

# Ethnobotanical Study Of Medicinal Plants Used By Herbalists For The Treatment Of Respiratory Diseases In The Region Of Oran, Algeria

BOUREDJA Nadia<sup>\*1</sup>; BOUTHIBA Meriem<sup>1</sup>; KEBIR Meriem<sup>1</sup>

<sup>1</sup>Department of living and Environment, Faculty of Natural Science and Life, University of Sciences and Technology, Mohamed Boudiaf-Oran, Algeria

\* Corresponding Author: [nadia.bouredja@univ-usto.dz](mailto:nadia.bouredja@univ-usto.dz)

**Abstract**—In order to identify and contribute to a better knowledge of medicinal plants used in traditional medicine to relieve digestive diseases, an ethnobotanical survey was conducted among 50 herbalists in the city of Oran through direct interviews with the help of a questionnaire.

The study of the medicinal flora made it possible to inventory 21 species of medicinal plants used for the treatment of digestive diseases belonging to 12 families, among which lamiaceae are the most dominant. Similarly, we collected a certain amount of information through a series of ethnobotanical surveys conducted by the questionnaire.

The leaves are the most used organs and the administration is mostly oral. The concept of dose and duration depends on each informant to another.

This work is a source of information that can be used as a basis for pharmacological studies to evaluate the therapeutic efficacy and safety of medicinal plants.

**Keywords**—ethnobotany, herborist, respiratory diseases, medicinal plants, Oran, survey.

## I. INTRODUCTION

Through the ages, man has been able to rely on nature to provide for basic needs such as food, shelter, clothing and also for his medical needs. The therapeutic use of the extraordinary virtues of plants for the treatment of all diseases of man is very old and evolves with the history of humanity [1].

Medicinal plants are important for pharmacological research, not only when the constituents of plants are used directly as therapeutic agents, but also as raw materials for drug synthesis or as models for pharmacologically active compounds [2].

The Oran region, offers an eccentric and very diverse botanical landscape, related to the circumstances of climate, soil and terrain. It is characterized by many medicinal plants which arouse great interest, by their therapeutic properties. These aromatic plants are, therefore, at the origin of products with high added value [3].

The ethnobotanical study has therefore become a very reliable approach for the exploration of ancestral knowledge in this field. This is a field work that consists of conducting surveys of traditional healers in order to identify the use of medicinal plants for the treatment of diseases. Today, many modern drugs have their origin in ethnopharmacology [4].

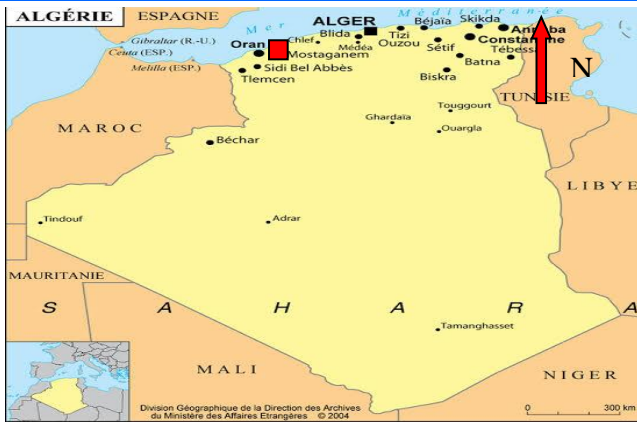
In this perspective, our study consists of valuing the traditional natural heritage of the Oran region, through an ethnobotanical study that was conducted with herbalists to collect as much information as possible about therapeutic uses. The survey is based on a pre-established questionnaire containing questions about the vernacular name of the plant, the part used, the method of preparation.

The main objective is to identify the medicinal plants used in order to set up a phytotherapy database for the regions in question.

## II. MATERIAL AND METHODS

### A. Geographical situation and climate

Oran is the second largest city in Algeria and one of the largest in the Maghreb. It is a port city of the Mediterranean, located in northwestern Algeria (Fig.1); the climate of Oran is typically Mediterranean and is characterized by mild and wet winters, often wet spring and autumn and dry summers. It is a transitional climate between a temperate climate in the north and a subtropical or desert climate in the south [5].



**Figure1.** Location of Oran (Algeria).

### B. Research tools

In this study, the sampling is composed of randomly selected herbalists in different municipalities of Oran.

The survey was conducted using a survey or questionnaire, the latter is composed of specific questions about the informant (age, sex, level of study ...) who is the herbalist in this study, and on medicinal plants used for digestive and respiratory diseases (names, parts used, methods of preparation ...).

This survey surveyed 50 herbalists from different municipalities in Oran, who informed us about the therapeutic applications of the most used medicinal plants for respiratory diseases.

## III. RESULTS AND DISCUSSION

### A. Frequency of plants used by herbalists studied according to survey parameters

#### A.1 According to age

The results obtained show that herbalists who belong to the class [30 years - 45 years] are the most present in Oran.(Fig.2 A)

#### A.2 According to the family situation

The results show that 88% of herbalists are married compared to singles that represent a rate of 12% (Fig.2 B).

#### A.3 According to sex

The questioned herbalists are only men with a percentage of 100% in the Oran region.

#### A.4 According to the academic level

- The data processing allowed us to obtain the graph of the (Figure), which shows that 44% of the herbalists have a secondary level, then come the primary level with a rate of 20%, and 13% have a medium level and university, 10%

of the surveyed herbalists do not have any academic level. (Fig.2 C)

### B. Results for respiratory diseases

#### B.1 According to the type of plant

According to the herbalists surveyed the plants that are cultivated represent a fairly high rate (74%) compared to plants that are wild that represent a percentage of 26% and weeds with a rate of 0% (Fig.3 A)

#### B.2 According to the state of the plant

Desiccated plants are the most sold and used by herbalists with a rate of 55%, followed by fresh plants with a rate of 43%, which shows that these two rates are close, then plants treated with a 2% percentage(Fig.3 B)

#### B.3 According to the parts used

The percentage of use of these different parts shows that the leaves and seeds are the most used (44% - 19%). Followed by stems and rhizomes (13% - 12%), flowers and fruits with a rate of 5% and barks with a rate of 2%.

The high frequency of use of the leaves can be explained by the ease and speed of the harvest [6].but also by the fact that they are the site of photosynthesis and sometimes the storage of the secondary metabolites responsible for the properties plant biology [7]. (Fig.3 C)

#### B.4 According to the form of employment

Several forms of employment are used by the population of Oran including Herbal tea and Powder with a rate (53% -27%), followed by essential oils (15%), finally the Extract form with a rate 5% (Fig.3 D)

#### B.5 Depending on the mode of preparation

Different therapeutic practices are used by the population, namely decoction, infusion; the poultice, cooked and raw.

The decoction and infusion are the most used modes with a rate of (43% -34%) Followed by the poultice, raw and cooked with percentages (9% -8% - 6%) respectively (Fig.4 A)

#### B.6 Depending on the dose used

Spoons occupy the first place according to our ethnobotanical study with a percentage of (72%) followed by handle and the pinch with a percentage of (22% - 6%) (Fig.4 B)

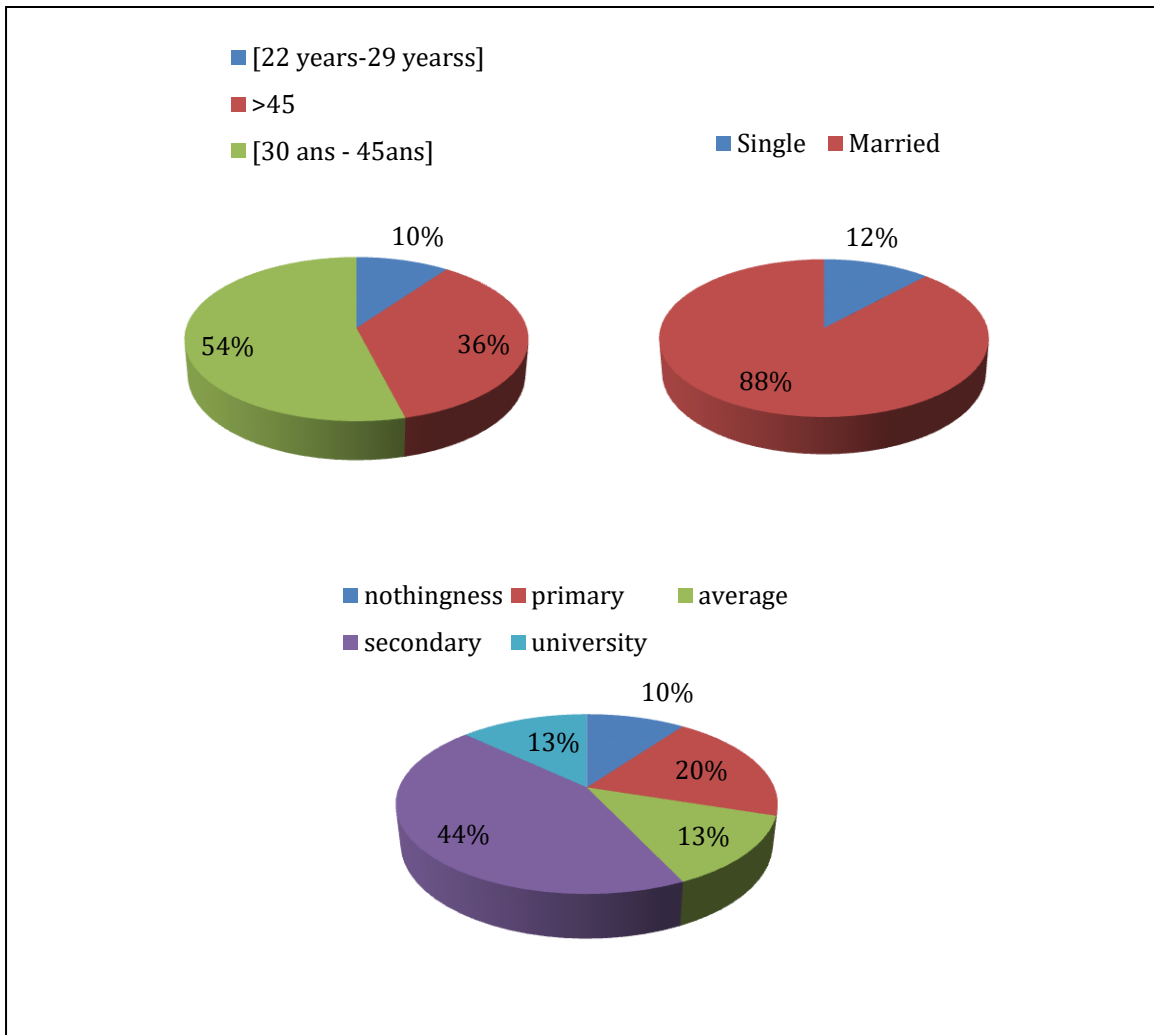
**B.7 Depending on the mode of administration**

until healing and the rest use herbal remedies for a month 25% (Fig.4 D)

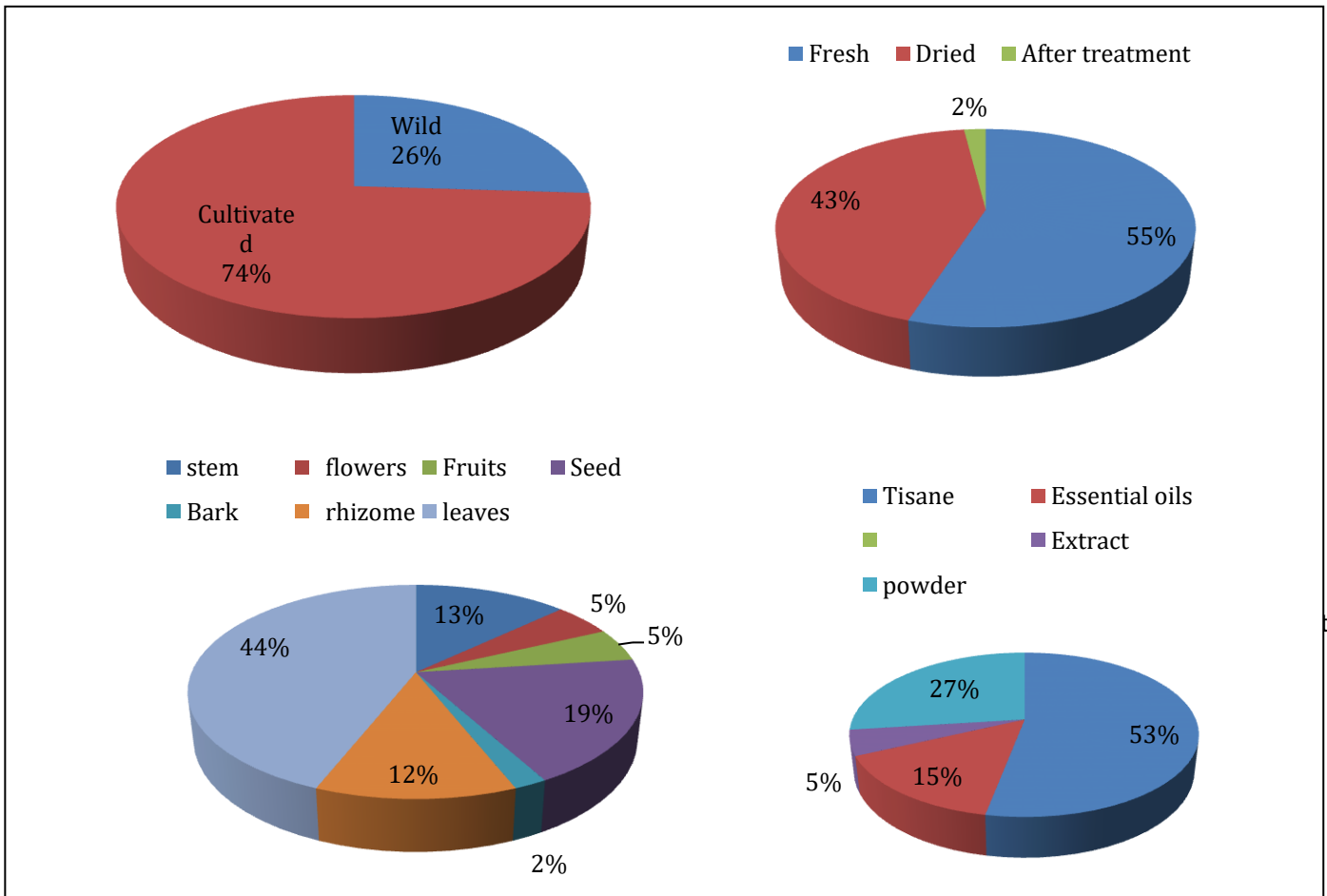
Most people in Oran use the oral mode with a percentage of 91% then come the massage mode with a rate of 9% (Fig.4 C)

**B.8 Depending on the duration of treatment**

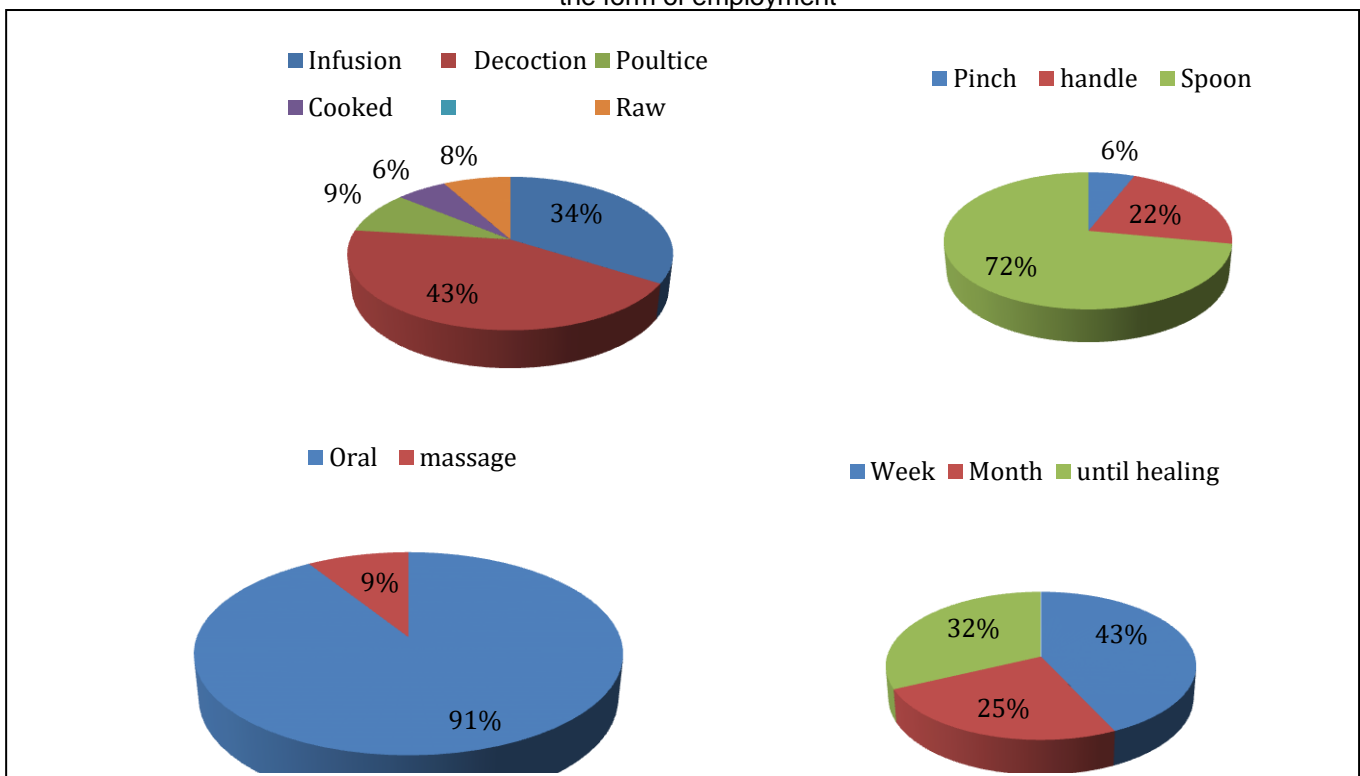
According to herbalists 43% of Oran populations use herbal remedies for a week, 32% prefer to use



**Figure.2.** Informant profile results A-Age, B-Marital status, C-Education



**Figure 3.** Results of using medicinal plants (A- the type of plant, B- the state of the plant, C- the parts used, D- the form of employment)



**Figure 4.** Results of using medicinal plants (A- the mode of preparation, B- the dose used, C- the mode of administration, D- the duration of treatment)

### 3.3 Floristic analysis

On the basis of 50 questioned herbalists carried out in the region of Oran, an ethnobotanical catalog was drawn up.

Floristic analysis of the listed species shows that 21 species are used.

They are divided into 12 botanical families. Among which four are the most dominant, notably the Lamiaceae, Verbénaceae, Fabaceae, Myrtaceae.

The medicinal plants used by the population of Oran are identified and listed in the table (Table 1)

Including the traditional African pharmacopoeia, plants of the family Lamiaceae are used as a diuretic, anti-syphilitic, anti-diarrheal, healing, antiseptic and in the treatment of many conditions such as problems intestinal or meteorism[8].

Among the species most used in the treatment of respiratory diseases, we note the use of *Tymus vulgaris* (Thyme), *Pimpinella anisum* (Green anise) and *Aloysia Citroedora* (Verbena).

In Antiquity, thyme was dedicated to Venus. According to legend, it provided vital energy. Galien already quoted it: "Thyme is notoriously incisive and hot. It is suitable for urinating and causing menstrual flow, for aborting and removing the child from the mother's womb, and for cleaning the noble and internal parts, taking it as a drink. It is suitable for spitting and throwing out all superfluity from the chest and lung".

Thyme is antiviral, antifungal, anti-inflammatory, and antibacterial properties including recent study has shown that methanolic and hexanic extracts from parts aerials of *Thymus vulgaris* inhibit the growth of *Mycobacterium tuberculosis* (bacteria that cause tuberculosis) [9].

Anise is named among the plants which must be cultivated, Green anise herbal teas or its extracts have as main indications respiratory tract disorders, bloating digestive disorders, stomach and liver disorders, as well as diuresis.

In external use it was used in earache and headache, in particular by the external application in a pasty manner [10].

**Table 1:** Main medicinal plants used for the treatment of respiratory diseases

Famille	Species	
	Scientific name	% specific
Apiaceae	<i>Pimpinella anisum</i>	10%
Astéraceae	<i>Chamaemelum Nobile</i>	2%
Fabaceae	<i>Trigonella foenum graecum</i>	12%
	<i>Glycyrrhiza glabra</i>	
Lamiaceae	<i>Rosmarinus officinalis</i>	30%
	<i>Tymus vulgaris</i>	
	<i>Mentha spicata</i>	
	<i>Marrubium vulgare</i>	
Lauraceae	<i>Ocimum basilicum</i>	2%
	<i>Cinnamomum laureiri</i>	
Myrtaceae	<i>Eucalyptus globulus</i>	12%
	<i>Eugenia caryophyllata</i>	
Pedaliaceae	<i>Sesamum indicul</i>	2%
Rutaceae	<i>Ruta graveolens</i>	4%
Solanaceae	<i>Capsicum annuum</i>	2%
Urticaceae	<i>Urtica dioica</i>	2%
Verbénaceae	<i>Aloysia Citroedora</i>	12%
	<i>Vitex agnus castus</i>	
Zingibéraceae	<i>Curcuma longa</i>	10%
	<i>Ellettaria</i>	
	<i>Cardamomum</i>	
	<i>Zingiber officinale</i>	

## CONCLUSION

Medicinal plants occupy a very important place in the daily life of the inhabitants of Oran; it offers wide possibilities of treatment of respiratory diseases for this region.

The ethnobotanical study conducted in the Oran region has allowed us to highlight the important role of traditional herbal medicine.

The information acquired from the questionnaire cards and the floristic analysis carried out in the field with the 50 herbalists of Oran, helped us to identify 21 species of medicinal plants used for the treatment of respiratory diseases belonging to 12 families.

The analysis of the results obtained by this ethnobotanical study enabled us to identify the medicinal plants most used to relieve digestive diseases in the studied region such as *Tymus vulgaris*, *Pimpinella anisum* and *Aloysia Citroedora*.

These results can be considered as a source of information for scientific research in the field of phytochemistry and pharmacology with a view to finding new plant-based active ingredients.

## ACKNOWLEDGMENTS

We thank the herbalists of the region of Oran in Algeria very much for their support.

## REFERENCES

1. Gurib Fakim A. "Medicinal plantes: Traditions of yesterday and drugs of tomorrow Molecular Aspects of Medicine," 2006. vol. 27, pp. 1-93.
2. Ameenah G. F. Medicinal plants: Traditions of yesterday and drugs of tomorrow Molecular Aspects of Medicine. 2006. 27:1-93.
3. Amroune S. 2018. Phytotherapy and medicinal plants, Mentouri Brothers University, Constantine .2018.
4. Fleurentin J. t., Balansard B. The methodological approach used in this study is limited to field work .conducting surveys among traditional healers to identify the use of depigmenting plants. 2002. 62(1): 23-8.
5. Kadir B. Contribution to the study of Alpine pine *pinus halepensis* in Algeria. Ed .O.P.U, Algeria .1987. 200p.
6. Bitsindou M, 1986. Enquête sur la phytothérapie traditionnelle à Kindamba et Odzala (Congo) et analyse de convergence d'usage des plantes médicinales en Afrique centrale. Mem. Doc (inéd.). Univ. Libre de Bruxelles. 482 pp.
7. Bigendako-Polygenis MJ & Lejoly J, 1990. La pharmacopée traditionnelle au Burundi. Pesticides et médicaments en santé animale. Pres. Univ. Namur. Pp. 425-442.
8. Naghibi, F., Mosaddegh, M., Mohammadi Motamed, S., Et Ghorbani, A. Labiateae family in folk medicine in Iran: from ethnobotany to pharmacology. Iran, J. Pharm. Res. 2005. 2, 63-79.
9. Jiménez-Arellanes A., Martínez R., García R., León-Díaz R., Aluna-Herrera J., Molina-Salinas G. et Saïd-Fernández S. 2006. *Thymus vulgaris* as a potential source of antituberculosis compounds. Pharmacologyonline., 3 : 569-574.
10. Babulka, P. de la recherche à la pratique (2004) 2/57. <https://doi.org/10.1007/s10298-004-0016-3>