

**5th International Electronic Conference on
Medicinal Chemistry**

Section: Posters

**Ethnomedicinal studies on medicinal plants used by people of Rif,
Morocco**

Presented by : Noureddine Chaachouay



summary



Introduction



Materials and methods



Results and discussion



Conclusion



References

Introduction

People have long histories on the uses of traditional medicinal and aromatic plants for medical purposes in the world, and nowadays, this is highly actively promoted [1]. In all ancient civilizations and in all continents, one finds traces of this use. Morocco, by its biogeographical position, offers a very rich ecological and floristic diversity constituting a true plant genetic reserve, the mountainous regions of Rif and Atlas being the most important areas for endemism. The analysis of the Moroccan medicinal bibliography shows that the data on regional medicinal plants are very fragmentary and dispersed, due to of the few thousand plant species. Accordingly, we conducted this ethnobotanical study in the Moroccan Rif, which has a considerable lithological, structural, biological and floristic diversity. The purpose of the present investigations was to evaluate MAPs that grow in the study area with the aim to contribute to indigenous knowledge of MAPs and to analyze the results concerning the existing relationships between medicinal species and human diseases.

1. Description of the study area

The present study was conducted in the Rif (Northern Morocco) it is located on the Mediterranean coast, about 431km at the north of Rabat, the administrative capital. The Rif is part of the region of Tangier-Tetouan - Al Hoceima which is one of the twelve regions of Morocco established by the territorial division of 2015 [2]. This study area (between 34° to 36° N latitude and 4° to 6° E longitude) is limited to the north by the Strait of Gibraltar and the Mediterranean Sea, to the west by the Atlantic Ocean, to the south-west by the Rabat-Sale-Kenitra region, to the south-east by the Fez-Meknes region and to the east by the Eastern region. The region has two prefectures (Tangier-Asilah and M'Diq-Fnideq) and six provinces (Al Hoceima, Chefchaouen, Fahs-Anjra, Larache, Ouezzane and Tetouan).

2. Methodology

2.1. Data collection tools and procedures

In order to gather information on MAPs used for curing human disorders, an ethnobotanical survey was conducted from June 30th, 2016 to June 1st, 2018. Semi-structured questionnaires were administered and free listings were conducted, through face to face interviews and focus groups, adopting the standard methodology followed by Martin [3]. The inclusion criterion includes qualified healthcare professionals such as pharmacists, herbalists, practitioners and therapists. While the exclusion criteria were informants who are not living in the study area.

2. Methodology

2.1. Data collection tools and procedures

The questionnaire used consists of two parts: the first part deals with the demographic characteristic of the informants and the second one focuses on the plants used in the treatment of the diseases. (Appendix A). The sample is made up of 400 females and 332 males from different socio-economic strata, chosen at random from the Rif's population. In this study, the sample is developed using a stratified random sampling method [4] to conduct various surveys from a site to another in the study area. According to this sampling method, we have divided our study area into sites (S_n), so we have 28 sites that correspond to the number of divisions in the study area

2. Methodology

2.2. Plant species identification and preservation

Standard method was followed with record to collection of plant materials, drying, mounting, preparation and preservation of plant specimens [5]. All data collections were done with special care on the base of the cultural view of the local sites in the study area. The plant species collected during surveys were arranged alphabetically by family name, vernacular name/scientific name and ethnomedicinal uses. These plants were identified using standard floras available in this area of Morocco, including: The medicinal plants of the Morocco [6], Practical flora of Morocco [7] and Catalogs of vascular plants of northern Morocco volumes I and II [8].

2. Methodology

2.3. Data Analysis

A descriptive and quantitative statistical method was used to analyze the socio-demographic data of the informants (ANOVA One-way and Independent Samples T-Test, P-values of 0.05 or less were considered significant). The results of the ethnobotanical survey were analyzed using the Family Use Value (FUV), Use Value (UV), Use Report (UR), Plant Part Value (PPV), Fidelity Level (FL) and Informant Agreement Ratio (IAR). All statistical analyses were carried out with Statistical Package for Social Science (SPSS) version 21 and Microsoft Excel 2010.

Results and discussion

1. Socio-demographic features of the informants

Variables	Catrgories	Total	Percentages (%)	P-values
Sex	Female	400	54.64	2770.
	Male	332	45.36	
Age	<20. years	25	3.38	0.000
	20-40	121	16.5	
	40-60	366	50.02	
	> 60years	220	30.1	
Marital status	Married	550	75.2	0.000
	Divorced	64	8.8	
	Widower	81	11	
	Single	37	5	
Educationalstatus	Illiterate	586	80.1	0.000
	Primary	94	12.9	
	Secondary	37	5	
	University	15	2	
Income/month	Unemployed	221	30.2	0.000
	250 - 1500 MAD	332	45.4	
	1500 - 5000 MAD	147	20	

Results and discussion

2. Quantitative analyze

2.1. Most used families and their family use value (FUV)

A total of 87 MAPs species belonging to 43 botanical families were used to treat human diseases in the study area. These plants are presented in alphabetical order. For each plant listed, we give the scientific name, the family, the local name, the part used, the method of preparation adopted by the local population..

The most representative families, in terms of number of species, were Apiaceae (10 species) followed by Fabaceae and Liliaceae (7 species each), Asteraceae (6 species), Lamiaceae and Poaceae (4 species each). Based on the FUV index, The 7 most cited families are Lamiaceae (FUV = 0.106), Geraniaceae (FUV = 0.073), Lythraceae and Rhamnaceae (FUV = 0.072 each), Arecaceae (FUV = 0.070), Theaceae (FUV = 0.057) and Asteraceae (FUV = 0.051).

Results and discussion

2. Quantitative analyze

2.2. Diversity of MAPs and their UV values

The importance of MAPs was assayed by use values (UV). In the present study, UV values of cited plants ranged from 0.001 to 0.240. The most commonly used species were *Thymus saturejoides* Coss. (UV = 0.240), *Origanum vulgare* L. (UV = 0.110), *Artemisia absinthium* L. (UV = 0.102), *Foeniculum vulgare* Mill. (UV = 0.093), *Ceratonia siliqua* L. (UV = 0.092) and *Trigonella foenum-graecum* L. (UV = 0.074).

The high values of UV can be explained by the fact that these plants are the best known and have long been used by the majority of informants, representing a source of reliability. In fact, many biological activity and phytochemical evaluation were carried out for these plants and these species are particularly interesting for research of bioactive compounds.

Results and discussion

2. Quantitative analyze

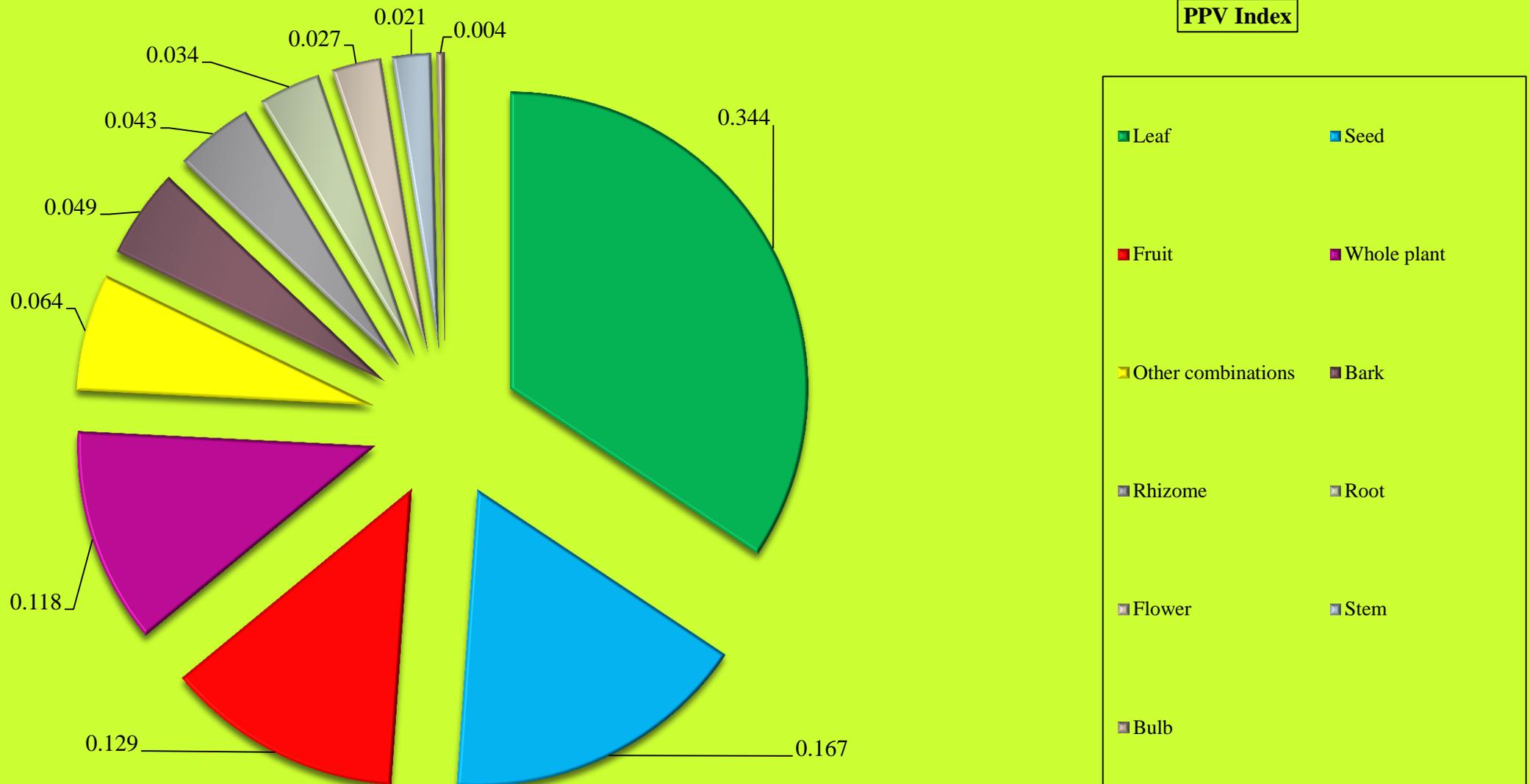
2.3. Disease categories and their IAR values

Informant agreement ratio (IAR) depends upon the availability of plants within the study area to treat diseases. The product of IAR ranges from 0 to 1. High value of IAR indicates the agreement of selection of taxa between informants, whereas a low value indicates disagreement. The category with the highest degree of agreement from informants was gastric ulcers related disorders (0.97). The IAR results of the study proved that diseases that were frequent in the Rif's area have the higher informant agreement ratio (values between 0.64 and 0.97). This high IAR values indicated reasonable reliability of informants on the use of MAPs species. The informant agreement values also indicated that the people share the knowledge of the most important MAPs species to treat the most frequently encountered diseases in the study area. Therefore, species with high IAR are to be prioritized for further on pharmacological and phytochemical studies [9].

Results and discussion

2. Quantitative analyze

2.4. Parts of the MAPs used



Results and discussion

2. Quantitative analyze

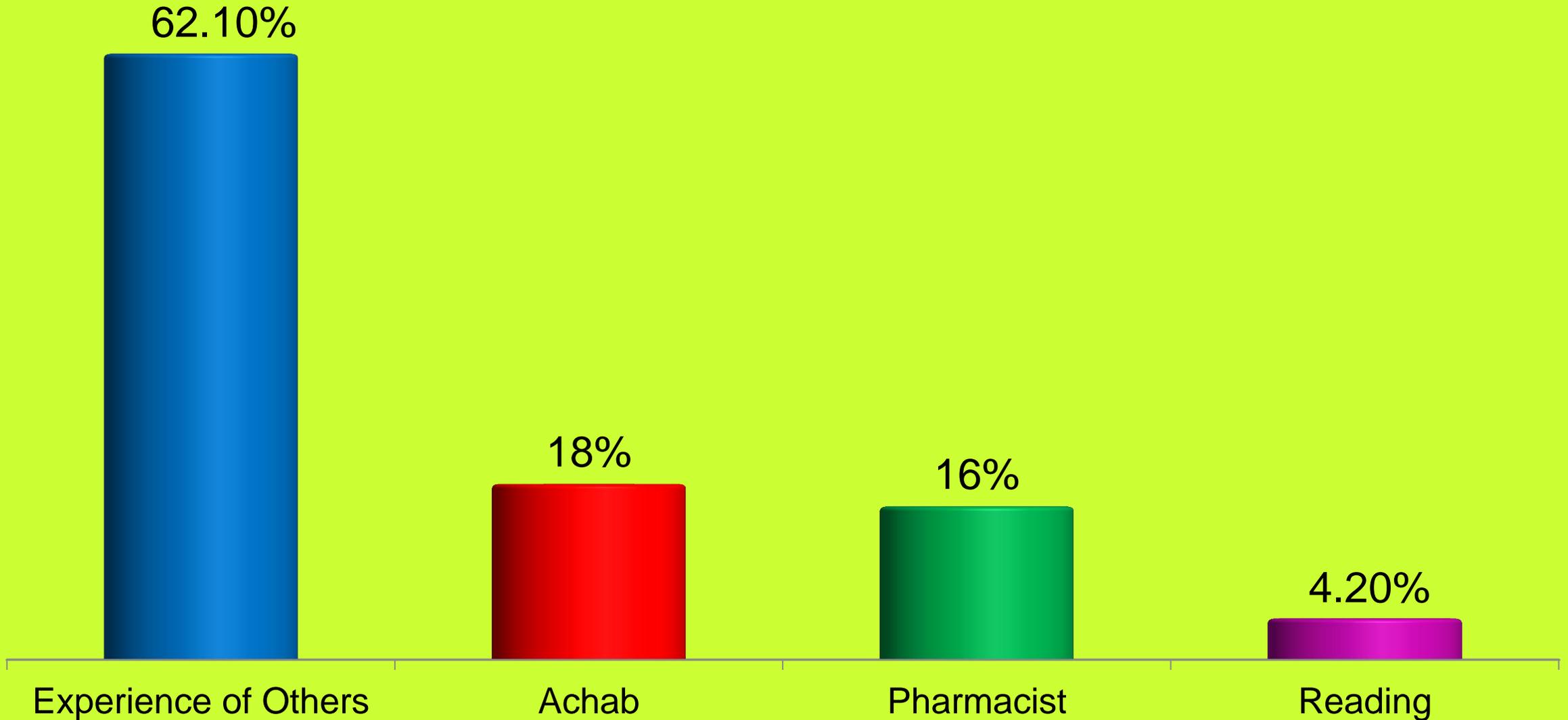
2.5. Methods of remedy preparations

In order to facilitate the administration of the active principles of the plant, several modes of preparation are employed to know the decoction, the infusion, cataplasm, raw, maceration and cooked. In the study area. The results also showed that the majorities of remedies (89%) were prepared from decoction (42.12%) and infusion (41.33%) followed by cooked (8.67%) and raw (3.54%). The percentage of the other methods of preparation grouped (maceration, cataplasm) does not exceed 4.33%. The frequent use of the decoction can be explained by the fact that the decoction makes it possible to collect the most active ingredients and attenuates or cancels out the toxic effect of certain recipes. Ethnobotanical research surveys conducted elsewhere in Morocco showed the majority of the interviewees prepared the remedy by decoction

Results and discussion

2. Quantitative analyze

2.6. Source of knowledge about medicinal plants



Conclusion

Our study revealed that the local traditional healers of Rif, Northern Morocco are rich in ethnomedicinal knowledge and majority of people rely on plant based remedies for common health problems diarrhea. The survey also revealed that all the traditional healers have strong faith on ethnomedicines although they were less conscious about the documentation and preservation of medicinal and aromatic plants and ethnomedicinal folklore. Based on the results of this study, higher use value, and preference ranking scores of the recorded medicinal and aromatic plant species would empower the future pharmaceutical and phytochemical studies and conservation practices. In this connection, attention should be drawn to the conservations of traditional medicinal plants and associated indigenous knowledge in the Moroccan Rif area to sustain them in the future.



EGYAR.COM

**THANK YOU FOR
YOUR
WARNING**



EGYAR.COM



EGYAR.COM

References

- [1] J. W. Kiringe, « A survey of traditional health remedies used by the Maasai of Southern Kaijiado District, Kenya », *Ethnobot. Res. Appl.*, vol. 4, p. 061–074, 2006.
- [2] Bulletin officiel, Bulletin officiel, Décret n° 2-15-40 du 1^{er} jourmada I 1436 (20 février 2015). 2015.
- [3] G. J. Martin, « *Ethnobotany: A Methods Manual.* », Earthscan Publ. Ltd, no London, p. 01., 2004.
- [4] M. Godron, « Essai sur une approche probabiliste de l'écologie des végétaux. Thèse de Doctorat, » USTL, Montpellier, France, p. 247 p., 1971.
- [5] S. K. Jain, « The role of botanist in folklore research », *Folklore*, vol. 5, no 4, p. 145–150, 1964.
- [6] A. Sijelmassi, « *Les plantes médicinales du Maroc, 3ème édition Fennec* », Casablanca Moroc, 1993.
- [7] M. Fennane, M. I. Tattou, J. Mathez, et P. Quézel, *Flore pratique du Maroc: manuel de détermination des plantes vasculaires. Pteridophyta, Gymnospermae, Angiospermae (Lauraceae-Neuradaceae).* Institut scientifique, 1999.
- [8] B. Valdés, *Catalogue des plantes vasculaires du Nord du Maroc, incluant des clés d'identification*, vol. 1. Editorial CSIC-CSIC Press, 2002.
- [9] G. N. Njoroge et R. W. Bussmann, « Traditional management of ear, nose and throat (ENT) diseases in Central Kenya », *J. Ethnobiol. Ethnomedicine*, vol. 2, no 1, p. 54, 2006.