Trop J Nat Prod Res, December 2024; 8(12): 9547 - 9554

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

Tropical Journal of Natural Product Research

Available online at https://www.tjnpr.org

Original Research Article

Ethnobotanical Investigation of Aromatic and Medicinal Plants Used in Traditional Treatments in Ain Mediouna and Thar Souk (Taounate; Morocco)

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ARTICLE INFO

Article history:
Received 01 May 2024
Revised 01 October 2024
Accepted 25 November 2024
Published online 01 January 2025

ABSTRACT

Despite the advancement in modern medicine, medicinal plants still occupies a prominent place in Moroccan culture. It has been jealously preserved and passed down from generation to generation. The aim of this study was to establish a comprehensive inventory of medicinal and aromatic plants (MAPs) in two rural areas; Ain Mediouna and Thar Souk of Taounate province, Morocco, and to raise awareness about the importance of this wealth of medicinal plants in order to preserve them. An ethnobotanical survey was conducted by distributing questionnaires in twenty-one Douars within the study areas, and by oral interview of selected population. The survey was conducted from January to December, 2023. The results obtained showed that the province of Taounate has 40,631.49 hectares of forest located mainly in the northern part, where there is a great diversity of MAPs. The floristic analysis of the survey identified 61 species belonging to 31 families of which the lamiaceaes were the most represented (20%), followed by the asteriaceaes (10%), and lastly the other families with low frequencies. The majority of the species are cultivated (67%) while 33% are wild. This work affirmed that most MAPs are used to treat digestive disorders and skin infections, followed by neurological disorders, and fever. Most of the respondents use MAPs for therapeutic purposes only, and preserve them by drying, storing in plastic or glass bottles. The study provided an information base of MAPs of the study area, as well as its cultural and therapeutic significance in the customs of the populations.

Keywords: Ethnobotanical surveys, Therapeutic indications, Inventory, Preparation methods, Aromatic, Medicinal plants.

Introduction

Medicinal plants have been cherished for their wide-range of benefits throughout history, offering remedies for ailments, enhancing well-being, promoting beauty, and contributing to daily comfort and happiness. Their virtues have been recognized and valued since ancient times, a history as old as humanity.[1,2] Currently, there is an increasing interest in natural products due to their incredible wealth of bioresources with potential therapeutic benefits.[3] Herbal teas, capsules, essential oils and herbal elixirs have been formulated and used successfully,[4] their exploitation continues to increase in diverse fields, especially in therapeutics.[5] Thus, in recent decades, aromatic and medicinal plants have made great impact due to their efficacy and safety, despite their relegation by modern medical practice.[6]

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Citation: Laftouhi A, El-assri Y, El-assri E, Elrherabi A, Mahraz MA, Eloutassi N, Rais Z, Taleb A, Taleb M.Ethnobotanical Investigation of Aromatic and Medicinal Plants Used in Traditional Treatments in Ain Mediouna and Thar Souk (Taounate; Morocco). Trop J Nat Prod Res. 2024; 8(12): 9547 – 9554 https://doi.org/10.26538/tjnpr/v8i12.28

Official Journal of Natural Product Research Group, Faculty of Pharmacy, University of Benin, Benin City, Nigeria

Traditional medicine is the set of practices, methods, knowledge and beliefs inherited from one generation to another used to diagnose, treat and preserve human health (WHO Strategy for Traditional Medicine 2014-2023).[7] This discipline is widespread throughout the world and especially in rural areas.[8] Traditional medicine is majorly based on the use of aromatic and medicinal plants. which constitute an invaluable treasure offered by Mother Nature. These precious plant species are endowed with a variety of active ingredients used in the treatment of several diseases. The use of aromatic and medicinal plants is gaining more momentum in developing countries, where several social, cultural and economic factors promote such practices.[9,10] In Africa, one cannot talk about healing without talking about medicinal and aromatic plants (MAPs); up to 80% of the population use MAPs for preventive or therapeutic purposes. In developed countries; the exploitation of MAPs is constantly growing, it is 48% in Australia, 70% in Canada, 42% in the United States, 38% in Belgium, 75% in France and 40% in China.[11] In Morocco, MAPs have been used throughout the ages for therapeutic purposes, which nevertheless remain random. Their use often lacks precision and do not explore the advancement in modern medicine.[12] Moroccos's rich and diverse heritage of MAPs is not due to chance, but rather due to its envied geographical location, coupled with the overlap of several types of bioclimatic floors, as well as its double marine façade positions the country as a rich and unique reservoir of biodiversity. As a result, Morocco has a rich plant diversity of which there are

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

approximately 4200 species, and subspecies,[13] of which 800 are used for medicinal purposes.[14]

The Taounate region is home to a rich botanical heritage, yet this wealth is rapidly disappearing due to lack of proper valuation and preservation. Of particular concern is the decline in traditional phyto-therapeutic practices, which have historically played an essential role in the healthcare of the local population. Unfortunately, much of this knowledge is being lost or applied incorrectly—whether through improper harvesting techniques, inaccurate drying methods, or incorrect preparation, and usage of medicinal plants. This disconnects between traditional knowledge and its correct application threatens both the cultural heritage and the sustainable use of these natural resources.

Recognizing the urgency of this problem, this study was designed to address the need for systematic documentation and preservation of the ethnobotanical knowledge in two key areas of the Taounate region: Ain Mediouna and Taher Souk. Through an ethnobotanical investigation, this research seeks to develop a comprehensive catalogue of aromatic and medicinal plants, ensuring that the traditional knowledge associated with these plants is both preserved and properly understood. By creating this inventory, the study aims to support the cultural heritage of the region and promote the sustainable use of these botanical resources for future generations. Additionally, the work will provide a scientific basis for further research and development, encouraging engagement of both local stakeholders and the scientific community.

Materials and Methods

Study area

The study focuses on the Ain Mediouna and Thar Souk regions, covering an expansive area of 5616 km², situated in the pre-Rif and Rif's zones of the Taounate province (Figure 1). Taounate province is geographically bounded by Al-Hoceima province to the north, the Wilaya of Fez to the south, the province of Taza to the east, and the province of Ouazzane to the west. The region experiences a Mediterranean climate characterized by a pattern of alternating seasons: one season is wet and cold while the other is dry and hot. This climatic condition supports an average annual rainfall of 790 mm and an average temperature of 16.9°C. These conditions are conducive to maintaining a significant forest cover, which currently spans approximately 40,631.49 hectares. This environmental setting does not only defines the ecological dynamics of Taounate but also shapes the socio-economic activities within the region, making it a critical area of study for understanding the impacts of climate variations and human interactions with the natural landscape.

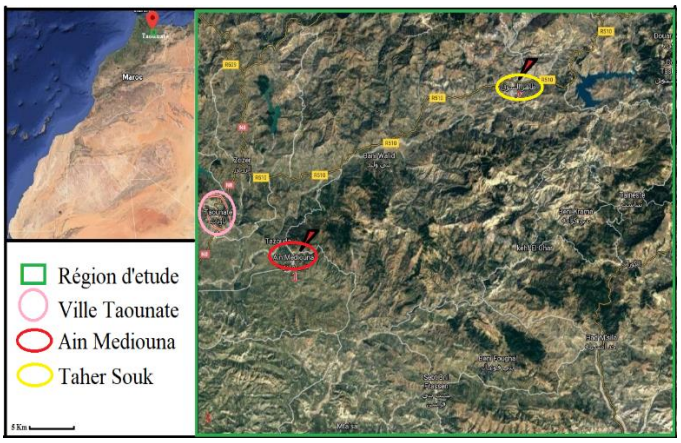

Figure 1: Map of the study area

Ethnobotanical survey

In the ethnobotanical survey, questionnaires were administered to different social classes, including the rural population, farmers, students, teachers, and administrative staff in the several Douars of the two study areas; Thar Souk and Ain Mediouna.

The information on medicinal and aromatic plants were obtained by means of questionnaires. These questionnaires were distributed in twenty-one Douars (small villages) located in Ain Mediouna and Tahar Souk in the Taounate region. In addition, some interviews were conducted with people from the Regional Directorate of Water and Forests and the Fight against Desertification. The questionnaires were written in a simple language to facilitate communication with the locals and obtain as much information as possible. During these interviews, personal information was requested from the people, such as their age, education level, specialization, profession, address, the relationship of their occupation with the subject matter. The information collected includes vernacular names of all the plants used for medicinal purposes, the parts of the plants used, the diseases that they treat, the mode of preparation and use, cases of toxicity, the frequency of use, the time and technique of harvesting and preservation method. Also, people were asked about the types of plants used, both wild and cultivated, and which plants can be used in combination. Samples of these plants were purchased and taken to the laboratory to be identified. Figure 2 shows the location of the various douars surveyed. A total of 1300 questionnaires were completed in one year, from January 2023 to December 2023 (more than 15% of the population). Professor and botanist Noureddine Eloutassi identified the medicinal and aromatic plants obtained.

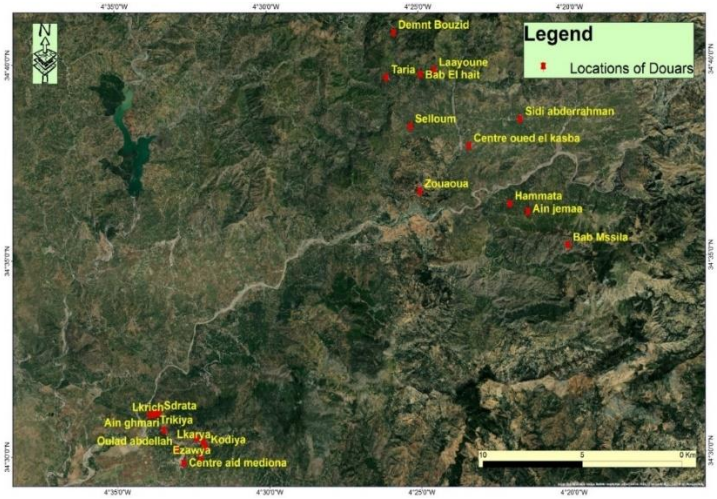

Figure 2: Map of the location of the Douars

Results and Discussion

Biodiversity of MAPs

This study was based on an ethnobotanical survey and ecological fieldwork. Also, an interview was conducted with the administrative staff of the Regional Directorate of Water and Forests and the Fight against Desertification. This allowed us to conclude that the province of Taounate has 40,631.49 hectares of forest, which represents 7% of the total area of the province. These forests are mainly located in the northern part, where there is a wealth of aromatic and medicinal plants. Some of these plants are wild and others are cultivated. These plants include trees, shrubs, and herbs. The main species of aromatic and medicinal plants found in the area include *Lavandula dentata, Erica australis, Lavandula stoechas, Ceratonia siliqua, Mentha pulegium, Pistacia lentiscus, Origanum elongatum, Myrtus communis, Thymus hirtus, Tetraclinis articulata, Thymus riatarum, Copparis spinosa,* and *Arbutus unedo.* The most prevalent of these plants are *Myrtus communis, Origanum compactum,* and *Thymus satureioeides.*

Demographic characteristics of the population surveyed

Table 1 provides a comprehensive view of how demographic characteristics influenced the use of medicinal and aromatic plants (MAPs) within the surveyed population. According to gender, slightly more men (53.8%) than women (46.1%) use MAPs, possibly pointing to subtle variations in health practices, or cultural roles within the community. Age-wise, there was a clear trend where the majority of MAP users fall between 40 and 59 years (50%), suggesting that people

in this age group use MAPs to address emerging health concerns typically associated with middle age, such as stress, chronic pain, or other conditions where alternative remedies are sought alongside modern healthcare. Additionally, the data indicates that older adults, particularly those between 60 and 80 years (26.9%), are strongly inclined to the therapeutic use of MAPs to manage age-related ailments and chronic conditions where traditional medicinal plants may offer relief, or are used as a complement to the limited access to modern medicine, especially in rural areas.[15] On the other hand, younger age groups, particularly those under 19 years (7.6%), and those between 20 and 39 years (15.4%), show significantly lower use of MAPs. This might reflect a generational shift in health practices, where younger individuals may prefer modern pharmaceuticals or have fewer health conditions necessitating the use of MAPs. It could also be influenced by education, exposure to modern medicine, and lifestyle changes that distance younger generations from traditional remedies.

The data also highlights an important correlation between literacy levels and the use of MAPs. A significant proportion of the MAP-using population (34.6%) are illiterates, which suggests that traditional knowledge, passed down through generations, plays a vital role in communities with lower educational attainment. In such areas, reliance on MAPs is likely more pronounced due to both cultural familiarity and limited access to formal healthcare. This trend is particularly notable in the rural communities of Sehoul and Sidi-Abderrazak, part of northern Morocco's Maamora region, where MAP use is culturally embedded. In these areas, people aged 40 to 60 years have the highest frequency of MAP use, at 42.2%, reinforcing the idea that cultural and traditional knowledge systems deeply influence health practices. The overall findings suggest that MAPs are more widely used in rural, less-educated populations, where they serve as both a cultural tradition and a practical healthcare solution.[16]

Table 1: Demographic Characteristics of the Population Surveyed.

Demographic	Category	Frequency	Percentage (%)
Age	<19	100	7.6
	20-39	350	26.9
	40-59	650	50
	60-80	200	15.4
Sex	Male	700	53.8
	Female	600	46.1
	Primary	100	7.6
	College	50	3.8
Educational status	Secondary	300	23
	University	400	30.7
	Illiterate	450	34.6
Discipline	Scientific	300	23
	Literary	200	15.3
	Economic	100	7.6
	Social	100	7.6
	No discipline	600	46.1
Profession	Teacher	200	15.4
	Administrative staff	100	7.6
	University student	200	15.3
	Student	215	16.5
	Farmer	500	38.4
	Without	85	6.5
Place of Residence	Taher souk	800	61.5
	Ain Mediouna	500	38.4
Means of knowledge acquisition about MAPs	Training	0	0
	Family initiation	1300	100
	Reading	0	0
	Other	0	0

MAPs = Medicinal and Aromatic Plants

Inventory of the most used MAPs in the region

A botanical analysis (Table 2) of the survey reveals an impressive diversity of medicinal plant species, with 61 species identified across 31 families, underscoring the rich biodiversity within the study area. The Lamiaceae family, representing 20% of the identified species, stands out as the most significant contributor to traditional medicine in the region. This is not surprising, as Lamiaceae plants, such as mint and thyme, are well-known for their medicinal properties and widespread use in Morocco for treating ailments ranging from digestive issues to respiratory conditions. The dominance of this family reflects its deep integration into traditional Moroccan healing practices, where it is prized for its antimicrobial, anti-inflammatory, and antioxidant properties.

The Asteraceae family, which comprises 10% of the species, is also a major player in traditional medicine. Plants from this family, including chamomile and dandelion, are commonly used for their anti-inflammatory and soothing properties. The presence of families like Apiaceae, Fabaceae, and Rosaceae at 5% each highlights their importance in treating various conditions. Apiaceae, known for species like fennel and coriander, is often used for digestive health, while Fabaceae includes legumes and is valued for its nutrient-rich properties. Rosaceae species, like rose and hawthorn, are often used for cardiovascular health and skin conditions.

Further down the list, families like Oleaceae, Myrtaceae, Liliaceae, and Cactaceae, each representing 3% of the species, add to the diversity of medicinal plant used.[17] Although small in representation, these families still play key roles in traditional practices. For instance, Oleaceae (which includes olive) is important for its oil's medicinal properties, while Myrtaceae which includes species like eucalyptus, is widely used for respiratory issues. Liliaceae, with species like garlic and aloe, is famous for its antimicrobial and wound healing properties, and Cactaceae which includes plants like prickly pear, is valued for its anti-inflammatory and antioxidant effects,[18] The smaller families, each represented by only one or two species, also contribute to the medicinal landscape, albeit on a smaller scale. Their inclusion reflects the broad knowledge of local practitioners, who draw on a wide variety of plants to address different health needs. Interestingly, the prevalence of Lamiaceae in Moroccan traditional medicine has been widely

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

confirmed in the literature. Research shows that this family, along with Asteraceae, Fabaceae, Apiaceae, and Rosaceae, are frequently used to treat conditions such as tuberculosis, highlighting the medicinal potency and versatility of these plants.
In general, the 12 different species of Lamiaceae documented in the literature further emphasize its widespread use and importance in traditional medicine across Morocco. The botanical diversity found in this study underscores the rich heritage of plant-based remedies in Moroccan healthcare, where indigenous knowledge has been passed down from generation to generation. This intricate system of plant use demonstrates a deep understanding of local flora and its medicinal potential, reflecting both cultural and ecological richness.[19, 20]

Types of plants
As shown in Figure 3, the majority of the medicinal and aromatic plants (MAPs) preferred by the respondents are cultivated (67%), while the remaining 33% are wild plants. This suggests that the population heavily relies on plants that are grown and managed, likely due to the easier access and control over the quality and availability of cultivated species. Cultivated MAPs may include widely known plants that are easier to grow and harvest, ensuring a steady supply for medicinal use.
On the other hand, the 33% reliance on wild plants indicates that a significant portion of the population still value and utilize plants that are naturally occurring in the wild. These wild species could offer unique medicinal properties or may be part of traditional knowledge passed down from generation to generation. However, the lower percentage of wild plants suggests potential challenges in access, seasonal availability, or perhaps a shift towards cultivation as populations seek more sustainable and reliable sources of medicinal plants.
This distribution between cultivated and wild MAPs reflects the balance between tradition and practicality in the respondent populations' use of plant-based medicine. Cultivated plants offer a consistent and controllable resource, while wild plants, though less accessible, may still play an essential role in local medicinal practices.

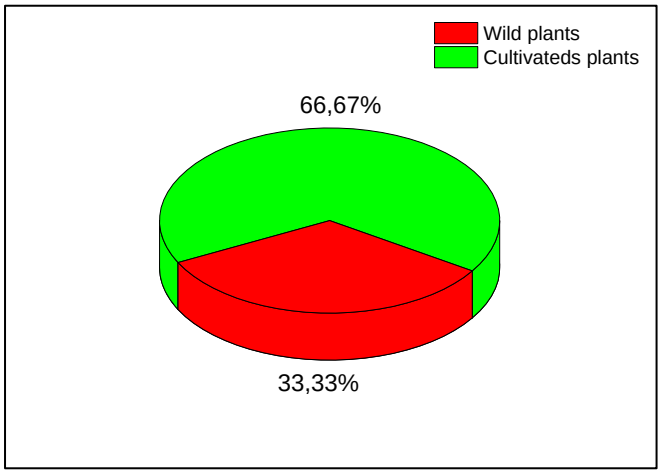

Figure 3: Type of Medicinal and Aromatic Plants Used

Preparation methods for MAPs
In order to facilitate the use of aromatic and medicinal plants, and the extraction of their active ingredients. The study population used several methods of preparation that differ from person to person (Figure 4). From the results obtained, it was noted that the majority of the respondents used Medicinal and Aromatic Plants (MAPs) in the form of decoction in water, milk, and tea. This was followed by the powdered form, then the cataplasm, and finally, the infusion, while infusion-shaped essential oil and fumigation were used to a lesser extent. Several scientific studies support the idea that decoction is the most commonly used method for the extraction of active ingredients.[21-23]
Ethnobotanical study in the Middle Central Atlas showed that MAPs are most commonly used as decoction in water, tea, or milk for 15 to 20 minutes, depending on the part of the plant used.[24] Similar results were highlighted internationally during an ethnobotanical and floristic investigation of some medicinal plants,[25] which revealed that decoction is the most widely used method of preparation.[26]
The certainty about this method is that it is very effective, allowing better extraction of active ingredients and disinfection of the plant but could also lead to the distortion of certain active principles.[27]

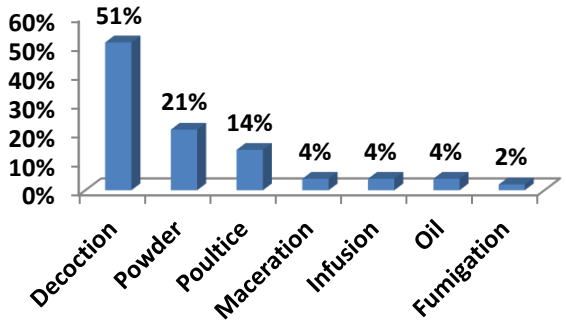

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Figure 4: Medicinal and Aromatic Plants Preparation Methods

Diseases treated by MAPs
The information on the pathologies treated by MAPs is displayed in Figure 5. Analysis of the results showed that most of the respondents use MAPs to treat digestive disorders (41%), followed by skin infections (25%), fever (21%), and the rest of the respondents use MAPs to treat other disorders, and infections such as kidney disorders, impaired vision, anaemia, rheumatism, and for cosmetic applications.
Similar results were found in Tunisia,[28] and Algeria,[29] where it was reported that 43.47% of the medicinal use of MAPs was for the treatment of digestive disorders. Cheng *et al*. (2022)[30] found that the leaves were the most used part of plants in the field of traditional medicine with a percentage of 43%. In a study by Ngbolua *et al*. (2021),[31] it was also reported that the leaf is the most used part of medicinal plants with a percentage of 72.2%, followed by fruit (13.9%).[32]

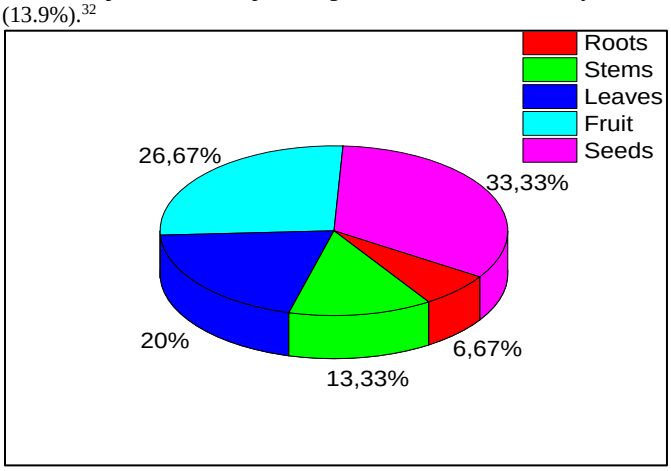

Figure 5: Medicinal and Aromatic Plants Parts Used

Precaution, adverse reaction and toxicity of MAPs
A piece of information that sparked scientific curiosity is that none of the subjects in the surveyed populations paid attention to the precautions of use, toxicities, or adverse effects. Similar results were mentioned in the work of Ouakrouch *et al*. (2017),[33] which confirmed that no adverse effects were recorded with the use of WFP (Wild and Forest Plants).[34]

Form of application and mode of administration of MAPs
Data on the form of application, and the way in which MAPs is administered are shown in Figure 6. According to the results, oral ingestion is the most common method of administration with a percentage of 78%, followed by skin administration at 24%, and finally,

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

through the eye and ear routes at 2%. Similarly, a study performed in the central-western part of the Ivory Coast confirms that the oral route was the most frequently used route of administration.[35]

With respect to the form of application, it was noted that the liquid form with an application rate of 63% dominated other forms, followed by the powder form (35%), the oil (15%), and finally, the fresh form (7%). This was corroborated by the work of Achour *et al*. (2022).[36] it has been reported previously that most of these applications involves the use of leaves in the form of decoction,[37] which is most often administered orally.[38]

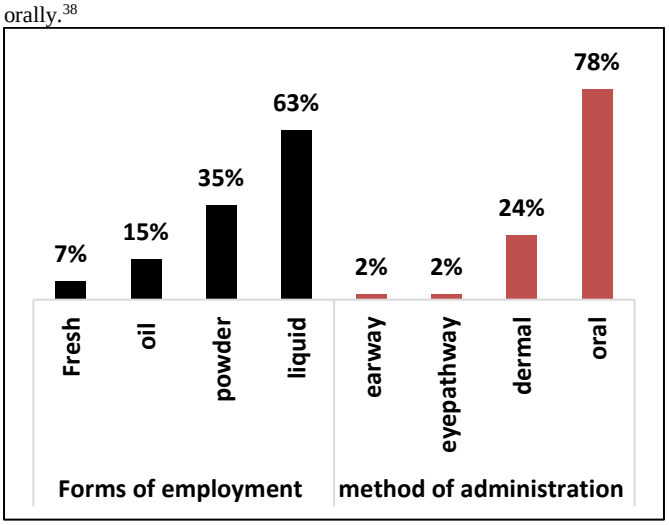

Figure 6: Forms of Application and Method of Administration of Medicinal and Aromatic Plants

Frequency of use of MAPs

From the results of the ethnobotanical survey as presented in Figure 7, the vast majority (85%) of the population surveyed primarily use medicinal and aromatic plants (MAPs) for therapeutic purposes. This high percentage underscores the central role that MAPs play in traditional medicine and healthcare practices within the community. The strong reliance on MAPs for healing and treatment suggests that these plants are deeply embedded in local traditions, particularly in regions where access to modern healthcare may be limited or where cultural preferences favour natural remedies.

A smaller portion of the population (10%) acknowledge the therapeutic, cosmetic, and culinary uses of MAPs. This indicates that while healing remains the predominant use, some individuals recognize the versatility of these plants in other aspects of daily life, such as skincare and food preparation. These multiple uses highlight the multifaceted value of MAPs beyond their medicinal properties, reflecting a broader understanding of the plants' benefits.

Additionally, a very small proportion of respondents (5%) use MAPs for all three purposes; therapeutic, cosmetic, and culinary, demonstrating a more holistic approach to the application of these plants. This group views MAPs as not only valuable for healing but also for enhancing beauty, and for nutrition, showcasing the plants' wide-ranging benefits in daily life. The results revealed the diverse applications of MAPs in the region, with a strong emphasis on their therapeutic strength, and also an acknowledgment of their broader uses in other personal and cultural practices.

Treatment duration with MAPs

Based on the results obtained (Figure 8), it was evident that the majority of respondents (90%) use aromatic and medicinal plants (MAPs) for healing purposes until they achieve full recovery. This reflects a deep-rooted cultural and traditional reliance on the continuous use of MAPs as a long-term healing method. Only a small fraction of the population (7%) uses these plants for just one day, while 3% use them for a week. This pattern of extended use aligns with the traditional belief in the gradual healing process offered by MAPs, which may take a long time to fully address ailments, particularly chronic or persistent health issues.

The findings closely mirror those of Slimani's study conducted in the Zerhoun region of Morocco, where 97% of the population also reported using MAPs until recovery.[39] This consistency across different regions highlights the widespread cultural practice in Morocco of depending on MAPs as a primary or complementary form of healthcare. The prolonged use of MAPs until recovery could indicate the local population's confidence in their effectiveness and their deep integration into everyday health practices, especially in rural or underserved areas where access to modern healthcare might be limited. This reliance on MAPs do not only reflects a cultural tradition, but also the practical benefits and accessibility of plant-based remedies in the region.[40]

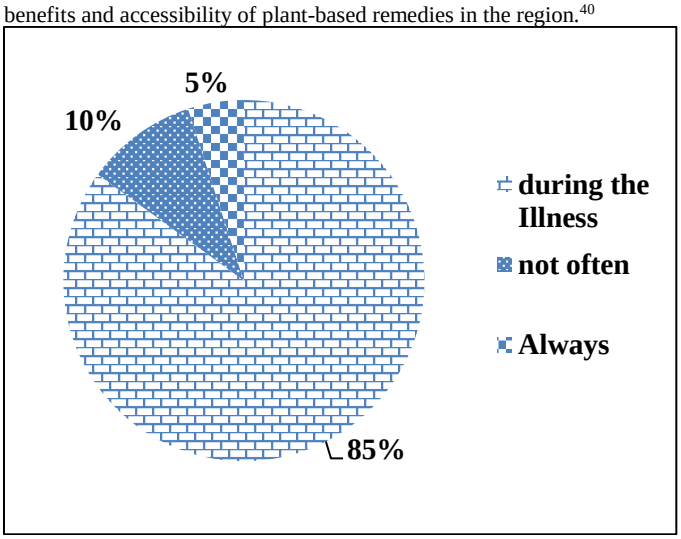

Figure 7: Frequency of Use of Medicinal and Aromatic Plants

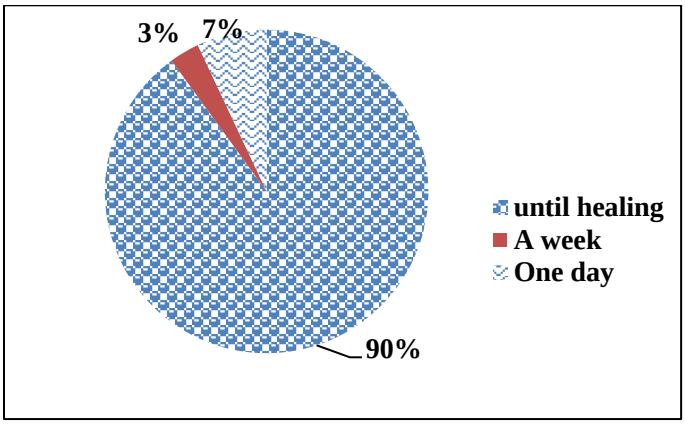

Figure 8: Duration of Treatment with Medicinal and Aromatic Plants

MAPs harvesting period and technique

The data presented in Figure 9 reveals important insights into the harvesting periods and techniques for medicinal and aromatic plants (MAPs) in the study region. According to the results, a significant portion of MAPs (54%) are harvested throughout the year, suggesting that many of these plants are either perennials or have long growing seasons, making them readily available to the population regardless of seasonal changes. This year-round availability highlights the importance of these plants in the daily lives of the local communities, who may rely on them continuously for medicinal and therapeutic purposes.

Seasonal variations in harvesting are also noteworthy, with 26% of MAPs being harvested specifically during the summer. This could be due to the fact that many plants reach full maturity or optimal potency during the warmer months, making them ideal for harvest. Meanwhile, 13% of the plants are harvested in winter, which may include species that thrive in cooler climates or those that are traditionally used during the cold season for treating winter-related ailments like respiratory issues. Spring and autumn saw the least amount of harvesting, with 5%

ISSN 2616-0684 (Print)
ISSN 2616-0692 (Electronic)

and 1%, respectively, indicating that fewer species are ready for harvest during these transitional seasons.

The harvesting technique predominantly used is manual uprooting, which reflects traditional, hands-on methods that have likely been passed down from generation to generation. Manual uprooting allows for careful selection of plants while minimizing damage to the surrounding environment, ensuring sustainability in the long run. However, it can also be labour-intensive, suggesting that the harvesting process requires a significant amount of time and effort. This traditional method highlights the connection between the local population and their natural environment, as well as the reliance on indigenous knowledge and practices for the collection of MAPs.

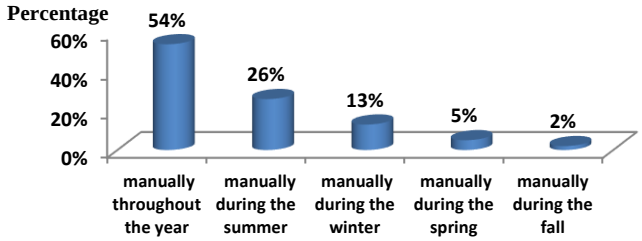

Figure 9: Medicinal and Aromatic Plants Harvesting Period and Technique.

Preservation of MAPs

According to the data presented in Table 3, the preservation methods for medicinal and aromatic plants (MAPs) are primarily focused on drying and storing them in containers like plastic bags or glass bottles. The ethnobotanical studies revealed that 76% of the surveyed population utilizes this method, highlighting the importance of proper preservation techniques to ensure the longevity and efficacy of these plants for medicinal use. Drying is a common and effective method for preserving MAPs, as it reduces moisture, prevents mold and spoilage while maintaining the plants' active compounds. Storing the dried plants in plastic bags or glass bottles protects them from environmental factors like humidity and light, which could degrade their medicinal properties. Meanwhile, 24% of the population do not engage in preservation techniques, instead they use MAPs that are still fresh, and available in nature, and do not require long-term storage. This practice likely reflects a reliance on wild plants or plants that are seasonally harvested when fresh. It also indicates that some communities may have ready access to natural habitats where these plants grow abundantly, thereby reducing the need for preservation.

Table 2: Summary of the various Medicinal and Aromatic Plants (MAPs) Investigated and their Families.

S/N	Vernacular name	French name	Scientific name	Family
	lkharob	Caroubier	*Ceratonia Siliqua*	Fabaceae
	zaatar	Thym	*Thymus Vulgaris*	Lamiaceae
	Azir	Romarin	*RosmarinusOfficinalis*	Lamiaceae
	Trilan	Inule visqueuse	*Inula viscosa*	Asteracea
	Rihan	Basilic	*Ocimum Basilicum*	Lamiceae
	Lkrmoss	Figue	*Ficus Carica*	Moraceae
	Fliyo	Menthe pouliot	*MenthaPulegium*	lamiaceae
	Dro	Lentisque	*PistaciaLentiscus*	Anacardiaceae
	Dfla	Laurier-rose	*NeriumOleander*	Apocynaceae
	Manta	Calmant	*Valériane Officinale*	Valirianaceaae
	Chngora	Ajuga Iva	*Ajuga Iva*	Lamiaceae
	Salmiya	Sauge	*Salvia Officilis*	Lamiaceae
	Lwiza	Verveine	*AloysiaCitrodora*	Verbanaceae
	Horiga	Ortie	*UrticaSp*	Uticaceae
	Ziton	Olivier	*Olea Europaea*	Oleaceae
	Arar	Genévrier commun	*JuniperusCommunis*	Cupressaceae
	lkhzama	Lavande	*LavandulaAngustifolia*	Lamiaceae
	Mriwta	Marrube commun	*MarrubiumVulgare*	Lamiaceae
	Mkhinza	Anserine	*ArtemissiaAbsinthium*	Asteraceae
	Lblot	Chêne	*Quercus Robur*	Fagaceae
	Chiba	Absinthe	*ArtemissiaAbsinthium*	Asteraceae
	Lhlba	Fenugrec	*TrigonellaFoenum-Graecum*	Fabaceae
	Naenae	Menthe	*MenthaAquatica*	Lamiaceae
	Babonj	Camomille	*Chamaemelum Nobile*	Asteraceae
	Lksbour	Coriandre	*CoriandrumSativum*	Apiaceae
	Lbakdounss	Persil	*PetroselinumCrispum*	Apiaceae
	Lkif	Chanvre	*Cannabis Sativa*	Cannabaceae
	Lmzah	Néflier commun	*MespilusGermanica*	Rosaceae
	Rman	Grenadier commun	*PunicaGranatum*	Rosaceae
	Lkhrchof	Cardon	*CynaraScolymus*	Astéraceae
	Lcaliptoss	Eucalyptus	*Eucalyptus Globulus*	Myrtaceae
	Toma	Ail	*Allium Sativum*	Liliaceae
	Sanawbar	Pin d'Alep	*Pinus Halepensis*	Pinaceae
	Chih	Armoise	*Artemisia Schmidtiana*	Astéraceae
	Lbri	Oléastre	*Olea Oleaster*	Oleaceae
	Lbsla	Oignon	*Allium Cepa*	Liliaceae
	Khobbeza	Mauve	*Malva Sylvestris*	*Malvaceae*
	Lhabbasawdae	Nigelle cultivée	*Nigella Sativa*	ranunculaceae
	Arksouss	Réglisse	*Glycyrrhiza Glabra*	Fabaceae
	Zanjabil	Gingembre-épice	*Zingiber Officinale*	Zingiberaceae
	Alwivira	Aloe Vera	*Aloe Barbadensis Mill*	Aleoceae
	Zitra	Thym	*Thymus Sp*	Lamiaceae
	Sbar	Cactus	*Cactaceae*	Cactaceae

Limon	Citronnier	*Citrus xLimon*	Rutaceae
Awrma	Mauve	*Malva Parviflora*	Malvaceae
Nwarchms	Tournesol	*Helianthus Annuus*	Asteraceae
Dalya	Vitis	*Vitis Vinifera*	Vitaceae
Mrssita	Mélisse officinale	*Melissa Officinalis*	Lamiaceae
Lkamon	Cumin	*CuminumCyminum*	Apiaceae
Lkrnfl	Giroflier	*Syzygium Aromaticum*	Myrtaceae
Lhna	Henné	*Lawsonia Inermis*	Lythraceae
Lward	Rosier	*Rosa Canina*	Rosaceae
Ezaafran	Safran	*Crocus Sativus*	Iridaceae
Nbak	Jujube	*Ziziphus lotus*	Rhamnaceae
Lhndiya	Figuier de barbarie	*Opuntia Ficus-Indica*	Cactaceae
Hummayda	Oseille	Oseille Commune	Polygonaceae
Swak	Noyer	*Juglans x Intermedias*	Juglandaceae
Dora	Mais	*Zea Mays*	Poaceae
Dom	Palmier doum	*Hyphaenethebaicia*	Arecaceae
Tghighcht	Saponaire	Saponaire Officinale	caryophyllaceae
Lkhyar	Concombre	*Cucumis Sativus*	cucurbitaceae

Table 3: Methods of Preservation of Medicinal and Aromatic Plants

Conservation method	Amber drying and stored in plastic bags	Amber drying and preservation in glass bottles
Percentage	46%	30%

Conclusion

The present investigation conducted an ethnobotanical survey of medicinal and aromatic plants (MAPs) among the population in two localities of Ain Mediouna and Tahr Souk in the Taounate region of Morocco. The study aimed to highlight the scope of traditional medicine within the rural population in the Taounate region. The information obtained from the study indicated that respondents in the age bracket of 39 to 60 years are most likely to use traditional therapy given their fairly strong social connections.

In addition, the floristic analysis identified 61 species belonging to 31 families, with Lamiaceae being the most represented (20%), followed by Asteraceae (10%), and other families with lower frequencies. The majority of the listed species are cultivated (67%), while 33% are wild. This work also affirms that most aromatic and medicinal plants are used to treat digestive disorders and skin infections, followed by neurological disorders and fever.

Furthermore, this study revealed that most of the investigated respondents use Medicinal and Aromatic Plants (MAPs) only for curative treatment and preserve them by drying, storing them in plastic bags, or glass bottles. Additionally, the study provided a prodigious information base for recognizing the medicinal flora of the study site, as well as its cultural and therapeutic significance in the customs of the populations. The data collected could be integrated into a database for possible enhancement of this precious floristic heritage, which is the pride of the Moroccan herbarium.

Conflict of interest

The authors declare no conflict of interest.

Authors' Declaration

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

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