



ETHNOBOTANICAL STUDY OF TWO MEDICINAL PLANTS: VITEX AGNUS CASTUS AND ANABASIS ARETIOIDES

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ABSTRACT

In the aim of the valorization of medicinal and aromatic plants of the Moroccan and Saharein flora, we interested in this ethnobotanical study to two species frequently used by the population local for their virtues: *Vitex agnus castus* of the *verbenaceae* family, commonly called kharwaâ and the other spèce was *Anabasis aretiodis* of the *chenopodeaceae* family, knowed as Shejra li maidihach errih name.

For this reason, a series of ethnobotanical surveys was carried out in 2015, using a questionnaire, in three regions (Meknes Tafilalet, Gharb Chrarda Bni Hssen, and Rabat Sale Zemmour Zaer). Traditional herbalists and druggists in order to give the information about the medicinal virtues of these plants.

The results obtained shown that the leaves are the most used part of the both plants, moreover the majority of the remedies are prepared in the form of decoction for *Anabasis* and in powder form for *Vitex*.

The diseases treated by these plants were diseases of the digestive tract occupied the first place for *Anabase* with a rate of 27.67%, followed by use as poison antidotes with a rate of 20.67%. Fur ther more, for *Vitex* the genitourinary affections occupied the first place with a rate of 46.67% followed by dermatological affections with a rate of 20%.

Keywords

Vitex agnus castus, *Anabasis aretiodis*, Ethnobotanical, survey, Traditional medicine.

INTRODUCTION

Throughout the ages, the man has been able to rely on nature to provide for his basic needs: food, shelter, clothing and also for his medical needs. The therapeutic use of the extraordinary virtues from plants for the treatment of all diseases of man was a very ancient and it evolved with the history of mankind. Although a several years of the 20th century was devoted to the development of synthetic molecules, the search for a new active pharmacological agents by screening of natural sources, resulted the discovery of a large number of useful drugs that begin a major role player in the treatment of many human diseases[1].

Worldwide, 80% of the population uses medicinal plants to treat themselves due to the lack of access to the medicines prescribed by the modern medicine. However, we cannot deny that these plants have often a real effectiveness.

Today, the knowledge of the traditional practitioners was less and fewer transmitted tends to disappear. For this reason the ethnobotany and ethnopharmacology were working to identify, a throughout the world, the various plants knowing to be active, and it was necessary for the modern research to specify and validate their properties uses [2].

In this context we interested to studying the *Vitex agnus castus* plant (*verbenaceae*), from the Sidi Kacem region, more precisely next to Oued Baht which corresponds to the following coordinates: latitude: 34°.13'.00 "North, longitude: 5°.42 '00 "West, altitude: 194 m and studying also, the *Anabasis aretioides* plant (*chenopodiaceae*) from the Errachidia region which corresponds to the following coordinates: latitude: 31°.55'55" North, longitude: 4°.25'28"West, altitude: 1029 m.

Anabasis aretioides is an endemic plant [3], commonly called sella, lkarma lima ydiharih and cauliflower bouamama, it is a dwarf shrub, forming a very dense hemispherical cushions getting up to 2 m in diameter. The leaves are many, very tight and tough, becoming whitish by drying. The solitarily flowers and sessile bearded 5 stamens and an ovoid ovate attenuated in a short style. Flowering takes place in autumn. The fruit compressed dorsally, it is an achene surrounded by a small transparent wings of the perianth persistent. According to the survey, the *Anabasis* plant used in the treatment of diseases of the digestive tract, diabetes, rheumatism and as poison antidote.

The *Vitex agnus castus*, plant commonly called kharwaa sabra and hab el faqad, is a deciduous shrub which that reaches a height than 5m. The leaves are opposite, with an elongated petiole, composed from five to seven radiating leaflets, with they are supported on a principal stem. The green leaflets are linear, lanceolate, toothed, dark on the top and gray to the below. The flowers are perfumed, blue, lilac, pink or white. The berries resemble to the peppercorns, hard, from a purple to a black skin, yellowish on the inside, half covered by their green sage-calyces and containerized four seeds. The smell is aromatic and spicy, the flavor becomes warm and singular after maturation [4-5].

Following to the survey, the *Vitex* used in several therapeutic diseases, including constipation, rheumatic diseases, headaches, regulation of the rule, sterility, hemorrhoids, thyroid, also the dermatological diseases (Black spots on the face, hair loss ...).

The purpose of this study and specifically in these regions is to contribute to a better knowledge and familiarity with these medicinal plants, in order to gather as greatly information as possible about the therapeutic uses practiced by the population and to know the most used part of the plant.

I. MATERIAL AND METHODS

Description of study areas:

The Gharb region Chrarda Beni Hssen located in the north-western part of the Kingdom. It is bounded to the west by the Atlantic Ocean, in the north by the region of Tangier Tetouan, to the east by the two regions of Taza Al Hoceima Taounate and Fez Boulemane, and in the South by the regions of Meknès Tafilalet and From Rabat Salé Zemmour Zaër. It covered about 8,805 km², or nearly 1.23% of the area of Morocco. Its population, estimated at 1.625.082 (6.2% of the national population), distributed, according to the last administrative division, through two provinces (Kenitra and Sidi Kacem), comprising 12 municipalities, 61 rural communes and an urban community.

For the natural environment conditions, the region characterized by a temperate Mediterranean climate. Average annual rainfall is a 600 mm in coastal and mountainous areas, and decreases as they move south-east, where they do not exceed a 450 mm. The recorded rainfall concentrated in the period from the end of November to the end of March. The temperature is tempered by the maritime proximity and vary from 13°C during the winter to 26°C during the summer (the temperatures quoted are seasonal averages). However, during the chergui periods, the temperature value closed to 50°C [6].



Region of Gharb Chrarda Beni-Hssen (<http://www.mapsdumaroc.com/region-gharb-chrarda-beni-hssen.html>)

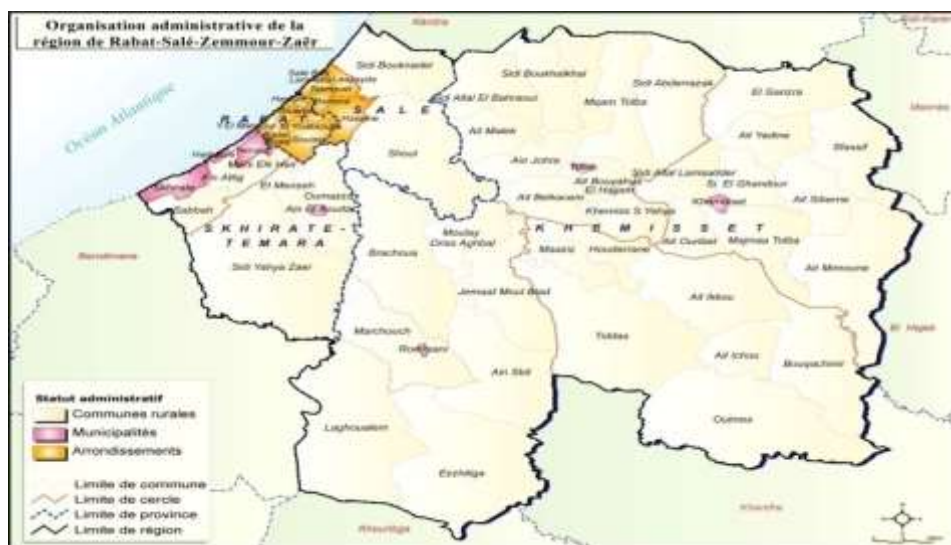
The Meknes Tafilalet region is one of the 16 regions of the Kingdom since to the 1996 regional division, which has consecrated the region as a local authority. It was succeeded to the 1971 division where the region knew as the Central-

South Economic Region. The region currently has a prefecture Meknes considered as a capital of the four provinces (El Hajeb, Ifrane, Khenifra and Errachidia). It extended from the south-east to the north-west of the Kingdom and covered an area of 79.210 km², or 11.1% of the national territory and is characterized by a diversity of physical environments and natural conditions [7].



Region of Meknes Tafilalet(<http://www.mapsdumaroc.com/region-13-meknes-tafilalet.html>)

The Rabat Sale Zemmour Zaer region is limited to the north: by the Rharb region CherrdaBaniHssen, on the west: by the Atlantic Ocean, to the east: by the region of Meknes Tafifalet and in the south: by the region of Chaouiya Ouedrigha. The Rabat Sale Zemmour-Zaer region is characterized by the relatively favorable climatic conditions. The geographical distribution of temperatures and precipitation is influenced by the latitude, the distance from the ocean and the altitude [8].



Region of Rabat Sale ZemmourZaer (<http://www.mapsdumaroc.com/Region of Rabat Sale Zemmour Zaer.html>)

The ethnobotany study method: by focusing on the two plants mentioned above, their identification are carried out in the laboratory "of biodiversity and natural resources" of the faculty of sciences of Kenitra. And the ethnobotanical surveys of the both plants are carried out using a questionnaire (appendix1) of 300 cards in the 2015 year. During this year, meetings were held with herbalists, traditional healers, druggists and all people using the Medicinal plants in these areas to acquire the information about their therapeutic uses. The choice of these study areas is drawn randomly (see Table 1). The time spent for each interview was about 15 minutes. At each interview, all information is gathered, i.e. sex, academic level, therapeutic uses, the part used, the toxicity and the preparation mode. The information of the ethnobotanical records is transferred to a database, processed and analyzed to obtain a standardized data.

Table 1: Distribution of the investigations by region.

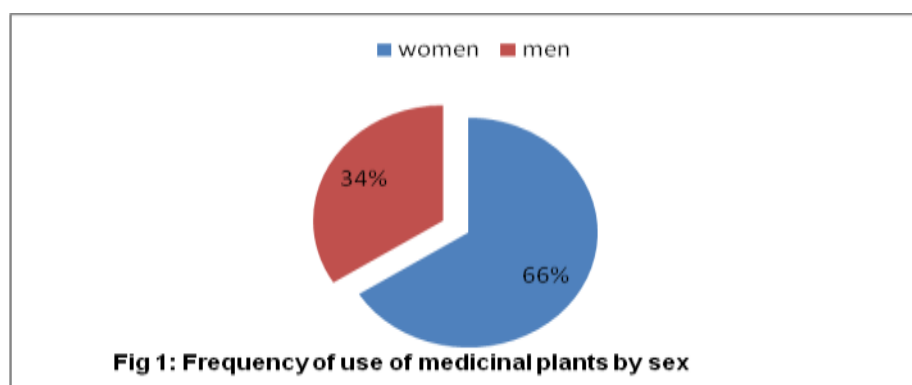
| Région | Zone Name | Number of Surveys | Contact Information |
|-----------------------------------|------------------------|-------------------|------------------------------------|
| Region of Meknes Tafilalet | Meknes | 20 | 33° 53' 42" North, 5° 33' 17" West |
| | Azrou | 20 | 33° 26' North, 5° 13' West |
| | Ifrane | 20 | 33° 32' North, 5° 06' West |
| | Errachidia | 20 | 31° 55' 55" North, 4° 25' 28" West |
| | El hajeb | 20 | 33° 41' 45" North, 5° 22' 00" West |
| Region of Gharb-Chrarda-BeniHssen | Kénitra | 20 | 34° 15' 00" North, 6° 35' 00" West |
| | Sidi kacem | 20 | 34° 13' 00" North, 5° 42' 00" West |
| | Sidi slimane | 20 | 34° 16' North, 5° 55' West |
| | Machra bel ksiri | 20 | 34° 34' 00" North, 5° 57' 00" West |
| | Souk el arbaa du gharb | 20 | 34° 41' North, 5° 59' West |
| Region of Rabat Sale Zemmour Zaer | Rommani | 20 | 33° 32' 00" North, 6° 36' 00" West |
| | Skhirat | 20 | 33° 51' 13" North, 7° 02' 08" West |
| | Rabat | 20 | 34° 01' 31" North, 6° 50' 10" West |
| | Tiflet | 20 | 33° 53' 35" North, 6° 18' 25" West |
| | Khemisset | 20 | 33° 49' 00" North, 6° 04' 00" West |

II. RESULTS AND DISCUSSION

The different results are presented in the form of graphs, realized by the computer processing and general analysis of the questionnaires grouped according to the answers of the traditional practitioners.

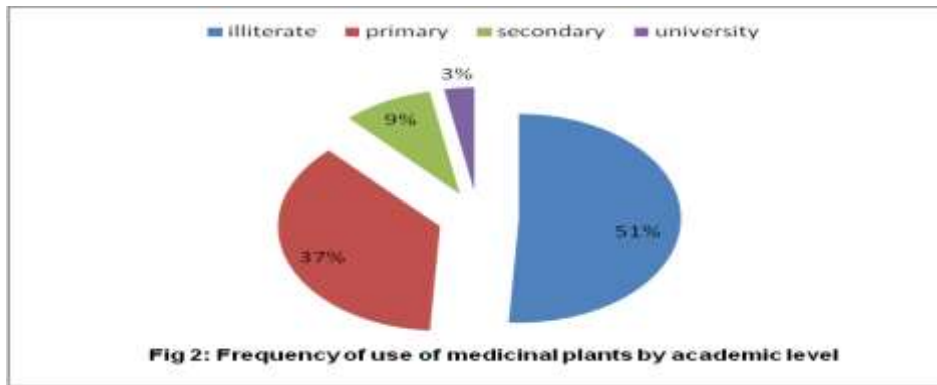
II. 1 Use of medicinal plants by the sex parametre

At the scale of the study areas, both women and men sexes are seduced by medical plants. In the three regions, the most traditional medicine practiceants were men. However, the users were a 66% of women and just 34% a men (Figure 1). This can be due to the fact that a woman was traditionally the repository of the secrets of medicinal plants, heir of a rich family knowledge, through to the transmission of information. These results consistent with those obtained by Benkhnigue in the region of Mechraâ BelKsiri [9] and by Mehdioui and Kahouadji in the forest of Amsittène (Province of Essaouira) [10].



II. 2 Use of Medicinal Plants by Academic Level

Among to the users of the traditional medicine, the illiterates person dominated with Percentage of 51% (Figure 2) is followed by the primary category with a 37% percentage. Nevertheless, people with secondary and university level used medicinal plants littly, with a percentage of 9% and 3% respectively. This confirms those obtained by Hseini and Kahouadji [11].

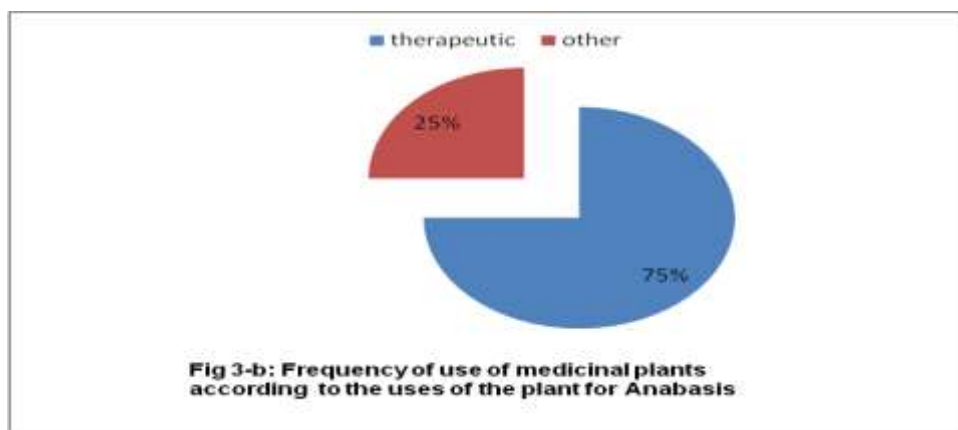
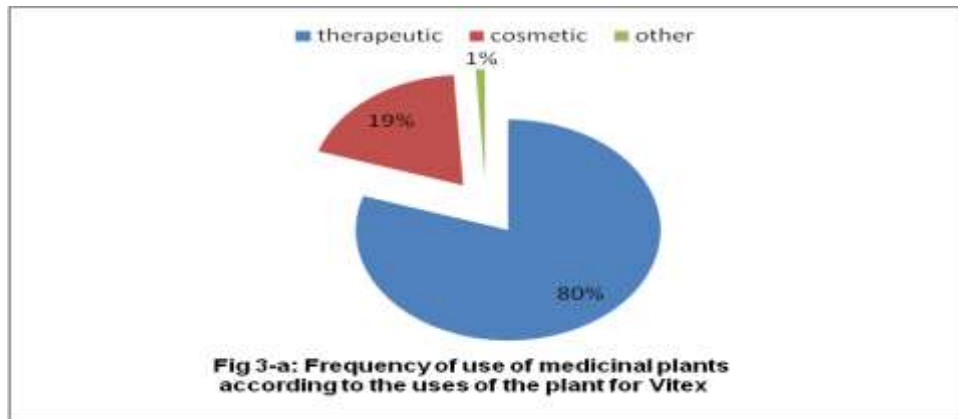


II. 3 Use of medicinal plants according to the uses of the plant

Vitex agnus castus and *Anabasis aretioides* considered as a two excellent medicinal herbs, proved by the obtained results from its therapeutic use 80% and 75% respectively for *Vitex* and *Anabasis* (see Figure 3).

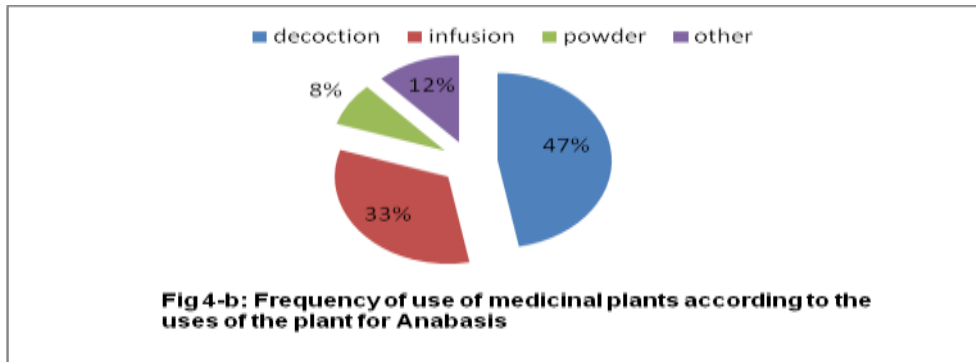
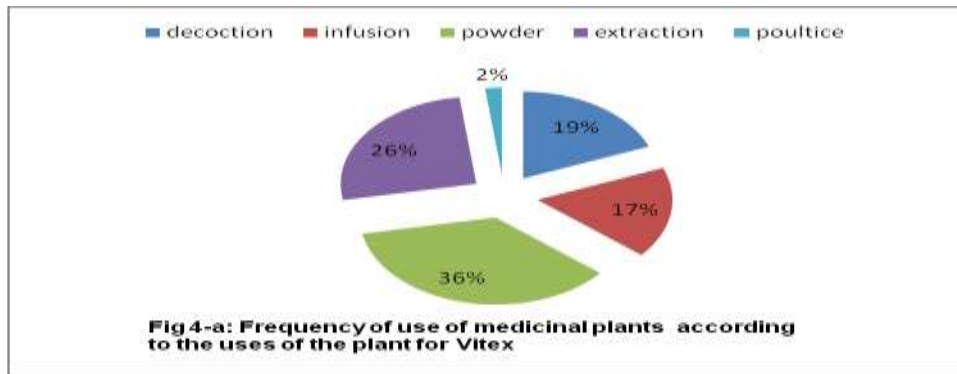
Vitex used to treat the constipations, rheumatism, regulation of rules, infertility, hemorrhoids and thyroids. Fur ther more, *Anabasis* used in the digestive devices, as a poison antidote, rheumatism and in the diabetes treatments.

Moreover, the *Vitex* plant also used with a rate of 19% in the preparations of some cosmetic products such as essential oils for massage, face and hair (fig 3-a). However, no cosmetic use has been registered for *Anabasis* plant. The "other" category use was presented in the graphic with a percentage of 25% and 1% for *Anabasis* and *Vitex*, respectively (Figure 3-b).



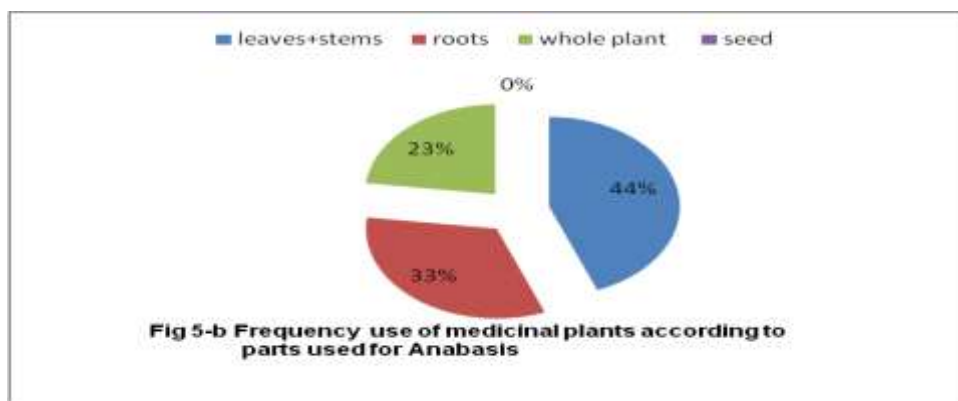
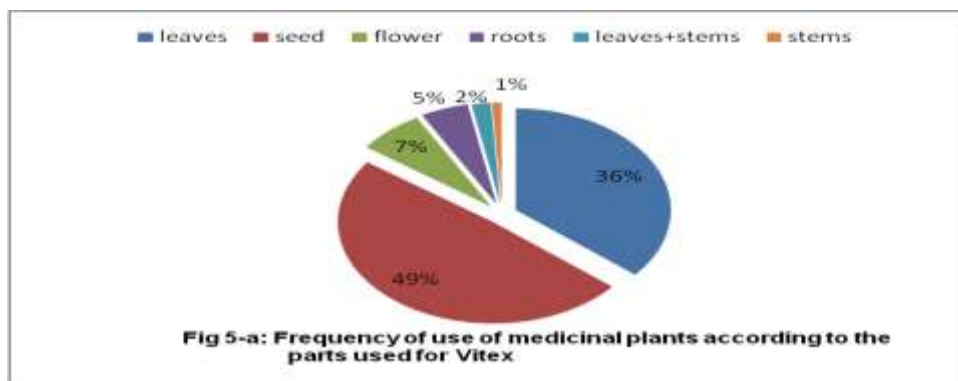
II. 4 Use of medicinal plants according to methods of preparation

The different therapeutic practices used by the local population of these regions, namely decoction, infusion, powder preparation, poultice and extraction of essential oils. The decoction was the most frequent preparation mode with a rate of (47%) for *Anabasis* (Figure 4 - b) followed by infusion (33%), powder (8%) and other preparations (12%). For *Vitex*, powder preparation was the most currently use with a rate of (36%) followed by extraction of oils (26%), decoction (19%), infusion (17%) and poultice (2%) (Figure 4-a). It is frequency reported that the decoction extraction makes it possible to collect the majority of active ingredients and to mitigate the toxic effect of some recipes [12].



II. 5 Use of medicinal plants according to the part used

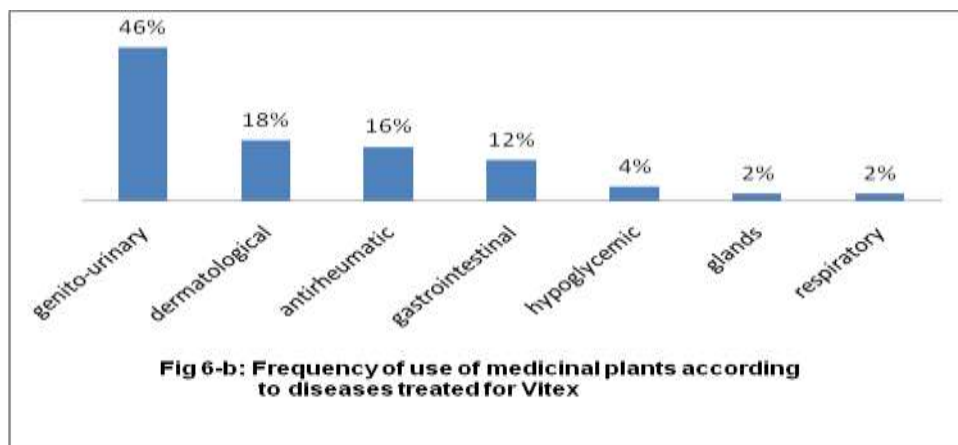
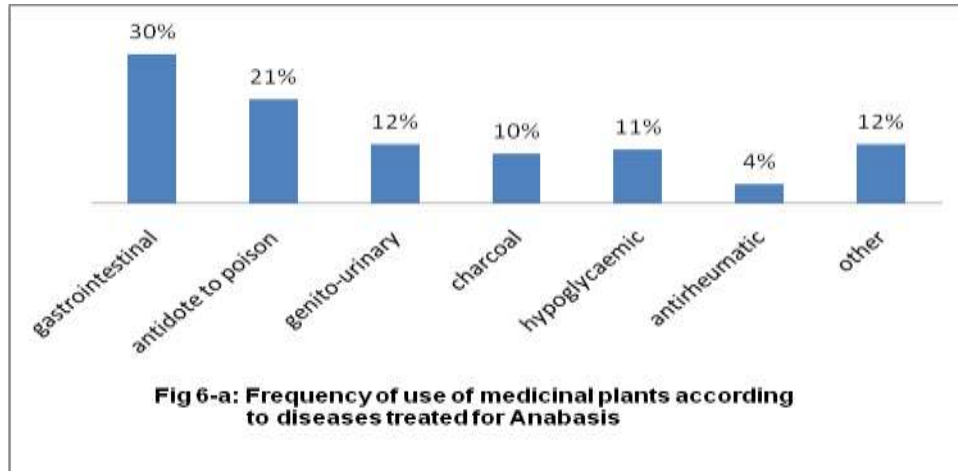
The 7 parts of the plant are used in traditional medicine including leaves, leaves + stems, seeds, stems, flower, roots and whole plant, the plant parts used are ranked in order of importance. For the Vitex plant we noted that the most used parts: seed with (49%), leaves (36%), flower (7%), roots (5%), leaves + stems (2%), stems (1%) (Figure 5-a), regarding Anabasis, we noted that: leaves + stems (44%), roots (33%), whole plant (23%), Seed (0%) (Figure 5- b). The high frequency use of the leaves can be attributed to the ease and rapidity of their harvest [13], also by the fact which they are the site of photosynthesis and sometimes responsible for the storage of the secondary metabolites of the active properties from the plant [14].



II. 6 Use of medicinal plants according to the type of disease treated

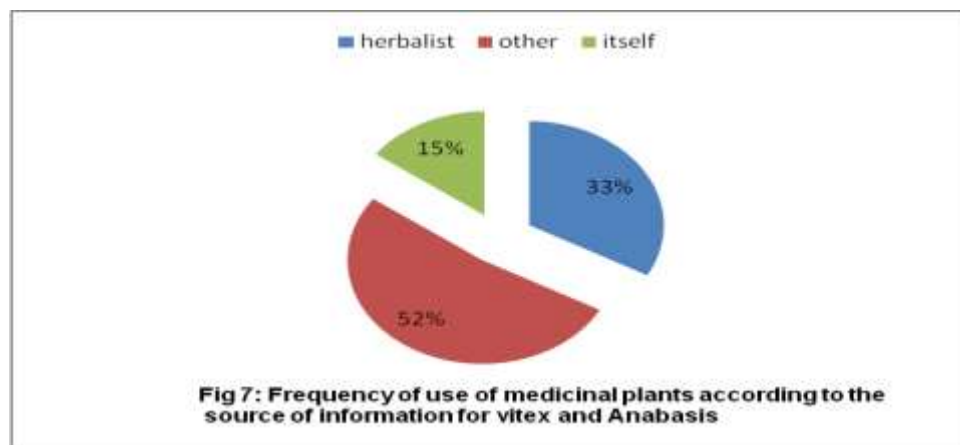
The ethnobotanical analysis of the information collected in the Figure 6-a , we allowed to listed a number of diseases treated by the medicinal plants. The results show that the Anabasi used mainly against the diseases of the gastrointestinal tract, with a 30% of percentage value ,as an antidote to poison (21%), a genito-urinary disorder (12%), charcoal (10%), hypoglycaemic (11%), antirheumatic (4%) and other uses (12%).

Vitex employed against the genito-urinary disorders with a percentage value of (46%) followed by dermatological (18%), antirheumatic (16%), gastrointestinal (12%), hypoglycemic (4%), glands and respiratory conditions (2%) in the equal amounts (Figure 6-b). These results confirmed by the results previously obtained by Bentabet, L [15] for the Anabasis plant.



II. 7 Origin of information on the use of medicinal plants

The 52% amount of the population used for studying the three regions, showed that the number of people using these plants as a cure for diseases referred to the experience from others people (see Figure 7), reflecting to the transmission of traditional practices While a 33% of this population speaks to herbalists and 15% of people refer to themselves either on the basis of documentary television programs or in the books.





Vernacular name:
Scientific name:

Type of plant:

Wild Cultivated Weed

Usage of the plant:

Therapeutic Cosmetics Other

Harvest Technique:

Manual Mechanical

Moment of harvest (season):

Plant alone Association possible (of plants)

State of the plant:

Fresh Desiccated After treatment

If dried, drying method:

Part used: Stem Flowers Seed Bark Leaf + Stem Root Leaves Whole plant
Other combinations

Form of use:

Herbal tea Powder Essential oils Fat oils Extract (dye, solution, capsule)

Method of preparation:

Infusion Decoction Poultry Raw Cooked Powder Extraction of essential oils

Method of administration:

Oral Massage Rinsing Pigging Other

Dosage: number taken per day

For children: 1 time / day 2 times / day 3 times / day Other

For the elderly: 1 time / day 2 times / day 3 times / day Other

For Adults: 1 time / day 2 times / day 3 times / day Other

Duration of use (duration of treatment): One day One week One month Until cure

Storage method:

Protected from light Exposed to light Other

Use :Type of disease:

Dermatological disorders Digestive tract disorders
Respiratory disorders Gland disorders
Cardiovascular disorders
Genitourinary disorders Neurological disorders
Rheumatic disorders
Metabolic disorders

Diagnosis By:

Himself The herbalist Others

Results:

Healing Improvement Ineffective

Side effect:

Toxicity:

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