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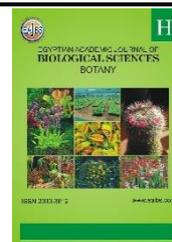
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A Study of Medicinal Plants in Tuz Area in The Middle of Iraq

Hemin Rizgar Kareem and Yaseen Mohammed Ahmed

Department of Biology, College of Science, Tikrit University.

*E-mail: heminrizgar96@gmail.com

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ABSTRACT

The current investigation was a survey study of medicinal plants in Tuz area in Salah Al-Din(Tikrit) district, From the beginning of November 2021 until the end of June 2022, It was recorded 34 plant species, which they belong to 21 botanical families. The species were compared with the Flora of Iraq, and it was found that five species *Capparis spinosa*, *Conyza bonariensis*, *Portulaca oleraceae*, *Carthamus oxyacanthus* and *Allium roseum* L. which were recorded in the area did not mention by the Flora. The present study found two species *Alhagi maurorum* and *Prosopis farcta* which that more prevalent in the study area, and two species *Achillea aleppica* and *Salvia lanigera* which that they were a rarity. The anatomical study showed the shapes and colours of pollen grains for some limited species which they recorded in the study area.

INTRODUCTION

Since the old-time human tried to use plants for healing and use them as a food until they were planted and used them as food, and at other times as medicine for treatment, and with this he accumulated knowledge of many healing properties throughout the ages (AOAD, 1988). There is no doubt that all civilizations showed great interest in medicinal plants after realizing their therapeutic value, as plant medicines were used in China around (4000-5000) years BC, and around the year 24 AD the Chinese began making tea from the plant known as *Camellia sinensis*, and they use soaking it for therapeutic purposes (Al-Katib,1988). Medicinal plants are currently used in many fields, including the preparation of medicines from the active substances found in the parts of medicinal plants, including medicines to relieve rheumatism, infections, joint pain, and drugs for atherosclerosis and high blood pressure, blood pressure and as an antiseptic (Al-Rawi,1966; Farzaei *et al.*,2016; Hassan *et al.*,2017; Stevenson,2019). Many medicinal plants are used in the preparation of some daily drinks such as coffee, tea and cocoa (Rahman *et al.*,2019). Many medicinal plants are grown to provide animal fodder such as *Medicago sativa* and *Zea mays* (Pliego *et al.*,2022). It also plays an important role in home and garden decoration (Fatah,2003). Medicinal plants are used in the production of some medicinal preparations, such as the production of fixed oils, which are some of these plants whose seeds contain fixed oils, and produce nutrients from the active substances present in the parts of the plant, and prepare a cosmetic solution, made with effective ingredients such as hair creams, powders, and soaps

(Zahid *et al.*,2016). Some of these plants are used in the manufacture of perfumes and scents, such as the jasmine plant (Hassawy *et al.*,1968). Insecticides that depend on what is found in these medicinal and aromatic plants also produce toxins that kill fungi and insects and given the importance of using plants in medicines (Yazdanshenas *et al.*,2016).

The study deals with the presence of these different types of medicinal plants in the Tuz area in Iraq, where the study aims to the following:

1. Identify the types of medicinal plants found in the study area.
2. Comparing the plants of the current study with the medicinal plants recorded in the Iraqi flora in the study area.

MATERIALS AND METHODS

Field visits were conducted according to the year's seasons to record and collect plant species in the study area by random squares method. From the beginning of November 2021 until the end of June 2022, fresh plant samples were collected during the survey process in the fruiting and flowering stages. These plant samples were placed in the herbarium of Tikrit University/ College of Science (TUH); a Novex optical microscope, an Olympus anatomical microscope, and a SONY Cyber-Shot T 700 digital camera were used.

RESULTS AND DISCUSSION

Survey Study:

The types of Medicinal plants recorded in this study were classified into 21 plant families, including 34 species of medicinal plants during the study period (Tables 1,3 &5) . The largest number of plants was recorded in the spring, reaching 23 species (Figs. 4,5 &6) and 8 plant species were recorded in the Autumn(Fig. 3) while in the summer, only 3 species were recorded (Figs. 1 &7). This is because it rains more in the spring and less rain in the summer and autumn, As the rainfall ranges between 200-500 mm per year in the area(Güneş *et al.*,2017). It was found that the family Asteraceae was more prevalent in the study area (Fig. 2), and the results showed that annual plants were more prevalent in the region at 88% and perennials at 12%. It was found that the two species, *Alhagi maurorum* and *Prosopis farcta*, were more prevalent in the study area. also, the two species *Achillea aleppica* and *Salvia lanigera*, were rare in the study area(Paksoy *et al.*,2016). When comparing the plant species recorded in the study area with the Iraqi flora was found that the *Capparis spinosa*, *Conyza bonariensis*, *Portulaca oleraceae*, *Carthamus oxyacanthus* and *Allium roseum* L. were not mentioned by the Iraqi flora in this district (Tables 2,4 &6).

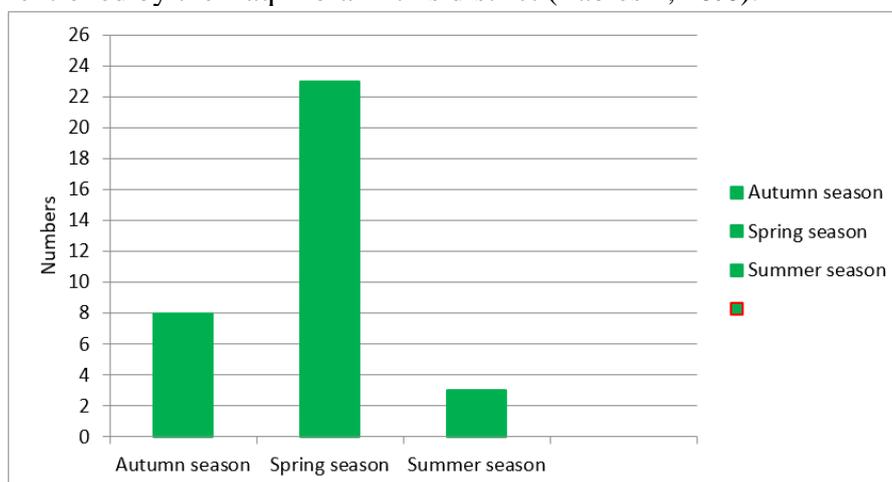


Fig. 1: Number of Medicinal plants recorded during the seasons of the study.

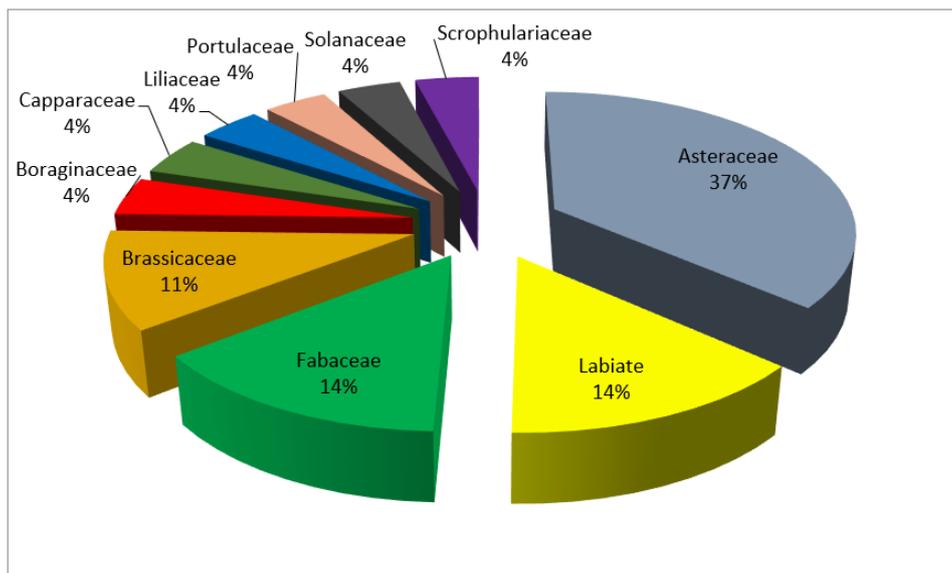


Fig.2: Relative distribution of ten botanical families that are more prevalent in the study area.

Table 1: The Medicinal plants recorded during the Autumn in the study area.

S.	Family	Species
1	Capparaceae	<i>Capparis spinosa</i>
2	Composite(Aesteraceae)	<i>Conyza bonariensis</i>
3	Labiate (Lamiaceae)	<i>Mentha longifolia</i>
4	Portulacaceae	<i>Portulaca oleraceae</i>
5	Scrophulariaceae	<i>Verbascum sinuatum L.</i>
6	Solanaceae	<i>Physalis angulata L.</i>
7	Tamaricaceae	<i>Tamarix aphylla</i>
8	Verbenaceae	<i>Vitex agnus castus L.</i>

Table 2: Comparison of Medicinal plants recorded during the Autumn with the Iraqi flora in terms of their recordation.

S.	Species	Its recordation in the studied the district within Iraqi flora
1	<i>Capparis spinosa</i>	Non-Recorded
2	<i>Conyza bonariensis</i>	Non-Recorded
3	<i>Mentha longifolia</i>	Recorded
4	<i>Portulaca oleraceae</i>	Non-Recorded
5	<i>Verbascum sinuatum L.</i>	Recorded
6	<i>Physalis angulata L.</i>	Recorded
7	<i>Tamarix aphylla</i>	Recorded
8	<i>Vitex agnus castus L.</i>	Recorded



Fig. 3: Medicinal plants recorded during the Autumn in the study area

Table 3: The Medicinal plants recorded during the Spring in the study area.

S.	Family	Species
1	Asteraceae(Composite)	<i>Achillea aleppica</i> <i>Calendula arvensis</i> <i>Carthamus oxyacanthus</i> <i>Centaurea bruguieriana</i> <i>Centaurea hyalolepis</i> <i>Gundelia tournefortii L.</i> <i>Matricaria aurea</i> <i>Scrozonera papposa</i> <i>Silybum marianum</i>
2	Amaryllidaceae	<i>Allium roseum L.</i>
4	Boraginaceae	<i>Anchusa strigosa</i>
5	Brassicaceae(Cruciferae)	<i>Diplotaxis eruroides</i> <i>Eruca sativa L.</i> <i>Sisymbrium irio L.</i>
6	Fabaceae(Leguminosae)	<i>Astragalus fasciculifolius</i> <i>Trifolium tomentosum L.</i>
7	Fumariaceae	<i>Fumaria parviflora</i>
8	Geraniaceae	<i>Erodium cicutarium L.</i>
9	Iridaceae	<i>Gladiolus atrovioleaceus</i>
10	Labiatae(Lamiaceae)	<i>Salvia lanigera</i> <i>Salvia verbenaca L.</i> <i>Teucrium polium L.</i>
11	Liliaceae(Asparagaceae)	<i>Muscari comosum L.</i>

Table 4: Comparison of Medicinal plants recorded during the Spring with the Iraqi flora in terms of their recordation.

S .	Species	Its recordation in the studied the district within Iraqi flora
1	<i>Achillea aleppica</i>	Recorded
2	<i>Calendula arvensis</i>	Recorded
3	<i>Carthamus oxyacanthus</i>	Non Recorded
4	<i>Centaurea bruguieriana</i>	Recorded
5	<i>Centaurea hyalolepis</i>	Recorded
6	<i>Gundelia tournefortii</i> L.	Recorded
7	<i>Matricaria aurea</i>	Recorded
8	<i>Scrozonera papposa</i>	Recorded
9	<i>Silybum marianum</i>	Recorded
10	<i>Allium roseum</i> L.	Non Recorded
11	<i>Anchusa strigosa</i>	Recorded
12	<i>Diploaxis erucoides</i>	Recorded
13	<i>Eruca sativa</i> L.	Recorded
14	<i>Sisymbrium irio</i> L.	Recorded
15	<i>Astragalus fasciculifolius</i>	Recorded
16	<i>Trifolium tomentosum</i> L.	Recorded
17	<i>Funaria parviflora</i>	Recorded
18	<i>Erodium cicutarium</i> L.	Recorded
19	<i>Gladiolus atroviolaceus</i>	Recorded
20	<i>Salvia lanigera</i>	Recorded
21	<i>Salvia verbenaca</i> L.	Recorded
22	<i>Teucrium polium</i> L.	Recorded
23	<i>Muscari comosum</i> L.	Recorded

**Fig. 4:** Medicinal plants recorded during the Spring in the study area.



Fig.5: Medicinal plants recorded during the Spring in the study area.

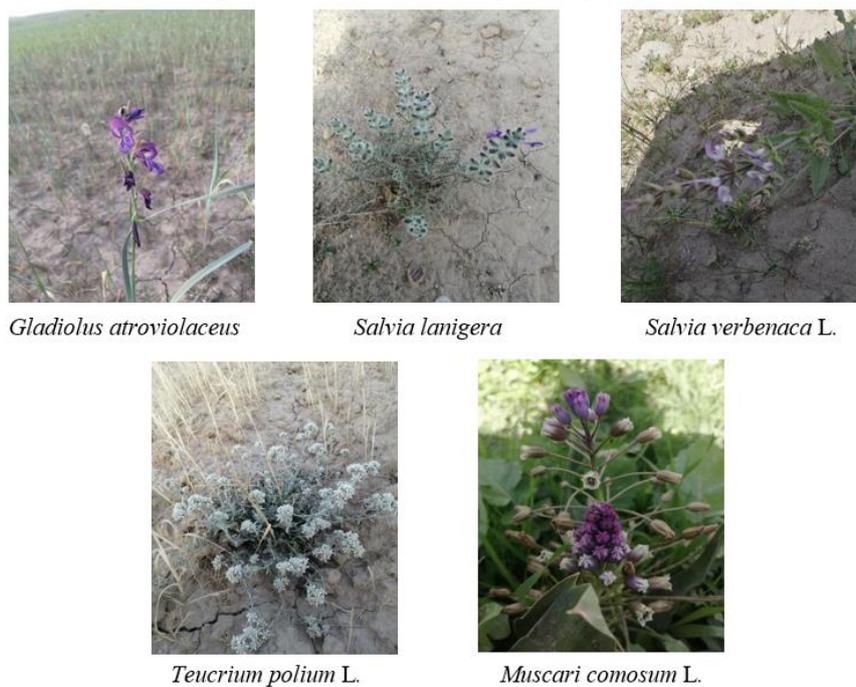


Fig.6: Medicinal plants recorded during the Spring in the study area.

Table 5: The Medicinal plants recorded during the Summer in the study area.

S.	Family	Species
1	Asteraceae(Composite)	<i>Echinops fraudator</i>
2	Fabaceae (Liguminosae)	<i>Alhagi maurorum</i> <i>Prosopis farcta</i>

Table 6: Comparison of Medicinal plants recorded during the Summer with the Iraqi flora in terms of their recordation.

S.	Species	Its recordation in the studied the district within Iraqi flora
1	<i>Echinops fraudator</i>	Recorded
2	<i>Alhagi maurorum</i>	Recorded
3	<i>Prosopis farcta</i>	Recorded

*Echinops fraudator**Alhagi maurorum**Prosopis farcta***Fig. 7:** Medicinal plants recorded during the Summer in the study area.**Anatomy Study:****Palynology Study:**

The pollen grains varied in terms of shape and color; it was clarified in this study by the shape and color and for some plant species recorded in the study area, that the pollen grain is elliptical in the species *Alhagi maurorum* and *Capparis spinosa* and oblate in *Physalis angulata* L. and rod-shaped in *Anchusa strigosa* (Bowden,1969;(Figueiredo *et al.*,2020; Keshavarzi *et al.*,2017; Tanaomi *et al.*,2018; Silva, 2015)(Figure 8). Regarding color, pollen grains were white in two species *Alhagi maurorum* and *Capparis spinosa*, green in *Physalis angulata* L. and yellow in *Anchusa strigosa* (Chakravarty,1976; Guest&Rawi,1966; Kantsa *et al.*, 2022; Silva, 2015).

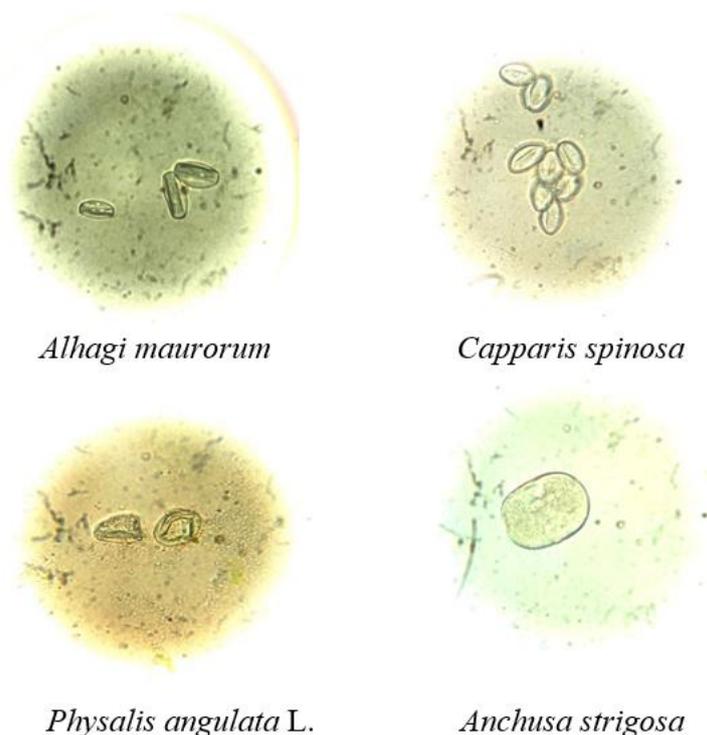


Fig. 8: Pollen grains in some species recorded in the study area, (100 X).

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