

# Medicinal Plants Adopted to Treat Children's Diseases by Traditional Pediatrics "Women Healers" In The Souss Massa Region (Agadir Idaoutanan, Inzegane Ait Meloul and Chtouka Ait Baha) Morocco

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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 pediatricians, these women used medicinal plants to treat diseases of infants and children. 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 "tachrifit" 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 2018-2019 and 2019-2020, 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 children's diseases. The population that uses traditional medicine frequently resorts frequently to these women healers to treat digestive and respiratory diseases and the incessant crying. The population that uses traditional medicine resorts to these women healers to treat digestive (30% of population) and respiratory diseases and the incessant crying (24% of population). The floristic analysis of the adopted recipes has revealed 56 plant species divided into 35 botanical families. The most used families are Lamiaceae (12,5%) and Apiaceae (10,71%). the leaves constitute the part more used 32.26% followed by the seeds 22.58%, the infusion is the mode of preparation most used by 35% and the dose is generally by pinch, spoonful or by handful

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 digestive and respiratory disorders and especially of the effects attributed to sorcery. The plants identified in this study could constitute a data base for further research in the field of phytochemistry and pharmacology.

**Key words:** Traditional medicine, Women healers, Medicinal plants, Children's diseases.

## INTRODUCTION

The World Health Organization considers traditional medicine as a set of medical practices, knowledge and beliefs based on the use of plants, animals or minerals as well as on psychotherapy and techniques applied for the diagnosis and treatment of disease.<sup>1</sup> Because of the weakness of health services, the high cost of services in hospitals and the shortage of personnel, traditional medicine is becoming the main source of medical care for the African population.<sup>2</sup>

As Morocco has a rich medical tradition and know-how based on medicinal plants,<sup>3</sup> the population of southern Morocco, especially that of Souss Massa, resorts to rich empirical traditional care thanks to its confluent strategic location and also to the history of the region where various cultures (Amazigh, Jewish, Saharan, and Arab) have coexisted. This heritage is the result of this mixture of ancestral know-how.<sup>4,5</sup> Several ethnobotanical studies have been carried out in the region but none has focused on women healers. These women have very interesting knowledge of therapeutic techniques based on medicinal plants.

The objective of the survey is to gather more information on the different practices treatment and herbal medicines adopted and used by these women in the treatment of children's diseases.

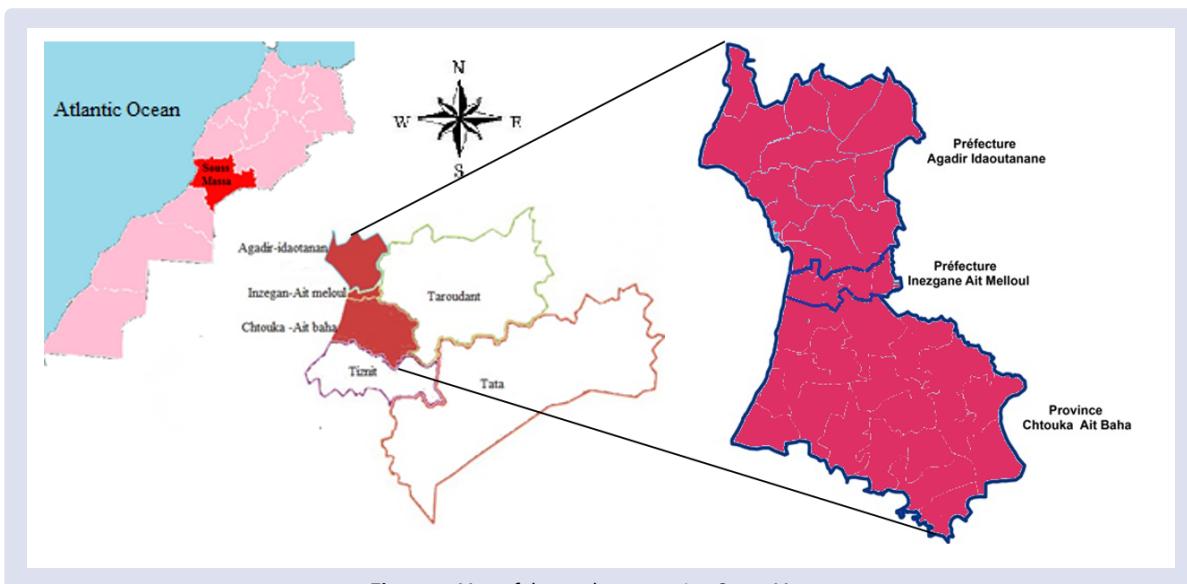
This study focused on these women healers, named locally according to the specialty "Ferraga" who mainly deal with women who have given birth, or "taguramt" and "tachrifit" specialized in the treatment of children's diseases. They are, therefore, considered as traditional pediatricians and gynecologists.

## 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 km<sup>2</sup> 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.<sup>6</sup>

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**Figure 1:** Map of the study area region Souss Massa.

**Table 1: Distribution of public health establishments, by province and prefecture.<sup>6</sup>**

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

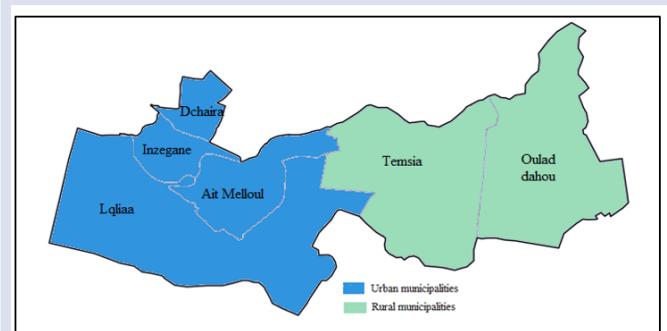
The region currently has nine hospitals (Table 1), basic health care training consists of 292 establishments, including 243 rural health centers and dispensaries and 49 others in urban areas. In addition to these structures, the region has a private sector made up of 23 clinics and 431 consultation offices. 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.<sup>6</sup> But the problem of inadequate health services still persists. (Table 1)

### Methods of data collection

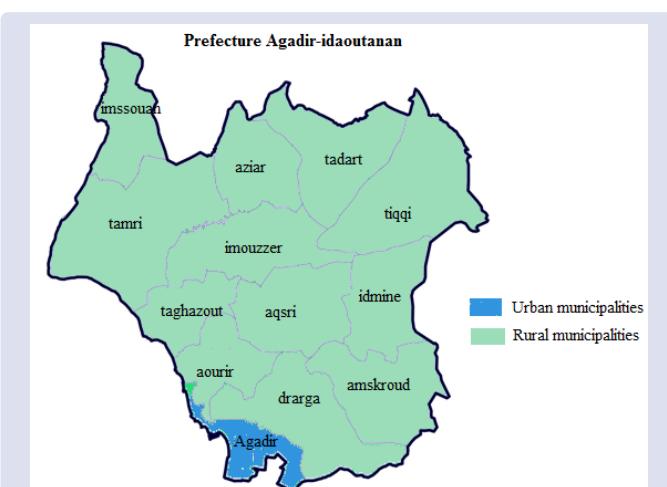
Firstly, the study is carried out in the three provinces during 2018-2019 and 2019-2020, the surveys are conducted in the local population (278 questionnaires) to collect the information about traditional medicine: the various specialties, the positioning in the health field and the effectiveness. (Annex 2)

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, Inzgane-ait Melloul, and Chtouka-Ait Bahia. (Figure 1,2,3 and 4)

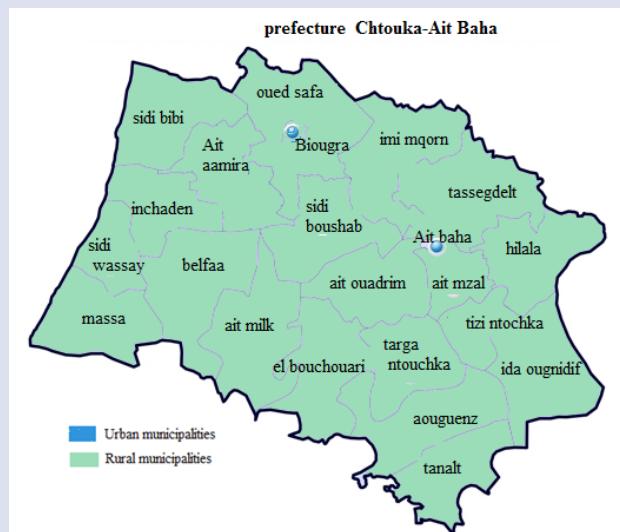
Given the clandestinity in which these women exercise their healing practices, we used the technique of "open discussion" which consists of asking these healers for the diseases treated and the medicinal plants used via free and open discussions. The number of healers questioned is 23 (average of 7 women per region). 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 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.



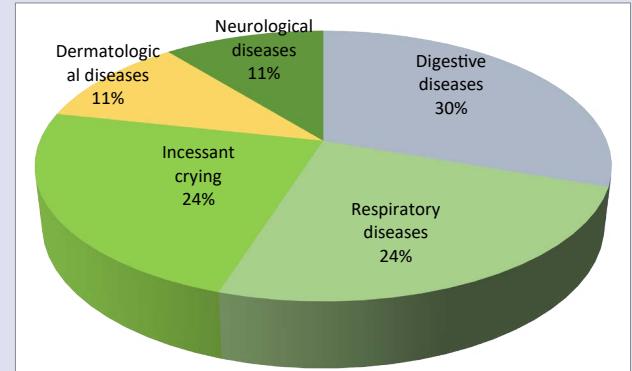
**Figure 2:** Map of prefecture Izegane-Ait Melloul.



**Figure 3:** Map of prefecture Agadir-Idaoutanane.



**Figure 4:** Prefecture of Chtouka-Ait Bahia.



**Figure 7:** Distribution of diseases treated by women healers in the sample of the population that had recourse to these women.

**Table 2: Children's diseases treated by women healers.**

Digestive disorders	Respiratory disorders	Incessant crying	dermatological disorders	Neurological disorders
Diarrhea		Effects attributed of Sorcery "chem" and "serra".	Buttons Red plaques Eczema Skin burns Wound	
Constipation	Flu			Epilepsy
Bloated belly	Cold			Enuresis
Oxyurosis	Asthma			Insomnia
Colic		Severe Shaking		

**Table 3: Percentage of species adopted by women healers to treat digestive disorders.**

Species	Percentage use
Matricacia chamomile L.	22,72%
Foeniculum vulgare L. ; Pimpinella anisum L.	18,18%
Ammodaucus leucotrichus L.; Artemisia herba-alba Asso ; Carvi carum L. Cuminum cyminum L; Olea europaea L. ; Rosmarinus officinalis L Thymus broussonetti Boiss ; Aloysia citriodora Palau	13,63%
Cassia senna L ; Rosa damascena L.	9,09%
Asphodelus tenuifolius L. ; Corrigiola telephiifolia Pourr. ; Linum usitatissimum L. ; Allium sativum L. ; Zizyphus lotus L. ; Nigella sativa L. ; Plantago ovata Forssk. ; Zygoiphyllyum gaetulum L.	4,54%

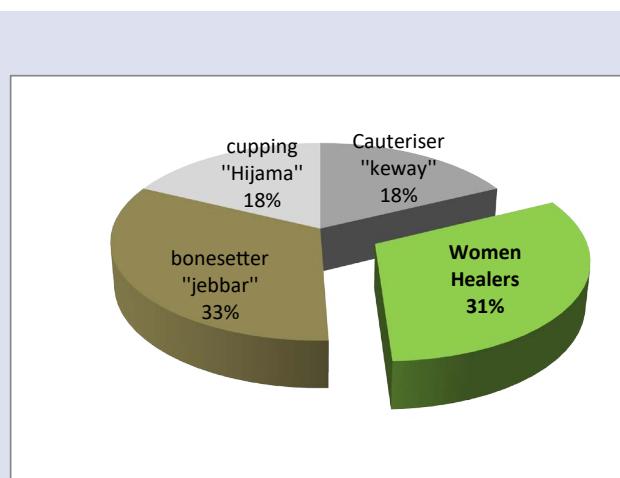
**Table 4: Percentage of species adopted by women healers to treat respiratory disorders.**

Species	Percentage use
Allium sativum L. ; Artemisia herba-alba Asso; Olea europaea L, Thymus maroccanus Ball	11,10%
Eugenia caryophyllata L.; Glycyrrhiza glabra L; Lepidium Sativum L. ; Nigella sativa L. ; Thymus broussonetti Boiss.	7,40%
Boswellia frereana Birdw; Chenopodium ambrosioides L. ; Foeniculum vulgare L; Lavandula dentata L. ; Myrtus communis L.	3,70%

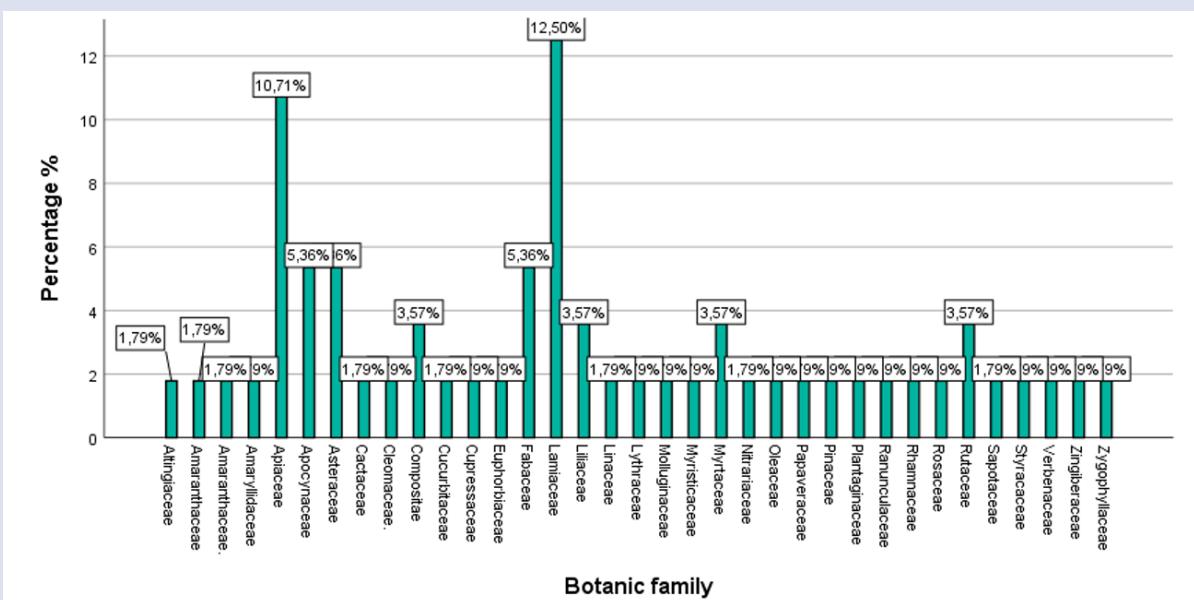
**Table 5: Percentage of species used by women healers to treat incessant crying.**

Species	Percentage use
Corrigiola telephiifolia Pourr. ; Liquidambar orientalis Mill.	12,5%
Nigella sativa L.; Peganum harmala L.; Ruta montana L.; Tetraclinis articulata (Vahl) Mast.; Trigonella foenum-graecum L; Ziziphus lotus (L.) Lam.	8,3%
Cedrus atlantica L.; Ferula communis L.; Nerium oleander L.; Olea europeae L.; Saussurea Costus L.	4,2%

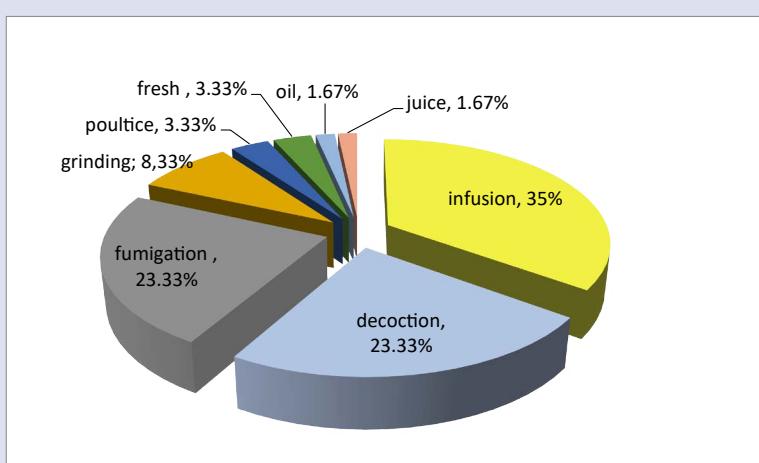
**Figure 5:** Percentage of people how recourse to traditional medicine.



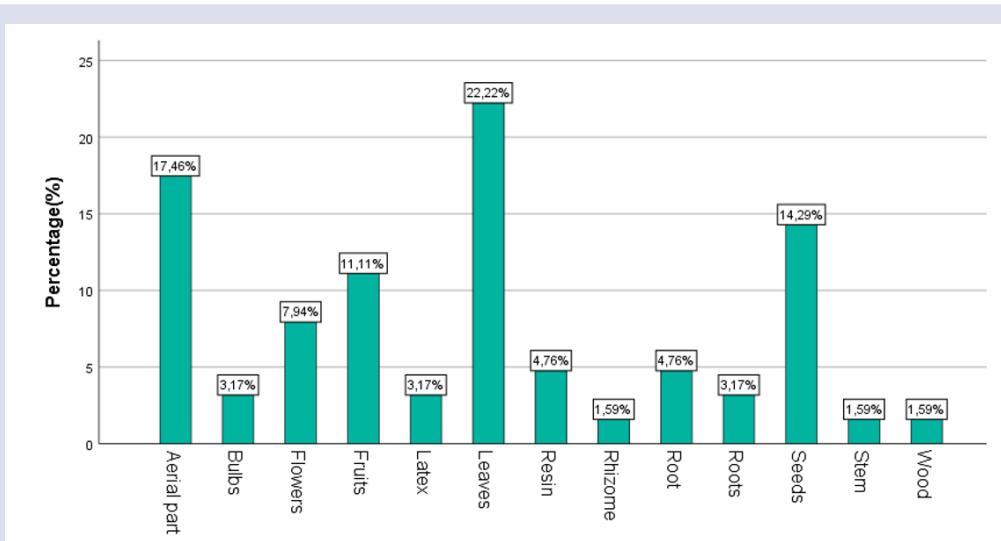
**Figure 6:** The percentage of specialties most frequented by the study population.



**Figure 8:** Percentage of botanical families.



**Figure 9:** Mode of use of plant.



**Figure 10:** Plants parts used.

**Table 6: Percentage of species used by women healers to treat dermatological disorders.**

Species	Percentage use
Allium cepa L; Lawsonia Inermis L; Olea europeae L.	14,60%
Citrus limon L; Colocynthis vulgaris L ; Euphorbia officinarum L; Opuntia ficus indica.	7,30%
Argania spinosa L; Cedrus atlantica L; Curcuma longa L;	4,90%
Asphodelus tenuifolius Cav; Calotropis procera (Aiton)	
Dryand. ; Hammada scoparia (Pomel) Iljin; Nigella sativa L;	2,40%
Zygophyllum gaetulum Emb. & Maire	

**Table 7: Percentage of species used by women healers to treat neurological disorders.**

Species	Percentage use
Aloysia citriodora Palau; Matricaria chamomilla L; Papaver rhoes L.; Peganum harmala L.	11,4%
Melissa officinalis L.	8,6%
Calotropis procera Aiton; Cleome africana Botsch; Corrigiola telephiifolia Pourr; Myristica fragrans Houtt; Nigella sativa L.; Origanum majorana L.;	5,7%
Ajuga iva (L.) Schreb ; Carum carvi L; Colocynthis vulgaris L.; Lavandula dentata L;	2,9%

## RESULTS

The investigation in the local population (279 people) showed that 62.60% have recourse to traditional medicine (figure 5) and Women Healers are one of the most frequented with a percentage of 31%. (Figure 6)

The survey of Women Healers (23 women) revealed a number of children's diseases treated by these women (Table 2) whose most treated diseases are digestive diseases 26% respiratory diseases and incessant crying 21% for each (figure 7), they mainly use medicinal plants to treat this diseases, we have identified 59 species divided into 34 botanical families. (Annex 1)

### Medicinal plants and floristic analysis

The most used families are Lamiaceae (12,5%), Apiaceae (10,71%) followed by Apocynaceae, Asteraceae and Fabaceae (5,36% for each) while Compositae, Myrtacae, Liliaceae and Rutaceae represent 3,57% for each, whereas the other families are the least used (1,72% for each). (Figure 8)

### Digestive disorders

From the recipes collected The species most adopted for the treatment of digestive disorders are Matricaria camomile 22,72%, and Foeniculum vulgare L., Pimpinella anisum L. 18,18% followed by eight species (Ammodaucus leucotrichus L; Artemisia herba-alba Asso ; Carvi carum L. Cuminum cyminum L; Olea europaea L. ; Rosmarinus officinalis L Thymus broussonetti Boiss ; Aloysia citriodora Palau) with a percentage of 13,63% for each one, for the other species they are less adopted with a total percentage not exceeding 13%. (Table 3)

### Respiratory disorders

For children's respiratory disorders, it has been demonstrated that these women healers use frequently four species, namely Allium sativum L., Artemisia herba-alba Asso; Olea europeae L and Thymus maroccanus Ball 11,10%. (Table 4)

### Incessant crying

Generally attributed to the effects of sorcery, these women frequently use two species Corrigiola telephiifolia Pourr.; Liquidambar orientalis

Mill. 12,5% for each, while the other species together have a share of 12,5%. (Table 5)

### Dermatological disorders

The recipes obtained show that Allium cepa L; Lawsonia Inermis L; Olea europeae L. are the species prescribed (14.6%) twice as much as Citrus limon L; Colocynthis vulgaris L; Euphorbia officinarum L; Opuntia ficus indica (7.3%), while the overall percentage of use of the other species does not exceed 7.3%. (Table 6)

### Neurological disorders

The women healers often prescribe medicinal plants for neurological disorders, of which the most adopted are Aloysia citriodora Palau, Matricaria chamomilla L., Papaver rhoes L. and Peganum harmala L. (11,4%) followed by Melissa officinalis L (8,6%) and Calotropis procera Aiton; Cleome africana Botsch, Corrigiola telephiifolia Pourr.; Myristica fragrans Houtt; Nigella sativa L.; Origanum majorana L. (5,7% for each)

### Mode of use

The most adopted mode is infusion 35% while decoction and fumigation are 23.33% whereas powders 8.33% fresh state and poultice are 3.33%, the other modes are very little used 1.67%. (Figure 9)

### Parts of the plant used

Based on the formulas adopted by these Women Healers, the leaves 22,22% and the aerial part 17,46%, and seeds 14,29% are the most used followed by the fruits with 11,11% the flowers 7,94% while the other parts are less used 3.23%. (Figure 10)

## DISCUSSION

Traditional healers and phytotherapy are important in health care in Morocco.<sup>7</sup> Women Healers occupy a very important place in the health sector in the Souss Massa region, they are the most frequented specialty of traditional medicine by the population 31%. Considered as traditional pediatricians, they treat children's diseases using manual techniques and medicinal plants, these women are mostly frequented by the population to treat digestive diseases (30%) and respiratory diseases (24%) of children as well as the incessant crying of babies (24%) attributed to the effects of sorcery "chem or ikda", "serra or Takmost" and the evil eye is the disorder that drives more families to resort to them

The survey recorded 59 plant species, belonging to 34 families of which Lamiaceae (12.90%), Asteraceae and Apiaceae (9.68% for each) are the most widely used, this result is in conformity with that of a study of phytotherapy for children conducted in Algeria.<sup>8</sup> In the recipes they recommend, different parts of the plants are used: the whole plant, the leaves, the roots, the fruits, the seeds. However, the leaves 32.26% and the seeds 22.58% are the most utilized this result is consistent with the many ethnobotanical studies conducted in other regions of Morocco,<sup>9-11</sup> Infusion is the most commonly used mode with a percentage of 35% in conformity with the results of different ethnobotanical studies carried out in different regions in Morocco,<sup>12,13</sup> whereas the dosage of the collected preparations is either by pinch, spoonful or by handful this is similar to an ethnobotanical study conducted in Morocco.<sup>12,14,15</sup>

In general, medicinal plants that are proscribed are intoxicating, except for *Harmala peganum L.*, and *Nerium oleander L.*, the toxicity of the other plants used is linked to the dosage or mode of use. In particular, a bad decoction can generate toxic molecules

## CONCLUSION

Traditional medicine is largely used by many people in the Souss Massa region. Thus, women healers occupy an important place in

the traditional health sector the people who have resorted to these Women Healers 81% are satisfied with their treatment, they have very interesting knowledge of therapeutic techniques based on medicinal plants which is in extinction, so it is important to preserve and value this empirical know-how which is a natural and cultural heritage.

## DECLARATION OF INTERESTS

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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