceae	bekbouka	bulbe	Powder	Oral	Aphrodisiac,	Emmenagogue ¹⁵
Cinnamomum aromaticum Zoll	Lauraceae	Lqerfa	Bark	Decoction Powder	Oral	Aphrodisiac	Aphrodisiac ¹²
Commiphora myrrha Engl.	Burseraceae	Ljawi	Resine	Fumigation		Infertility	Ritual and magic practices ⁷
Coriandrum sativum L.	Apiaceae	Lqezbor	Seed	Powder Decoction	Oral	Aphrodisiac, Infertility ²	Emménagogue ¹⁶ Aphrodisiac ¹⁷
Corrigiola telephiifolia Pourr.	Caryophyllaceae	serghina	Stem	Powder Fumigation	Oral	Aphrodisiac Infertility	Gynecological Disorders ⁹
Crocus sativus L.	Iridaceae	Zaafan lhor	Stigma	Raw Decoction	Oral	Aphrodisiac, Infertility	Aphrodisiac ¹⁸
Cuminum cyminum L.	Apiaceae	kamoun	Graine	Powder	Oral	Aphrodisiac,	oxytocic effect ¹⁹
Curcuma longa L.	Zingiberaceae	kharqum	rhizom	Powder Decoction	Oral	Aphrodisiac	Antifertility ²⁰
Datura stramonium L.	Solanaceae	chdeq jmel	seed	Powder	Oral	Aphrodisiac	Aphrodisiac ²¹
Daucus carota L.	Apiaceae	khizo	seed	Powder	Oral	Aphrodisiac	Aphrodisiac ²²
Elettaria cardamomum (L.) Maton	Zingiberaceae	Qaaqala	Decoction	Powder Decoction	Oral	Aphrodisiac	Aphrodisiac ¹²
Eugenia caryophyllata Thunb.	Myrtaceae	Qronfol	flower buds	Powder Decoction	Oral	Aphrodisiac	Aphrodisiac ²³
Euphorbia falcata L.	Euphorbiaceae	Hayat noufous	Leaves	Powder	Oral	Aphrodisiac, Infertility	Aphrodisiac ⁷
Ferula communis L.	Apiaceae	Lhaltit	Resin	Fumigation		Infertility	Infertility ²⁴
Foeniculum vulgare Mill.	Apiaceae	nafaa	seeds	Powder	Oral	Aphrodisiac,	Aphrodisiac ²⁵
Fraxinus angustifolia Vahl.	Oleaceae	Lsan ettir	Leaves	Powder	Oral	Aphrodisiac	Aphrodisiac ²⁶
Alpinia officinarum	Zingiberaceae	Khoudnjai	Rhizome	Powder Decoction		Aphrodisiac,	Aphrodisiac ²⁶ menstrual pains ⁷
Glycyrrhiza glabra L.	Fabaceae	Aarq souss	Rhizome	Decoction	Oral	Aphrodisiac,	Aphrodisiac ¹² Stimulates Prolactin Production ²⁷
Illicium verum Hook.f.	Schisandraceae	Badiana	Fruit	Decoction	Oral	Aphrodisiac,	Emmenagogue ²⁸ Estrogenic and menstrual pains ²⁹
Iris germanica L.	Iridaceae	Laanbar	Rhizome	Decoction	Oral	Aphrodisiac,	Aphrodisiac ¹²
Laurus nobilis L.	Lauraceae	Werqat sidna moussa	Leaves	Decoction Fumigation	Oral	Infertility	Emmenagogue ³⁰
Lavandula stoechas L.	Lamiaceae	Halhal	Leaf, flower	decoction	Oral	Dysmenorrhea, Itching, vaginal discharge	urogenital infections ³¹
Lepidium sativum L.	Brassicaceae	Heb rchad	Seed	Powder Decoction	Oral	Infertility	sexual impotence, infertility ³²

Linum usitatissimum L.	Linaceae	Zariat lketan	Seed	Powder	Oral	Aphrodisiac	estrogenic properties ² Infertility ¹⁶
Medicago sativa subsp. sativa L.	Fabaceae	lfessa	Seed Root	Powder	Oral	Aphrodisiac,	estrogenic properties and menopausal disorders ² Galactagogue ³³
Myristica fragrans	Myristicaceae	bsibisa	Mace	Powder	Oral	Aphrodisiac	urogenital infections ³¹
Myristica fragrans Houtt.	Myristicaceae	Lgouza	Fruit	Powder	Oral	Aphrodisiac	gynecological pains ⁷ Aphrodisiac ¹²
Myrtus communis L	Myrtaceae	Rihan	Leaves	Powder Decoction	Oral	Aphrodisiac,	Aphrodisiac ¹²
Nigella sativa L.	Ranunculaceae	Chanouj	seed	Powder Decocotion Fumigation	Oral	Infertility	galagtagogue, antispasmodic ⁷
Nerium oleander L.	Apocynaceae	Defla, alili	Leaves	Fumigation		Infertility	No data
Opuntia ficus-indica (L.) Mill	Cactaceae	Lhindia	Flowers	Powder	Oral	Aphrodisiac,	Aphrodisiac ³⁴
Peganum harmala L.	Nitrariaceae	Harmel	Seed	Fumigation		Infertility	Emmenagogue, ³⁵ infertility ³⁶
Petroselinum sativum Hoffm.	Apiaceae	Maadnous	Seeds	Powder	Oral	Aphrodisiac	Impotence sexual ²⁵
Phoenix dactylifera L.	Arecaceae	nkhel	pollen seed	Powder mixed with honey	Oral	Infertility	Aphrodisiac ³²
Pimenta officinalis Lindl	Myrtaceae	Nwiwira	Seeds	Powder	Oral	Aphrodisiac	Impotence sexual ¹²
Pimpinella anisum L.	Apiaceae	Hebet hlawa	Seeds	Powder	Oral	Aphrodisiac	Galactagogue ³³ menstrual pains ²
Piper cubeba L.f.	Piperaceae	Lkbaba	Seeds	Powder	Oral	Aphrodisiac	Aphrodisiac ³⁴
Piper longum L.	Piperaceae	Dher lfelfel	Seeds	Powder	Oral	Aphrodisiac	Aphrodisiac ²¹
Piper nigrum L.	Piperaceae	Lbzar lkhel et lbyed	Seeds	Powder	Oral	Aphrodisiac	Aphrodisiac ^{21,33}
Punica granatum L.	Lythraceae	Romane	Pericarp	Powder	Oral	Aphrodisiac	sex stimulants, ¹³ aphrodisiac ³⁴
Ranunculus muricatus L.	Ranunculaceae	Ouden lhalouf	Root	Powder	Oral	Aphrodisiac	gynecological disorders, ³⁷ Emmenagogue ²⁸
Rosa damascena Mill.	Rosaceae	Werd lbeldi	Flowers	Decoction	Oral	Dysmenorrhea	Sedative ²⁶
Rosmarinus officinalis L.	Lamiaceae	Azir	Leaves	Powder Decoction		Aphrodisiac	menstrual pains, ³⁸ stimulate blood circulation ²⁶ analgesic ³⁹
Rubia peregrina L	Rubiaceae	lfewa	Flowers	Decoction	Oral	Aphrodisiac	Aphrodisiac (Ouarghidi et al., 2013)
Ruta montana Mill.	Rutaceae	Lfijel	Leaves	Decocotion	Vaginal shower	Infertility	Antimicrobial ⁴¹
Saussurea costus Lipsch	Asteraceae	Lqist lhindi	Root	Fumigation		Infertility	Dysmenorrhea ⁴²
Spergularia marina (L.) Besser	Caryophyllaceae	oud boughlam	Root	Powder	Oral	Aphrodisiac	Anti-inflammatory, Genito-urinary disease ⁴³
Tetraclinis articulata Mast.	Cupressaceae	Aaraar	Leaves	Fumigation Decoction	Inhaling Oral	Infertility	urinary infections ⁴⁴
Thymus broussonetii Boiss.	Lamiaceae	zaaytra	Leaves	Powder Decoction	Oral	Aphrodisiac	menstrual pains ⁴⁵ analgesic ⁴⁶
Thymus maroccanus Ball	Lamiaceae	zaatar	Leaves	Powder Decoction	Oral	Aphrodisiac	Analgesic ⁴⁶ Antimicrobial ⁴⁷
Trigonella foenum- graecum L.	Fabaceae	Lhelba	Seeds	Powder	Oral	Aphrodisiac,	Aphrodisiac ¹²
Urtica dioica L.	Urticaceae	Lherriga	Seeds	Powder	Oral	Aphrodisiac	regulate hormonal disorders ¹⁵ Aphrodisiac ³³
Usnea barbata (L.) Weber ex F. H. Wigg	Parmeliaceae	Lhyat chikh		Powder	Oral	Aphrodisiac	Antibacterial ⁴⁸
Vitex agnus-castus L.	Verbenaceae	lkharwaa	Seeds	Powder	Oral	Aphrodisiac	Aphrodisiac ¹²
Petroselinum sativum	Apiaceae	Maadnous	Seeds	Powder	Oral	Aphrodisiac	sexual Impotence ²⁵
Zingiber officinale Roscoe	Zingiberaceae	Skinjibir	Rhizome	Powder Decoction	Oral	Aphrodisiac	sexual disorders ⁴⁹ appetite stimulant, ⁵⁰ Aphrodisiac ²¹
Ziziphus jujuba Mill.	Rhamnaceae	Essidr	Leaves	Fumigation		Infertility	Aphrodisiac ^{51,52}

Given the clandestinity in which these women exercise their healing practices, we used the technique of "open discussion" which consists of asking these healers for the diseases treated and the medicinal plants used via free and open discussions The number of healers

questioned is 23 (average of 7 women per region) and 21 herbalists. The identification of the plants mentioned by these women was carried out using regional, national and international ethnobotanical studies, the reference specimens of each plant were deposited in the herbarium of

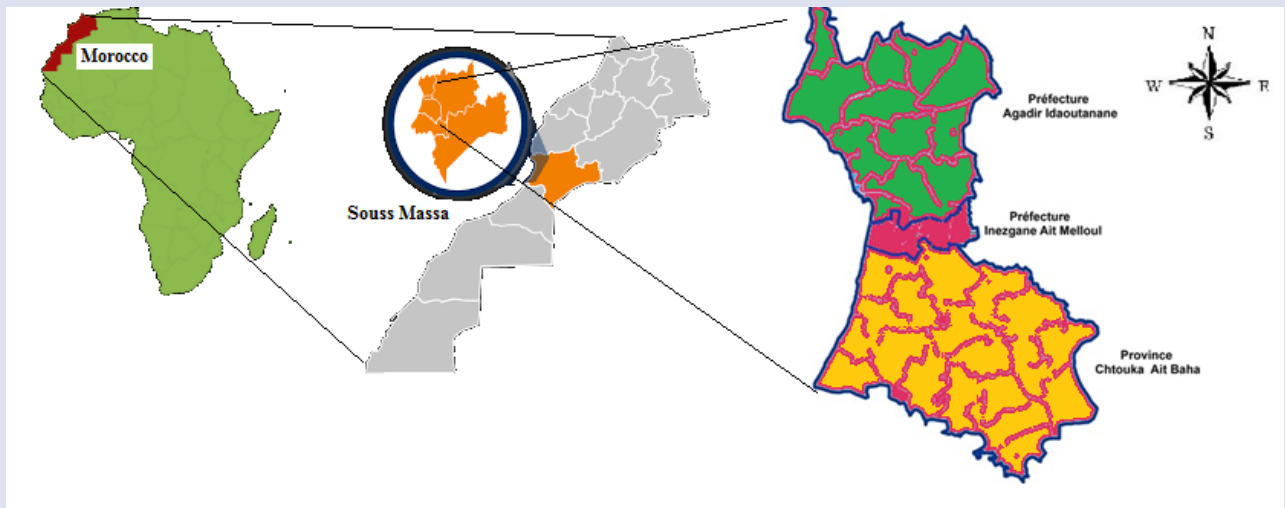


Figure 1: Map of the study area region Souss Massa

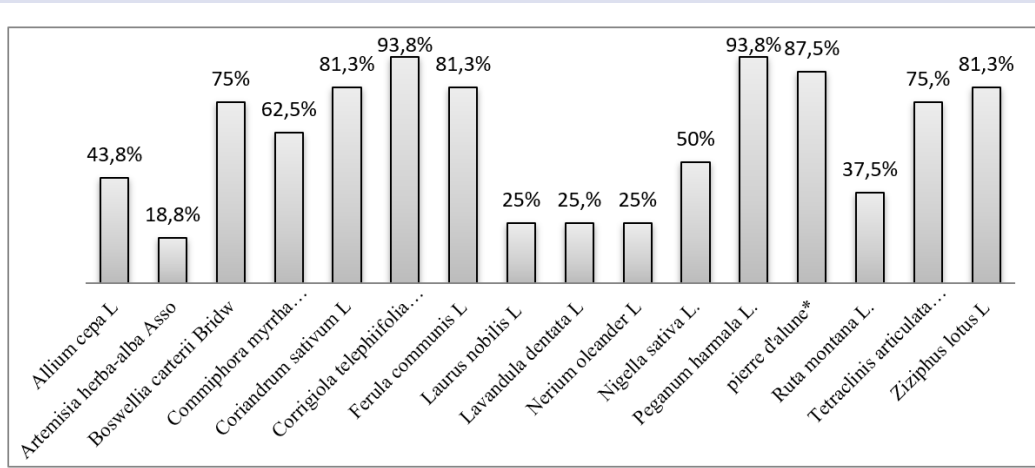


Figure 2: The component plants of Tfoussikha

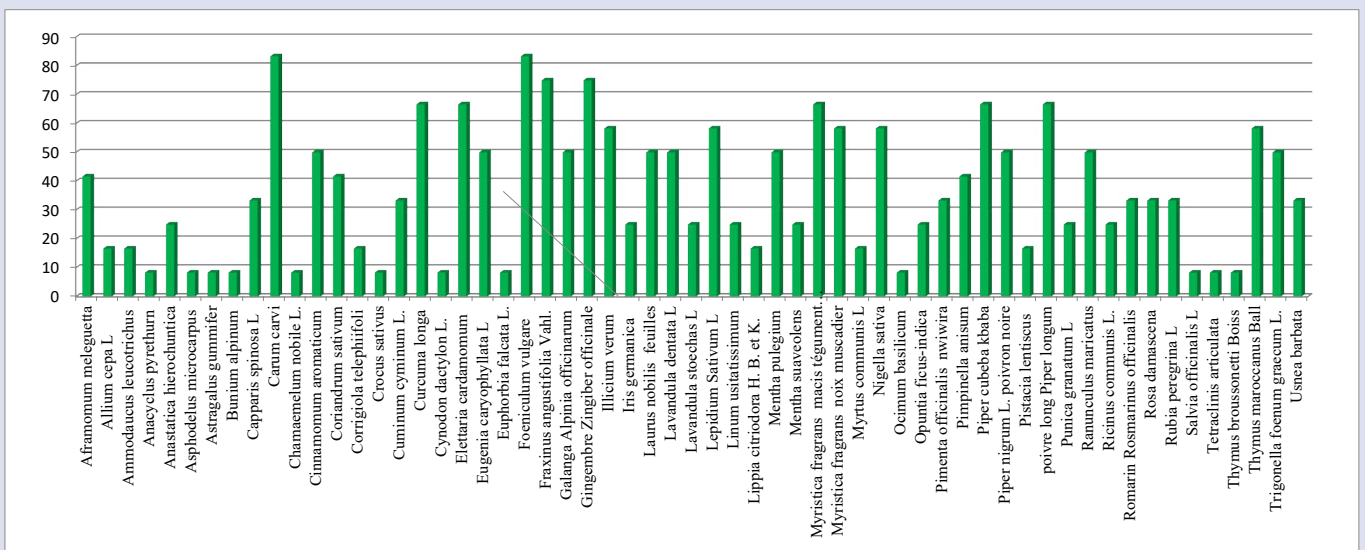


Figure 3: The vegetal species in the Imsakhen recipe

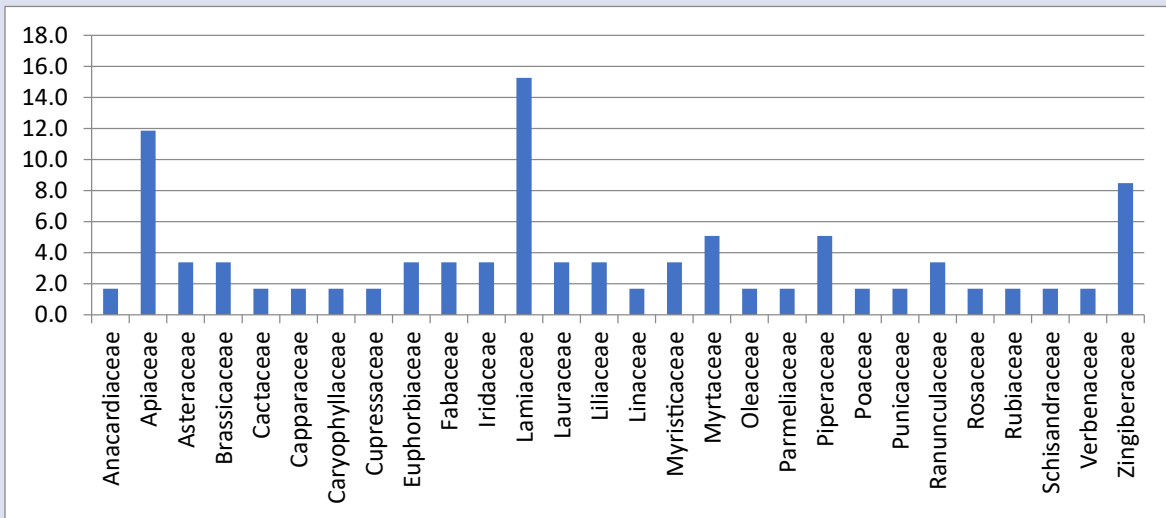


Figure 4: The familie botanicof plant in the Imsakhen recipe

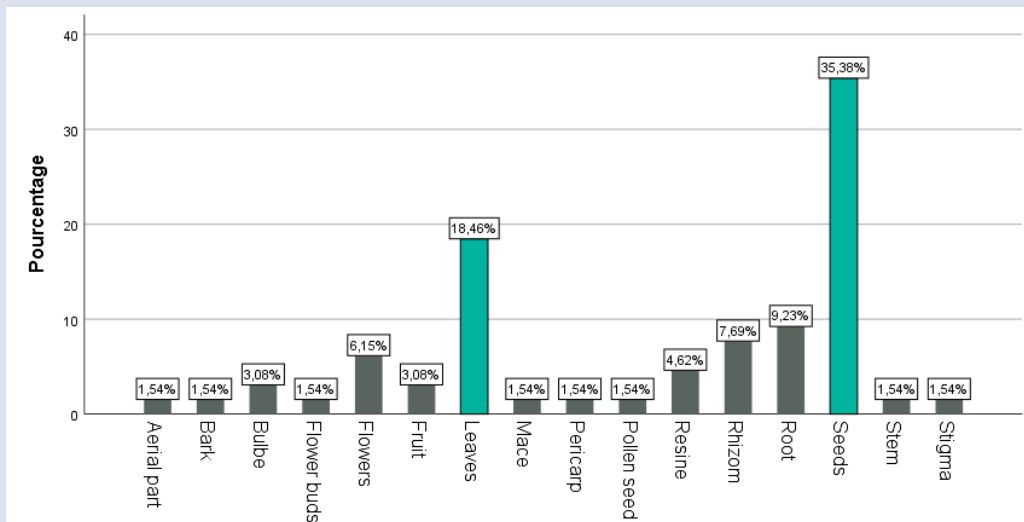


Figure 5: The different parts of the plants used

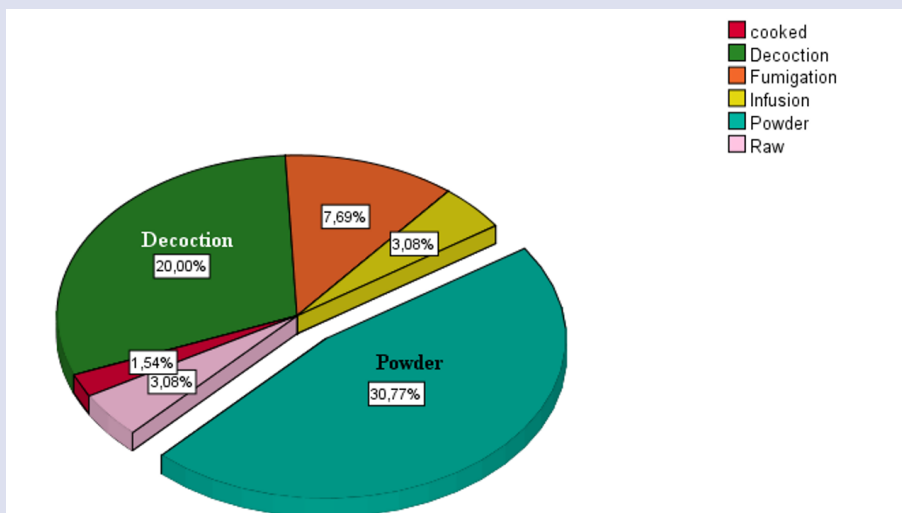


Figure 6: Different preparation methods

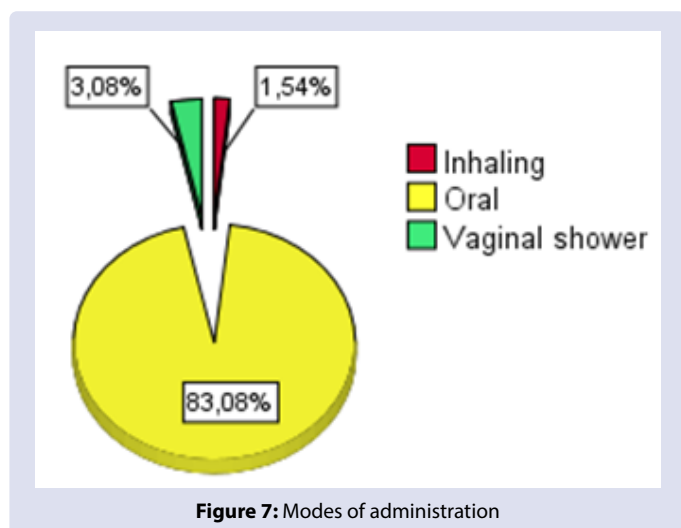


Figure 7: Modes of administration

the laboratory of the research team in biotechnology and biomolecule engineering, Faculty of Science and Technology, University Abdelmalek Essaadi Tangier, Morocco. The data collected were recorded and analyzed by IBM-SPSS statistics base 25 and the graphical representations are carried out by the same software.

RESULTS

Many women suffer from difficulties in getting pregnant (infertility), recurrent miscarriages and sterility, according to the healers these disorders are caused by the effects of witchcraft, a bad spell, cold or the closure of the womb known as "tqaf".

Most of them prescribe a recipe known as *Msakhen*, which designates a mixture of plants that is asked of herbalists. The collection of this recipe has shown a diversity of composition that varies from one herbalist to another. A total of 59 species have been identified, divided into 28 botanical families, of which the most commonly cited are *Myristica fragrans* Houtt, *Piper cubeba* L., *Piper longum* L., *Ginger Zingiber* L., *Foeniculum vulgare* L., *Elettaria cardamomum* (L.) Maton, *Curcuma longa* L. and *Carum carvi* ().

In some of them, special recipes are prescribed:

Palm pollen (*Phoenix dactylifera*), ginger (*Zingiber officinale*), nigella seeds (*Nigella sativa* L.), Indian costus (*Saussurea costus*) and jujube (*Zizyphus lotus*) mixed with honey and taken twice a day.

Seeds of *Daucus carota* var. *sativa*, *Apium graveolens* L. and *Allium cepa* L. in powder form mixed with honey and taken two to three times a day

Use of *Anastatica hierochuntica* decoctate, *Salvia officinalis* infusions and musk-ivet (*Ajuva iva* L.) or *Origanum majorana* L. taken twice a day.

Others prescribe an incense which is a set of plants called *tfoussikha* to treat the closure of the *tqaf* matrix, the recipe varies according to the healer, according to the results collected there are 15 species divided into 13 botanical families and a mineral alum stone.

The results of the survey conducted reveal that herborist use 59 different species for preparing the *lmsakhun* recipe. These species belong to 28 families, the most represented being the Lamiaceae (15%), the Apiaceae (12%) and the Zingiberaceae 8.5%, the other 25 families are less represented they do not exceed 5% (figure)

Plant parts

Leaves are the most frequently used plant parts (35.38%), followed by seeds (18.48%), other parts are less represented with percentages not exceeding 10%

Method of preparation

The powdered preparation 30.77% and the decoction 20% are the most adapted, the powdered preparation is often mixed with milk, tea, or food (bread, soup, couscous), and the decoctions are generally consumed in the form of herbal teas. the other modes of preparation are less common (less than 8%)

DISCUSSION

Traditional healers and herbal medicine are essential in health care in Morocco.⁶ Women healers occupy a very important place in the health sector in the Souss Massa region, they are the most frequented traditional medicine specialty by the population 31%. These women are mainly frequented by the population to treat urogenital affection

According to the survey, the main cause of urogenital disorders is chilling, and chilling can refer to various disorders such as dysmenorrhoea, menstrual pain, sterility, and impotence. And so these healers prescribe plants known as warming plants grouped in a recipe known as *Msakhen* composed of 59 species, divided into 28 botanical families, of which the Lamiaceae (15%) and the Apiaceae (12%) are the most widespread, sometimes the delay in pregnancy is linked to an effect of witchcraft, in which case the healers recommend an incense known as *tfoussikha*, made up of 15 species divided into 13 botanical families, and a mineral, alum stone and generally Leaves (35.38%) and seeds (18.48%) are the most used plant parts.^{7,8} The powdered preparation 30.77% and the decoction 20% are the most adapted.^{8,9}

The frequency with which medicinal plants are cited in the literature is likely evidence of their activity. Of the 59 species cited as aphrodisiacs 47 species have been described in ethnobotanical studies while 12 species are cited for the first time as aphrodisiacs (*Asphodelus microcarpus* Salzm. & Viv. *Bunium alpinum*, *Capparis spinosa* L., *Corrigiola telephifolia* Pourr, *Curcuma longa* L., *Linum usitatissimum* L., *Ilicium verum* Hook.f., *Medicago sativa* subsp. *sativa* L., *Rosmarinus officinalis* L., *Spergularia marina* (L.) Besser, *Petroselinum sativum*. *Rosmarinus officinalis* L.), it is also interesting to note that the present survey revealed two endemic species (*Thymus broussonnetii* subsp. *Broussonnetii* et *Thymus maroccanus* L).

Traditional healers take into account the notions of dose and toxicity in view of the mode of administration Oral (83.08%), they insist on respecting the prescribed dose, in fact certain species reputed to be toxic are prescribed citing *Aframomum melegueta* K.Schum, *Myristica fragrans* Peganum *harmala* *Ajuva iva* *Carum carvi*, *Datura stramonium* which present a neurological toxicity *Glycyrrhiza glabra* *Nerium oleander* L *Origanum majorana* Cardiovascular toxicity, *Ricinus communis* *Rosmarinus officinalis* mainly renal toxicity *Mentha pulegium* *Illicium*

This first ethnobotanical study conducted in the region of about the women healers revealed a very rich local knowledge in terms of traditional herbal medicine; this fact was reflected in the great diversity of species used in the treatment of several urogenital disorders. In the light of these results, it is therefore very important to subject some of the main species to further phytochemical and pharmacological studies in order to validate their traditional use and probably discover new bioactive molecules.

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