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# Herbal Remedies Used for the Treatment of Infertility in Females by Traditional Tealers in the Northwest of Algeria

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**Abstract**

Ethnopharmacological relevance: According to the world health organization, infertility was a global health issue affecting millions of people of reproductive age worldwide. Available data suggests that between 48 million couples and 186 million individuals have infertility globally.

Aim of the study: The aims of this work to inventory plants used in the treatment of female infertility by the herbal healers in the northwest of Algeria.

Materials and methods: A number of 30 herbal healers and resource persons were interviewed. This ethnobotanical survey allowed to identify 41 recipes in which involved 49 plant species belonging to 23 family used to treat infertility in women by traditional healers in the northwest of Algeria.The scientific name, family, common name, part used, mode of preparation as well as of administration, days of treatment and the indication are provided.

Results: Results show that The Lamiaceae family is the best represented with 9 species and 32.14% of the frequency of use, followed by the Apiaceae with 8 species and Asteraceae with 4 species and frequency of use 9.52% for each .The aerial parts are the most commonly parts used with a rate of 22% of total parts of the plant, followed by the leaves with 18%, seeds 16%,root and rhizome 12%,fruit and flower (10% each); bark bulb(4% each), the kernel and pollen grains(2% each) Infusion is the main mode of preparation with rate of 40% of total preparations, mixture with 37%, decoction with 17%, and finally paste with 6%. Recipes were principally taken orally (83 %) or topically (17%) as a poultice (10%) or as a vaginal steaming (7%).

Conclusions: Herbal healers in northwest of Algeria have a wide range of herbal remedies used to treat infertility in females; their knowledge is a natural heritage from their ancestors transmitted through centuries.

**Key Words:** ethnobotany, infertility, recipes, herbal healers, northwest of Algeria.

## 1. Introduction

Plants and natural products have played a significant role in curing and preventing a variety of diseases occurring in humans and animals, and continue to provide new bioactive leads for researchers (Singh et al., 2020). In this sense, ethnobotany can provide the tools for documenting this knowledge (Katiyar et al., 2012).

Ethnobotany is defined as the study of the dynamic relationship between plants and people. It draws on a range of disciplines, including natural and social sciences, to show how conservation of plants and of local knowledge about them can be achieved. This great wealth of knowledge has been acquired through direct personal experience and is passed on from generation to generation mainly through oral testimonies .it is considered as the starting point for plant-based new drug discovery since it reduces the number of plants candidates for the research, therefore, this integrated approach would lead to saving of cost and time, coupled with enhanced success rate (Signorini, 2007; Voeks, 2017).

Infertility is a disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse; it affects millions of people of reproductive age worldwide. Estimates suggest that between 48 million couples and 186 million individuals live with infertility globally (WHO, 2020). Our work consists in making an inventory of the plants used in the treatment of infertility by the herbal healers in the north-west of Algeria.

## 2. Material and Methods

### 2.1. Presentation of the Study Region

Algeria is the cradle of successive ancient civilizations which have brought vast knowledge on the use of plants whether for culinary or therapeutic purposes; also its diversity of geography, climate and soil type create the perfect environment for several and different plants that make Algeria has a great green fortune in the plant world. The research program was based on visits to the herbalists and healers in three neighboring states in the north-west of Algeria: Ain Temouchent, Mascara and Sidi Bel Abbes. Their total area is 17470 km$^2$ .They are an integral part of the Tell region, which means the Mediterranean coastal zone, which is bordered by mountain ranges.

**1. Aïn Témouchent** is bounded by three cities, to the east by Oran, to the southeast by Sidi-Bel-Abbès, to the south-west by t Tlemcen, and to the north-west by the Mediterranean Sea that borders it for a distance of about 80 km. It has a hot Mediterranean climate with dry summer. The average temperature in Aïn Temouchent is 19.1 °C and the precipitation averages 316.2 mm.

**2. Mascara is delimited** to the north, by t Oran and Mostaganem; to the east, by Tiaret and Relizane; to the south, by Saïda; to the west, by Sidi Bel Abbès.The climate of the city is Mediterranean with a tendency to semi aridity.

**3. Sidi Bel Abbès** is located in the northwest of the country, it is geographically limited as follows: To the north by Oran; In the North-West by Ain Témouchent; In the North-East by Mascara; To the west by Tlemcen; To the east by Mascara and Saïda; In the South by Nâama and El Bayadh; In the South-East by of Saïda. Sidi-Bel-Abbès has a hot Mediterranean climate with dry summer. The average annual temperature in is 18.9 ° C and the average rainfall is 337.4 mm. Data collection from herbal healers: The data was collected using questionnaire sheets through an ethnobotanical survey based on interviews with people in contact with plants throughout the study region. Five towns were selected at random from the study area in the four states (Mohammadia and Sig in Mascara,

Alamria and Hamam Bohdjer in Ain Temouchent , the city center of Sidi Bel Bbbes). The people surveyed are traditional healers and resource persons recognized by society as having a good knowledge of medicinal plants. Several interviewed are illiterate. The study was carried out during 7 months, from December 2020 to June 2021.The number of people questioned is 30, between 19 and 70 years old, split between both sexes (1/3 female, 2/3 male).the information collected are related to geographic data , the age and the experiences of the interviewee, the species used in the treatment of the female primary infertility , the method of preparation ,the used parts of the plant , composition of the recipe as well as its mode and time of use and its indication.

## 3. Results and Discussion

The analysis of the results of the survey on medicinal plants used in the treatment of primary infertility by the herbal healers in three states of the Algerian Tell Ain Temouchent, Mascara and Sidi Bel Abbes, brings out a number of 41 recipes which make use of 49 inventoried species, spread over 23 families (figure 1), including in addition to scientific name and families of plants, the vernacular name in English and Arabic, the method of preparation, the way and the days of administration of the remedy and its indication (Table1).

The Lamiaceae family is the best represented with 9 species and 32.14% of the frequency of use, followed by the Apiaceae with 8 species and Asteraceae with 4 species and frequency of use 9.52% each; Brassicaceae with 4 species (8.33%), then Rosaceae with 3 species (3.57). Amaryllidaceae, Thymelaceae and Amaranthaceae with 2 species for each (3.57;4.76;3,57 respectively). While the rest of the 15 families represented together by 15 species and a rate of 25% in their total frequency of use (Fig. 1).

The predominance of an organ uses over another, in the therapeutic field, arises from their concentration of active ingredients. It was thus found that the areal parts are the most used with a rate of 22%; followed by the leaves 18%, the seeds (16%), the roots and rhizomes (12%), fruit and flower (10% each); bark bulb(4%each), kernel and pollen grains (2% each) (Figure 3).

Infusion is the main mode used, entering into the preparation of 43.90% of recipes, followed by mixture (34.14%) decoction (17.07%), and finally as a paste (4.87) (Figure 2).

In our study, the oral route is the main mode adopted with a rate of 83% while the topical route represents 17% poultice (10%) and as vaginal steaming (7 %) (Figure 5). Finally, in only 39% of the recipes, plants are used alone. In 61% of the recipes, it is a combination of at least two plants or a mixture with other ingredients like milk, honey, olive oil, propolis (Figure 4). The herbal healers in the northwest of Algeria have confirmed that the recipe they provide were used by women who had difficulty in conceiving that for some women lasted more than 8 years without result from the conventional medicine, and have succeeded to conceive after trying traditional medicine.


**Figure 1.** Map showing all the surveyed areas

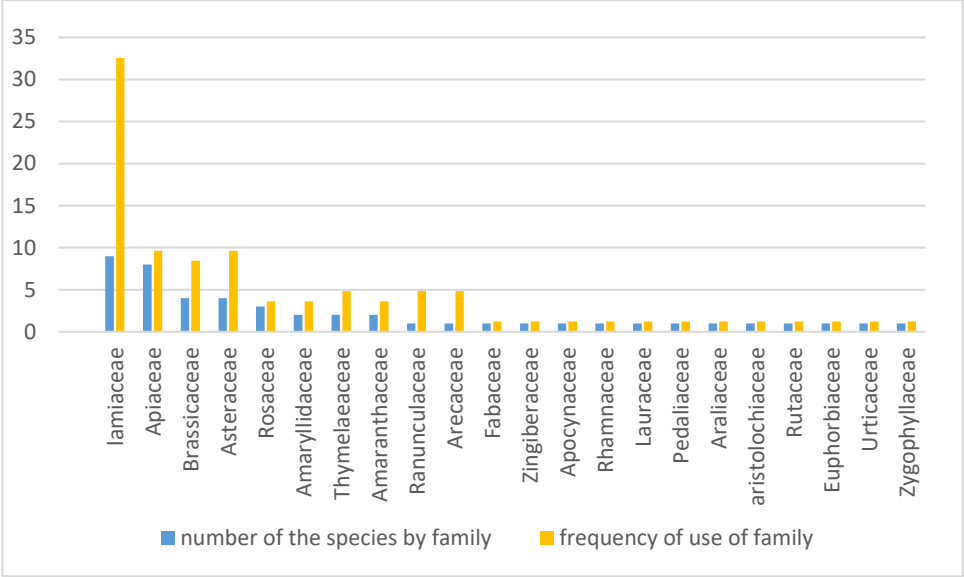


**Figure 2.** Number of species by family and the frequency of use of families

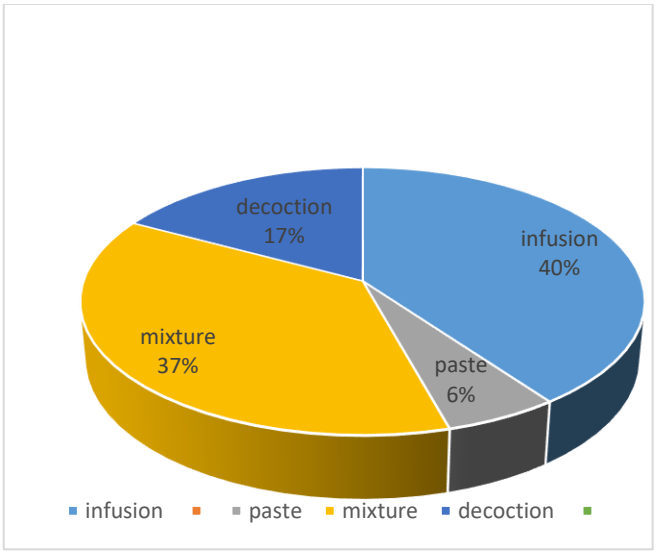


**Figure 3.** Modes of preparation of anti-infertility herbal recipes

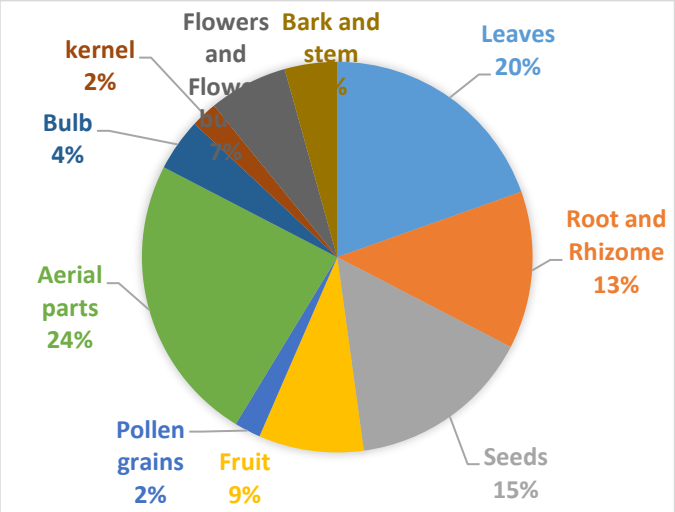


**Figure 4.** Parts used in anti-infertility herbal recipes

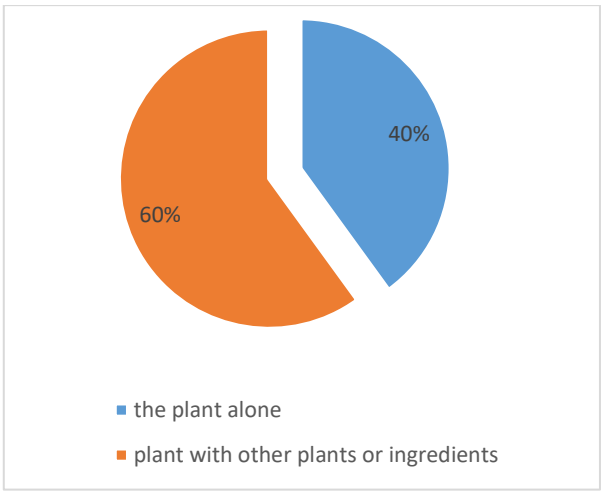


**Figure 5.** Number of ingredients in recipe

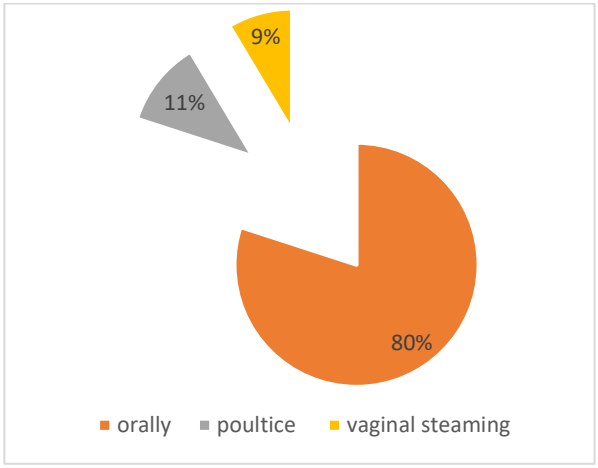


**Figure 6.** Roots of administration of the recipes

**Table 1** List of recipes used by herbal healers in the treatment of primary infertility in the north west of Algeria

| Scientific name | Family | Common name Arabic-English | Used parts | Mode of preparation | days /dose of administration | Indication according to the herbalist |
|---|---|---|---|---|---|---|
| *1/ -Urtica dioica* | Urticaceae | الحريق -stinging nettles | Leaves | Infusion | One cup everyday | Ovulation inducer Dietary supplement |
| *2/ -Nigella sativa -Lepidium sativum -Phoenix dactylifera* | Ranunculaceae Brassicaceae Arecaceae | الحبة السوداء-Black Cumin حب الرشاد -Garden cress التمر-date palm | Seeds Seeds Fruits | fruits to be filled with a mixture of equal amounts of both seeds | To be taken early morning once daily from the 1st to the 7th day of the cycle. | Dietary supplement |
| *3/ -Phoenix dactylifera* | Arecaceae | نخلpalm | Palm pollen | To be mixed with honey and prepared as paste | One or two pills to be taken everyday | Ovulation inducer |
| *4/ -Lavandula spica -Artemisia herba alba -Allium sativum* | Lamiaceae Asteraceae Amaryllidaceae | الخزامىlavender الشيح- Mugwort الثوم –garlic | Aerial parts (flowers) Leaves Bulbs | Roast 2 cloves of garlic then add some of olive oil and smash, add 2 tablespoons of both leaves and flowers, to be used as vaginal poultice | To be used at night after 3 days of the end of the menstrual period | Vaginal infection |
| *5/ -Lepidium sativum -Phoenix dactylifera* | Brassicaceae Arecaceae | الرشاد -Garden cress التمر-date palm | Seeds Fruits | Prepare the decoction of the fruit, let it cool and then add some olive oil; mix until homogeneity | To be taken from the 1st to the 5th day of the cycle | Dietary supplement |
| *6/ -Atriplex halimus* | Amaranthaceae | القطف- Mediterranean saltbush | Aerial parts | Infusion | One cup be drunk twice a day during one month | Ovarian cysts |
| *7/ -Raphanus sativus - Nigella sativa - Trigonella foenum-graecum* | Brassicaceae Ranunculaceae Fabaceae | الفجل-radish الحبة السوداء-Black Cumin الحلبة-Fenugreek | Seeds Seeds Seeds | A mixture of one teaspoon of each seed's powder with a cup of honey | A tablespoon of the mixture twice every day with a cup of milk (optional) | Dietary supplement |
| *8/ -Origanum majorana* | Lamiaceae | البردقوشMarjoram | Leaves | Infusion | One cup every day from the 2nd to the 14th day of the cycle | Ovulation inducer |
| *9/ -Zingiber officinale* | Zingiberaceae | زنجبيل-Ginger | Rhizome | Infusion | One cup every day from the 1st to the 5th day of the cycle | Ovulation regulator |

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| *10/*<br>*- Tabernaemontana crassa* | Apocynaceae | القطف Mediterranean saltbush | Fruits | A mixture of one teaspoon of the grated with a cup of milk and some honey | One cup every night before sleep during the menstrual period | Dietary supplement |
| *11/*<br>*- Saussurea costus* | Asteraceae | Root | A teaspoon of each to be prepared as infusion | Infusion | Three times a day | Hormonal disorders |
| *12/*<br>*- Salvia officinalis*<br>*- Salvia rosmarinus*<br>*- Foeniculum vulgare* | Lamiaceae<br>Lamiaceae<br>Apiaceae | تفاحة ادم-Adam's apple flower | Leaves<br>Leaves<br>Fruits | A warmed mixture of equal amounts of the bulb juice, olive oil, leaves and aerial parts as vaginal poultice | One cup after lunch and one cup after dinner | Hormonal disorders |
| *13/*<br>*-Salvia officinalis*<br>*-Origanum majorana*<br>*-Vitex agnus-castus* | Lamiaceae<br>Lamiaceae<br>Lamiaceae | القسط الهندي-costus | Leaves<br>Leaves<br>Leaves | Infusion | One cup a day from the 2nd to the 9th day of the cycle | Ovarian cysts |
| *14/*<br>*-Artemisia herba alba*<br>*-Lavandula spica*<br>*-Allium cepa* | Asteraceae<br>Lamiaceae<br>Amaryllidaceae | المريمية-sage<br>إكليل الجبل-rosemary<br>البسباس-Fennel | Leaves<br>Aerial parts (flowers)<br>Bulbs | A teaspoon of each to be prepared as infusion | To be used after 3 days of the end of the menstrual period | Vaginal infection |
| *15/*<br>*-Brassica rapa* | Brassicaceae | اللفت-turnip | Seeds | Infusion | One cup each morning during one month for the couple | Dietary supplement |
| *16/*<br>*-Lavandula stoechas*<br>*-Nepeta cataria*<br>*-Thymus vulgaris*<br>*-Ziziphus jujuba* | Lamiaceae<br>Lamiaceae<br>Lamiaceae<br>Rhamnaceae | حلحال- French Lavender<br>النابطة-lesser calamint<br>زعتر-thyme<br>السدر- jujube | Flowers<br>Aerial parts<br>Aerial parts<br>Leaves | A teaspoon of each to be prepared as infusion | Last day of the menstrual period | Dietary supplement |
| *17/*<br>*-Calendula officinalis*<br>*-Nigella sativa*<br>*-Aquilaria malaccensis*<br>*-prunus persica*<br>*-Haloxylon scoparium* | Asteraceae<br>Ranunculaceae<br>Thymelaeaceae<br>Rosaceae<br>Amaranthaceae | القطيفة-pot marigold<br>الحبة السوداء-Black Cumin<br>عود غريس- Eaglewood<br>الخوخ-Peach<br>الرمث-Saxaul | Flowers<br>Seeds<br>Stem wood<br>Leaves<br>Leaves | Infusion | One cup every night during 40 days | Ovarian cysts |
| *18/*<br>*-Salvia officinalis*<br>*-Syzygium aromaticum* | Lamiaceae<br>Myrtaceae<br>Thymelaeaceae<br>Lamiaceae | الميرمية-Sage<br>قرنفل-Clove<br>عود غريس- Eaglewood<br>كف مريم--Chaste tree<br>بردقوش- marjorum | Leaves<br>Flower buds<br>Stem wood<br>Leaves<br>Leaves | Infusion | One cup every night during 40 days | Menstrual cycle disorder<br>Hormonal disorders |

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| *-Aquilaria malaccensis*<br>*-Vitex agnus-castus*<br>*-Origanum majorana*<br>*-Lavandula spica*<br>*-Cinnamomum verum* | Lamiaceae<br>Lamiaceae<br>Lauraceae | الخزامى-Lavender<br>القرفة-Cinnamon | Aerial parts (flowers)<br>Barks | | | |
| *19/*<br>*-Sesamum indicum*<br>*-Prunus dulcis* | Pedaliaceae<br>Rosaceae | السمسم-Sesame<br>اللوز-Almond | Seed<br>Kernel | Equal amounts of seeds, crushed kernels, pollen to be mixed with honey and prepared as a paste | One spoon at morning during the ovulation days, for the couple | Dietary supplement |
| *20/*<br>*-Panax ginseng*<br>*-Phoenix dactylifera* | Araliaceae<br>Arecaceae | الجنسنج-Ginseng<br>نخل-Palm | Roots<br>Palm pollen | A mixture of the root's powder, palm pollen, propolis, crushed nuts and one cup of milk | One cup before the two principal meals during the ovulation days for the couple | Aphrodisiac<br>Dietary supplement |
| *21/*<br>*-Calendula officinalis* | Asteraceae | القطيفة-Pot marigold | Flowers | Infusion | One cup to be taken from the 1st to the 7th day of the cycle | Ovarian cysts<br>Hormonal disorders |
| *22/*<br>*-Nigella sativa*<br>*-Aquilaria malaccensis*<br>*-Calendula officinalis*<br>*-Saussurea costus*<br>*-Bunium mauritanicum*<br>*-Aristolochia baetica* | Ranunculaceae<br>Thymelaeaceae<br>Asteraceae<br>Asteraceae<br>Apiaceae<br>*Aristolochiaceae* | الحبة السوداء-Black Cumin<br>عود غريس- Eaglewood<br>القطيفة-pot marigold<br>القسط الهندي-costus<br>بكبوكة-تالغودة-banium<br>برستم-Common Barberry | Seeds<br>Stem wood<br>Flowers<br>Roots<br>Roots<br>Roots | A mixture of equal amounts of each plant and honey | One spoon to be taken on an empty stomach in the morning during one month | Uterine fibroids<br>Hormonal disorders |
| *23/*<br>*–Vitex agnus-castus* | Lamiaceae | كف مريم-Chaste tree | Leaves | Infusion | One cup every day from the 2nd till the 9th day of the cycle | Hormonal disorders |
| *24/*<br>*-Daucus carota* | Apiaceae | كلخ – Wild carrot | Seeds | A mixture of the seed's powder with milk or honey | One spoon to be taken twice every day, in the early morning and at night before sleep | Emmenagogue<br>Aphrodisiac |
| *25/*<br>*-Raphanus sativus* | Brassicaceae | الفجل- Radish | Seeds | Decoction | One cup to be taken in the early morning during one month | Ovulation stimulator |

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| *26/ -Pimpinella anisum* | Apiaceae | حبة حلاوة-Aniseed | Fruits | Powder | One spoon to be taken on empty stomach every morning during one month | Ovarian failure |
| *27 -Thymelaea hirsuta* | Thymelaeaceae | مثنان -the Sparrow-worts | Aerial parts | Infusion | One cup to be taken twice a day, two hours before the principal meals. From the 2nd till the 7th day of the cycle | Urinary tract infection |
| *28 - Ruta chalepensis* | Rutaceae | فيجل-Fringed rue | Aerial parts | A mixture with whole wheat flour, salt, butter and water and prepared as bread | To be taken twice a day from the 4th till the 7th day of the cycle | Emmenagogue Painful menstruation |
| *29 -Marrubium vulgare* | Lamiaceae | مريوة مرة- horehound | Aerial parts | Decoction to be used as vaginal steaming | To be used the last day of the menstrual cycle | Uterine fibroids |
| *30/ -Angelica archangelica* | Apiaceae | حشيشة الملاك-Angelica | Roots | Decoction | One cup to be drunk in the early morning during Three months maximum | Menstruation disorders Painful menstruation |
| *31 - Peganum harmala -Allium cepa -Thymus vulgaris -Lavandula spica* | Zygophyllaceae. Amaryllidaceae Lamiaceae Lamiaceae | حرمل-Wild Rue البصل-onion زعتر-thyme الخزامى-lavender | Aerial parts Bulbs Aerial parts Aerial parts (flowers) | Decoction to be used as vaginal steaming | To be used the last day of the menstrual cycle | Uterine fibroids Ovarian cysts Uterine weakness |
| *32/ -Marrubium vulgare -Thymus vulgaris* | Lamiaceae Lamiaceae | مريوة مرة- Horehound زعتر-thyme | Aerial parts Aerial parts | An amount of the aerial parts to be mixed with preheated olive oil and used as vaginal poultice | At night during three days after the end of the menstrual cycle | Uterus cleansing |
| *33/ -Petroselinum crispum* | Apiaceae | بقدونس-Parsley | Aerial parts | A mixture of the pre-steamed plant with olive oil to be used as abdominal poultice | A day after the end of the menstrual cycle | Menstrual cycle disorders |

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| *34/ -Alchemilla vulgaris* | Rosaceae | رجل الاسد- lady's mantle | Aerial parts | Decoction to be used as vaginal steaming | A day after the end of the menstrual cycle | Menstrual cycle disorders uterine fibroids |
| *35/ -Euphorbia hirta* | Euphorbiaceae | فربيون-Euphorbia | Aerial parts | Infusion | One cup a day during one month | The genitourinary tract infections |
| 36/ *-Anastatica hierochuntica* | Brassicaceae | شجرة مريم-Jericho Rose | Flowers | Decoction | One cup every morning from the 3rd to the last day of menstruation | Ovulation stimulator |
| 37/ *-Salvia officinalis -Anastatica hierochuntica* | Lamiaceae Brassicaceae | الميرمية-Sage شجرة مريم-Jericho Rose | Leaves Flowers | Infusion | One cup every day during the menstrual cycle | Ovarian cysts |
| 38/ *-Salvia officinalis -Matricaria chamomilla -Origanum majorana* | Lamiaceae Asteraceae Lamiaceae | الميرمية-Sage بابونج-Flowers بردقوش- marjorum | Leaves Flowers Leaves | Infusion | One cup every day from the 2nd day of the cycle until the 8th day | Ovarian failure |
| *39/ -Salvia officinalis -Origanum majorana -Atriplex halimus* | Lamiaceae Lamiaceae Amaranthceae | الميرمية-Sage بردقوش- marjorum القطف- Mediterranean saltbush | Leaves Leaves Aerial parts | Infusion | One cup every day during one month | Ovarian cysts |
| *40/ -Thymus vulgaris* | Lamiaceae | زعتر-Thyme | Aerial parts | An amount of dry aerial parts ground and mixed with Couscous ingredients and cooked with | To be eaten the last days of menstrual cycle | Menstrual cycle disorders |
| 41/ *-Cuminum cyminum -Coriandrum sativum* | Apiaceae Apiaceae | كمون-cumin قصبر-Coriander | Fruits Fruits | Infusion | One cup every day during one month | Ovarian cysts |

All women were in the age of procreation and suffered from primary infertility that means they haven't achieved a pregnancy before (Who 2020). Polycystic ovary syndrome (PCOS) is the most common reproductive and metabolic disorder affecting women of reproductive age causing menstrual dysfunction and infertility (Guo et al., 2021). In our study, PCOS is the most common reason for consultation.

Some female herbal healers, generally old women use other therapies beside the herbal remedies as the cupping therapy on the left and right lumber of the abdomen to stimulate the ovaries or use a massage technique on the abdomen in specific days.

## 4. Discussion

The northwest of Africa, has a rich medicinal biological diversity that has been recorded. In Algeria, 16 species out of the 45 identified by this study had already been cited in similar studies (Hadj-Seyd et al., 2016). In comparison with other regional ethnopharmacological surveys about herbal

remedies used for the treatment of female infertility 29 species out of the 49 identified by this study had already been reported in a study made in Morocco. In both studies the 4 dominant families are Lamiaceae, Apiaceae, Asteraceae and Brassicaceae (Slighoua et al., 2019). The common species found in the ethnobotanical survey carried in Ghardaia are less than the one carried in Morocco even though Ghardaia is in the same country, this is due to geographical location, since the study regions of both studies are situated in the northern Africa. At the contrary, Ghardaia is a desert state with a totally different geography and climate.

Exclusively in our study, the specie *Atriplex halimus* is considered as very effective to remove the ovaries cysts from experience and herbal healers' testimonies. It is also notable the use of some toxic species; as euphorbia which is toxic at high doses (Slighoua et al., 2019). *Peganum Harmala*; which at high doses, it can produce paralysis (Lamchouri et al., 2012). *Aristolochia baetica* , *Origanum majorana* and *Pimpinella anisum* that can cause digestive disorders. *Marrubium vulgare* which is associated with dermatological and respiratory disorders; also *Foeniculum vulgare* which can cause ophthalmic disorders (Chaachouay et al., 2021). Sage and oregano are two medicinal herbs that have been traditionally used to treat female infertility. While further research is needed to confirm their efficacy and safety, some studies have suggested that these herbs may play a role in the regulation of FSH and LH hormones. FSH (follicle-stimulating hormone) is a hormone produced by the pituitary gland that stimulates the growth and development of follicles in the ovaries. LH (luteinizing hormone) is also produced by the pituitary gland and plays a role in ovulation and the production of estrogen and progesterone. (Sharma, 2016)

*In vitro* studies have shown that sage can increase the production of FSH and LH by the pituitary gland. A clinical study also showed that taking sage for 12 weeks increased FSH and LH levels in women with low levels of these hormones. *In vitro* studies have shown that oregano can inhibit the production of FSH by the pituitary gland. A clinical study also showed that taking oregano for 12 weeks reduced FSH levels in women with high levels of this hormone. (Najem et al., 2019).

The route of administration plays an important role, in the case of *Marrubium vulgare* and *Peganum hamala* is used as vaginal steaming or as vaginal poultice which reduces the risk of toxicity but in other species which are taken orally the risk is higher. Another example external use of lavender is a natural and effective way to treat vaginal infections. Evaporation and poultice are two simple and easy-to-perform method Lavender is a medicinal plant with many properties, including antibacterial, antifungal, and anti-inflammatory properties has been demonstrated by several studies. One study showed that the evaporation of lavender essential oil was as effective as antibiotic treatment for treating bacterial vaginosis. Another study showed that the application of a lavender poultice was as effective as antifungal treatment for treating vaginal candidiasis. These properties make it a potential natural remedy for the treatment of vaginal infections. *Ruta graveolens* is a plant that has been used traditionally for a variety of medicinal purposes. There is some evidence that certain species of *Ruta* may have some effect on ovarian insufficiency. For example, one study found that *Ruta chalepensis* may help to improve ovarian function in women with polycystic ovary syndrome (PCOS), a condition that can cause infertility. Additionally, there have been reports of women with ovarian insufficiency who have conceived after taking *Ruta* graveolens in our survey.

However, more research is needed to confirm the efficacy and safety of *Ruta* species for the treatment of ovarian insufficiency. In addition, many species of *Ruta* are considered to be toxic, so it is important to use them with caution. (Sharma et al., 2013). Further research is needed to confirm the efficacy and safety of this plants for the treatment of women infertilities caused by several mechanism like the regulation of FSH and LH hormones, polycystic syndrome or infections also. However, these medicinal herbs appear to have the potential to help treat female infertility.

## 5. Conclusion

Herbal healers in northwest of Algeria have a wide range of herbal remedies used to treat primary infertility in females; their knowledge is a natural heritage from their ancestors transmitted through centuries.

Therefore, this heritage deserves to be studied and used as a scientific base by researchers in order to determine their efficacy and safety and integrate it in the global health system so that people will have more benefits from the therapeutic virtues and active principles contained in these plants.

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## Author Contribution

Dear authors please indicate the contribution of the authors. Cambria, 12 point, single line space, justified on both sides.

## Conflicts of Interest

The authors have no conflicts of interest to declare.

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