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Research Article

Ethnopharmacological Survey on the Traditional Use of Myrtle (*Myrtus communis*) in Northwestern Tunisia

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Abstract

Situated at the intersection of human and natural sciences, ethnopharmacology focuses on traditional knowledge and its potential for discovering new therapeutic agents. In this context, we conducted an ethnopharmacological survey on the traditional use of myrtle (*Myrtus communis* L.) in the Aïn Draham region (North-West Tunisia) to examine the population's knowledge regarding its medicinal applications. A structured questionnaire with two sections was used: the first covering the demographic profile of participants (age, sex, education level), and the second focusing on the identification and uses of myrtle (parts used, treated ailments, preparation methods, and routes of administration). The data collected revealed that myrtle is widely used as a traditional remedy for various conditions, mainly digestive disorders (50%) and respiratory ailments such as flu and sore throat (34%). The most common preparation methods were maceration (40%), essential oil use (30%), and decoction (15%), while oral administration was the predominant route (90%). According to participants, the leaves were the most frequently used part (55%), followed by fruits and flowers. In conclusion, the information obtained from the inhabitants of Aïn Draham highlights the ethnomedicinal importance of *Myrtus communis* L. and provides a valuable foundation for future phytochemical and pharmacological studies aimed at exploring its therapeutic potential.

Keywords: Ethnopharmacology; Traditional Medicine; Myrtle; Survey; Tunisia

Introduction

Medicinal plants have long constituted an essential therapeutic resource for many populations, particularly in rural regions where traditional medicine remains the primary form of healthcare [1,2]. In Tunisia, the richness of aromatic and medicinal flora has fostered the development of ethnopharmacological practices deeply rooted in local culture and transmitted across generations [3,4]. Among the most used species is *Myrtus communis* L., an aromatic plant belonging to the Myrtaceae family, widely distributed throughout the Mediterranean basin and particularly abundant in the forested areas of northern Tunisia [5,6].

Myrtus communis is known for its numerous biological properties, notably antimicrobial, antioxidant, anti-inflammatory, and antidiarrheal activities, which have been extensively documented in scientific literature [7,8]. The leaves, fruits, and essential oil of myr-

tle are traditionally used to treat various ailments, such as digestive disorders, respiratory infections, dermatological diseases, and certain metabolic pathologies [9,10]. Despite this growing interest, traditional knowledge related to the use of myrtle in Tunisia remains underexplored and insufficiently valorized, highlighting the need for thorough documentation to preserve this heritage and to confront it with modern scientific data.

The Aïn Draham region, located in northwestern Tunisia, is characterized by rich biodiversity and a humid climate that favors the proliferation of *Myrtus communis*. This forested area also represents a valuable reservoir of popular knowledge concerning the therapeutic use of plants. In this context, the present ethnopharmacological study aims to document the traditional uses of myrtle among a local population selected for its expertise and experience in medicinal plants. The survey identifies the plant parts used, methods of preparation, routes of administration, and treated pathologies, thereby contributing to a better understanding of ethnobotanical knowledge and its value for future research perspectives.

Material and Methods

Choice of region

We selected the Aïn Draham region, located in northwestern Tunisia, due to its humid climate and dense vegetation, which promote a natural abundance of myrtle (*Myrtus communis* L.) (Figure 1). This region is particularly renowned for its biodiversity and forest ecosystem, offering an ideal setting for the ethnopharmacological study of this plant with its many traditional uses.

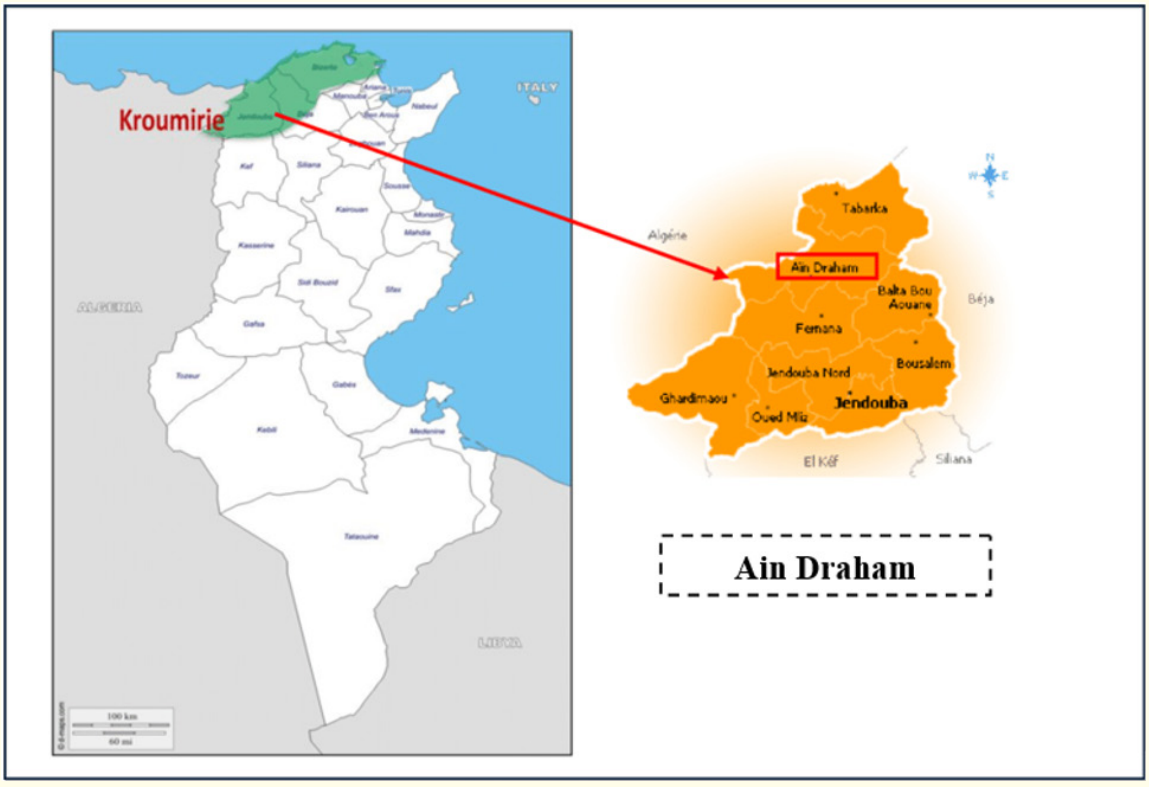

Figure 1: Map of Northwest Tunisia showing the location of Ain Draham in the governorate of Jendouba, Kroumirie region.

Survey design

The survey questionnaire is structured in two sections. The first section focuses on the sociodemographic information of the participants, including sex, age, and education level. The second section explores the identification and uses of the plant, examining preparation methods, administration techniques, and the pathologies treated. This approach allows for the collection of essential data to better understand the medicinal properties of *Myrtus communis* and its health benefits.

Data collection

To conduct our survey, we designed 100 questionnaires. First, we introduced ourselves using a badge containing the necessary information about the interviewer's identity. Next, we explained the objectives of the study to build trust with the interviewees. To ensure the reliability of the survey, we selected interviewees based on their knowledge of the plant, particularly its traditional medicinal uses. For this purpose, we chose to interview elderly people, mothers, and farmers. Interviews took place in people's homes, as well as at weekly markets and souks. Active listening allowed us to obtain additional information, some of which we found interesting, some less so. However, to avoid discouraging the interviewees, we took all the information into account. As soon as the conversation began, we started filling out the questionnaire.

Problems encountered during the survey

Difficulties arose in collecting information about myrtle from herbalists, who wish to protect the secrets of their trade. Furthermore, it was difficult to contact mothers, who were often busy with their daily tasks.

Data processing

Questionnaire preparation and data entry were carried out using Sphinx software, while results processing was analyzed using Excel.

Results

Ethnopharmacological survey

The questionnaire conducted in the Aïn Draham region revealed that myrtle (*Myrtus Communis* L) is widely used in traditional medicine to treat various pathologies.

Distribution of respondents by sex

Most respondents were male (58%), compared to 42% female, as illustrated in Figure 2.

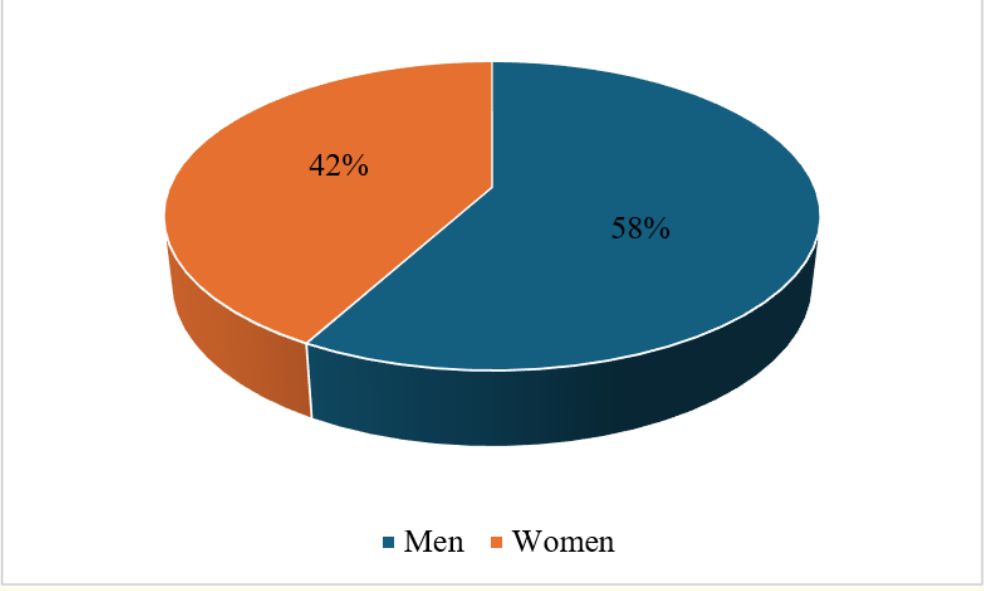

Figure 2: Distribution of respondents by gender.

Distribution of respondents by age group

Most respondents were between 50 and 70 years old (42%), and between 30 and 50 years old (40%). It should be noted that the extreme ages ranged from 20 to 90 years, as illustrated in Figure 3.

Education level

Among the surveyed population, 30% were university graduates, while the remaining 20% were divided between primary (10%) and secondary (10%) education levels. Most respondents (50%) were illiterate, as illustrated in Figure 4.

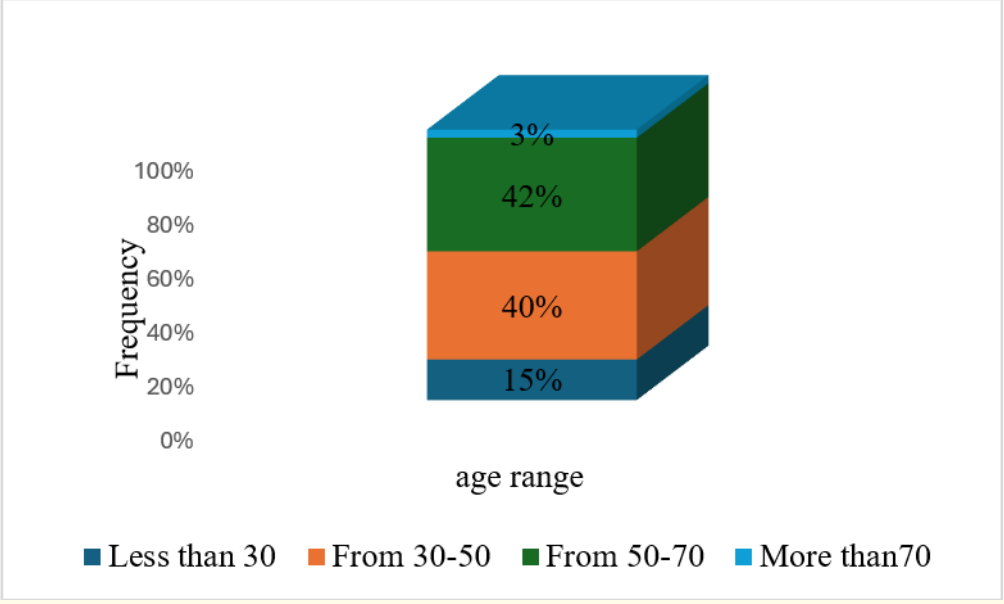

Figure 3: Distribution of respondents according to age group.

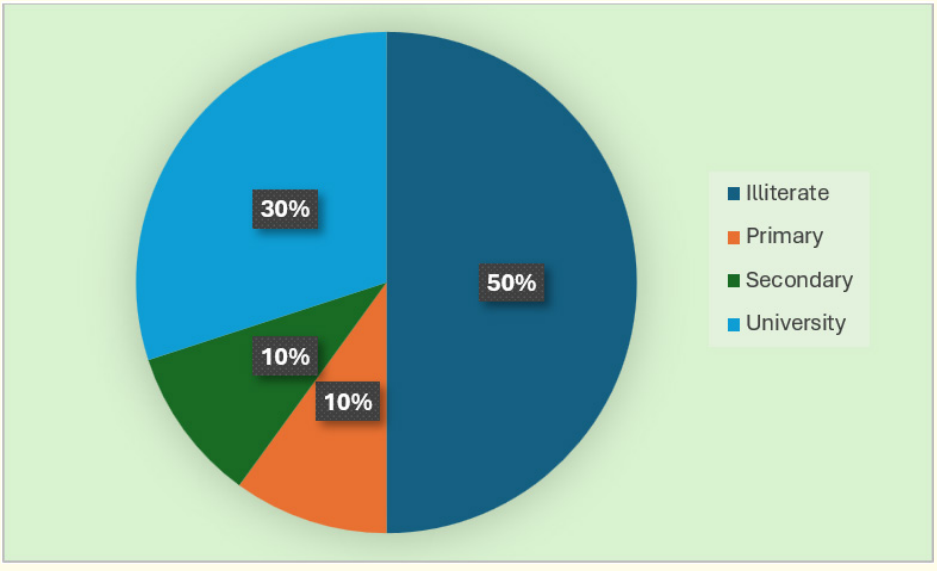

Figure 4: Distribution of respondents according to their level of education.

The parts used

According to those surveyed, the most used part of the myrtle is the leaves (55%), followed by the fruit (30%) and the flowers (15%). In contrast, the stem and roots are not used at all, as illustrated in Figure 5.

Preparation methods

According to the survey results, methods of using myrtle vary according to the respondents' habits. Maceration is the most common, used by 40% of respondents, followed by the use of essential oil (30%) and decoction (15%). Infusion is less widespread (10%), while 5% of respondents mentioned other methods of use (Figure 6).

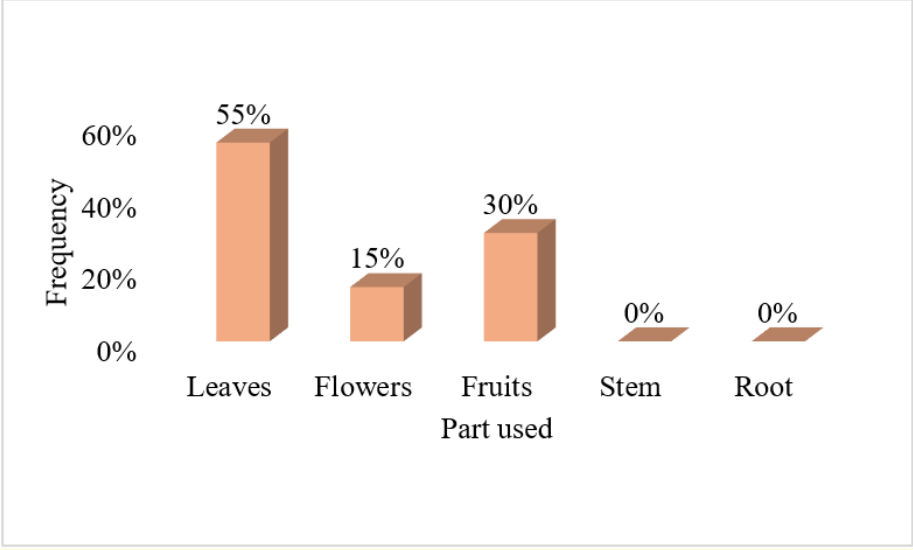

Figure 5: Frequency of the used part of myrtle in the study area.

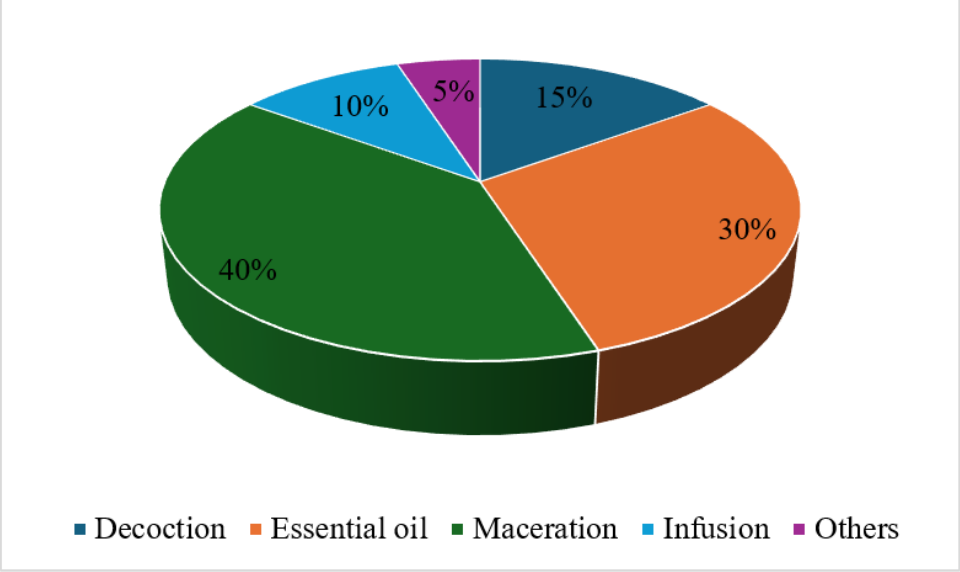

Figure 6: Frequencies of different myrtle preparation methods in the study area.

Method of administration

Generally, the preparation is taken orally (90%). Topical applications (7%) are preferred for treating skin conditions, wounds, inflammation, and muscle pain. Other methods of administration, such as gargling and inhalation (3%), are preferred for treating certain respiratory illnesses (Figure 7).

Traditional and medicinal uses of myrtle

The survey showed that myrtle leaves are primarily used to treat digestive ailments, mentioned by 50% of respondents. Their use to treat influenza and sore throats is also common, accounting for 34% of responses. In addition, 10% of respondents used them to treat diabetes, while other applications, notably as an aphrodisiac (1%), although marginal, appear promising. Finally, 5% of participants indicated other miscellaneous uses for the plant (Figure 8).

Reasons for using herbal medicine

Most respondents (41%) indicated they used myrtle because of its low cost. Others highlighted its effectiveness (33%), while 21% stated that it was preferable to modern medicine. Finally, 5% mentioned the unavailability of medications as a reason for their choice (Figure 9).

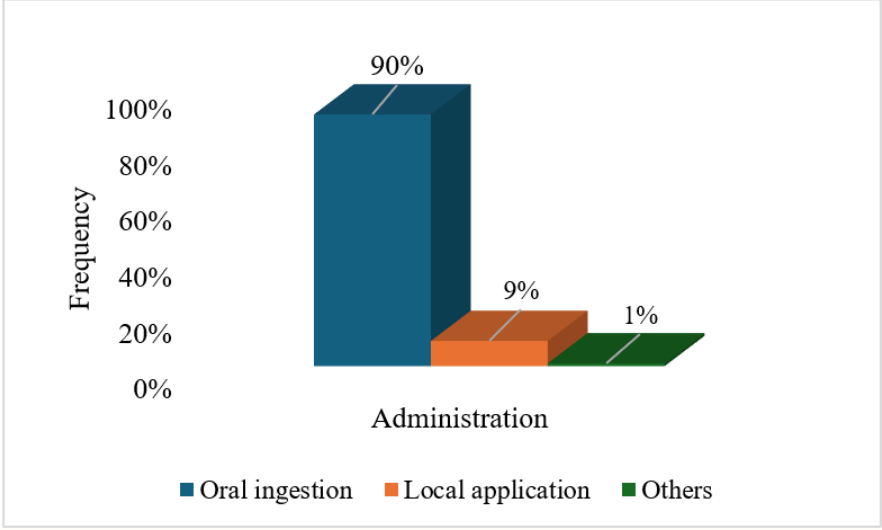

Figure 7: Frequency of different methods of myrtle administration in the study area.

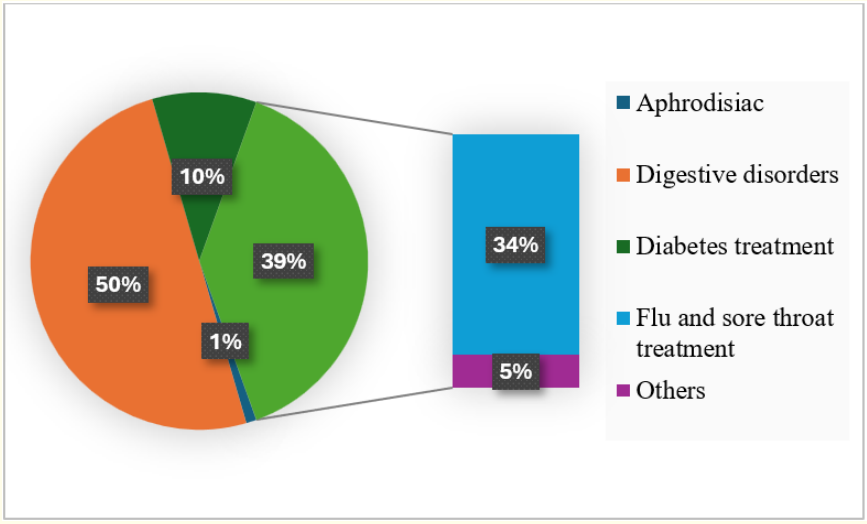

Figure 8: Frequency of different traditional and medicinal uses of myrtle in the study area.

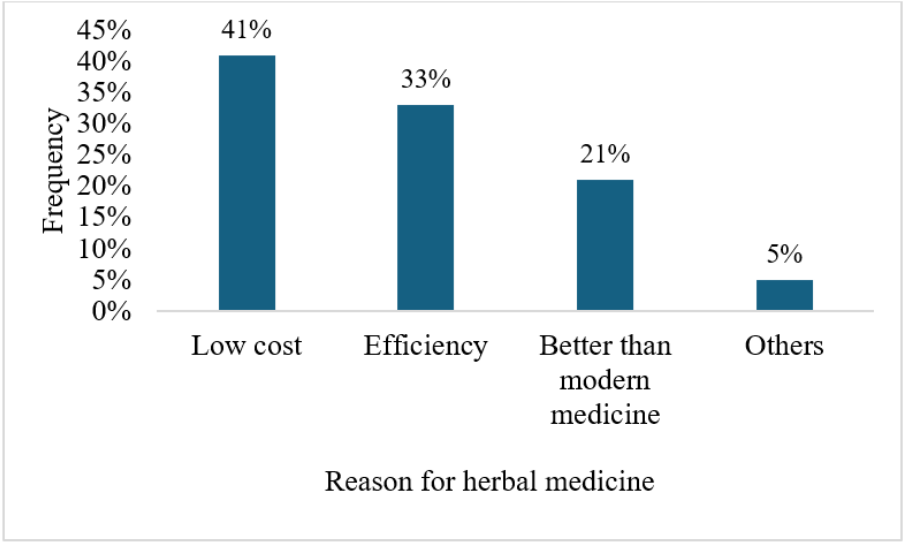

Figure 9: Frequency of myrtle phytotherapy in the study area.

Level of satisfaction

Figure 10 shows that most respondents reported being satisfied (70), followed by those who were very satisfied (18) and those who were somewhat satisfied (12), while none reported being disappointed (0). This illustrates an overall positive assessment.

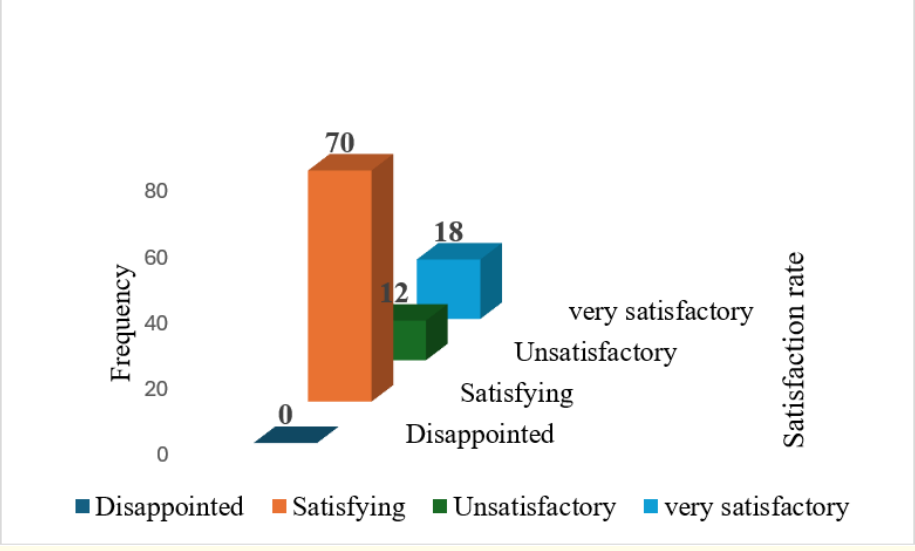

Figure 10: Level of satisfaction of respondents in the study region.

Discussion

In this study, we analyzed the baseline information collected from the surveyed population, including sex, age, family knowledge, educational level, and profession, as well as their knowledge of the studied plant. These data are presented as percentage-based graphs to facilitate comparison and interpretation of the results.

In the study area of Aïn Draham, Tunisia, traditional medicine involving the use of myrtle is practiced by both sexes. However, men are slightly more represented, with a rate of 58% compared to 48% for women. These findings are comparable to those reported by Idres and Bourai 2021 [11] in the Tizi Ouzou region of Algeria. The survey revealed a predominance of traditional use of myrtle in the treatment of digestive disorders. Indeed, most respondents reported using the leaves of this plant to treat various digestive ailments, such as abdominal pain, diarrhea, and gastric ulcers. These observations are consistent with several previous studies that have highlighted the gastroprotective properties of *Myrtus communis* L. [12,13]. The effectiveness of this plant in this context may be attributed to the presence of bioactive compounds such as flavonoids and tannins, which are known for their anti-inflammatory and antioxidant effects [14,15].

However, the use of myrtle in the field of male fertility appears to be much more marginal. Only 1% of respondents reported a traditional use of this plant for this purpose. This low prevalence may be explained by limited transmission of knowledge regarding this specific effect, as well as by the lack of clear scientific recognition of its effects on male reproduction. Nevertheless, some recent studies have begun to explore this potential. For example, research has shown that the aqueous extract of *Myrtus communis* L. exhibits significant antioxidant activity, which may play a protective role against oxidative stress induced by various environmental toxicants, including bisphenol A, an endocrine disruptor known to impair male fertility [16].

In addition, the aqueous extract is more commonly used than the essential oil, although several studies have demonstrated that the latter possesses strong antioxidant capacity [17] and beneficial effects in various diseases [10].

The high frequency of maceration (40%) and essential oil use (30%) also reflects common practices in North African traditional phytotherapy. These preparation methods enable the extraction of bioactive compounds such as myrtenol, 1,8-cineole, and limonene, which are widely recognized for their beneficial effects on respiratory [18] and digestive disorders [19]. The predominance of the oral route of administration (90%) further indicates the intention to achieve a systemic effect, which is consistent with the most frequently cited therapeutic indications by participants [20].

Finally, the main motivation reported by participants was the low cost of myrtle-based remedies (41%), highlighting an important socioeconomic aspect. In rural areas, the availability of medicinal plants, combined with limited financial resources, encourages the use of phytotherapy as an alternative or complement to modern medicine [2]. The perceived effectiveness reported by 33% of respondents further confirms the population's trust in this plant, which is a key factor in the transmission and sustainability of traditional knowledge [21].

Conclusion

Considering this study, the results obtained largely agree with ethnopharmacological data reported in other regions of the Maghreb and the Mediterranean basin. This confirms the importance of Myrtus communis L. as a versatile medicinal plant and underscores the need to value this traditional knowledge. Documenting these practices constitutes an essential starting point for guiding future phytochemical and pharmacological studies, which could lead to better therapeutic use of myrtle and a more rational integration of this plant into complementary medicine.

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