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Original article

Checklist of Poisonous Plants of Cyrene (*campus apollo*) Shahat-AL-Jabal AL-Akhdar, Libya

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ABSTRACT

Aims. *This study's primary goal was to identify the poisonous plants of Cyrene (campus Apollo) Shahat- AL-Jabal AL-Akhdar, Libya.* ***Methods.*** *The study was conducted between October 2021 to May 2023. The plant specimens were gathered when they were either in blossom or fruiting . A variety of data has been recorded, including family, scientific name, local name, life form, and used portion.* ***Results.*** *According to the study, there are 50 different species of poisonous plants, arranged in 41 genera and 27 families. Two families belonging to Gymnosperms and remaining 25 families are belonging to Angiosperms. Dicotyledons are represented by 39 species 2 sup species 33 genus 20 families. Monocotyledons are represented by 6 species 6 genus 5 families. There were 20 species of Therophytes, which were the most common life forms among the poisonous plants species (40%) followed by Geophytes 9 species (18%), Phanerophytes 8 species (16%), Nano-phanerophytes 6 species (12%), Chamaephytes 5 species (10%), and Heleophytes 2 species (4%).*

Conclusion. *This study is considered the first of its kind to document poisonous plants in the region, and to prepare a list of them, as they have not been studied before, and came to fill the lack of information.*

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INTRODUCTION

A World Health Organization (WHO) study report states that around 80% of people in developing nations receive their main medical care through traditional medicine [4]. Because of their medical qualities, most plant products are physiologically and pharmacologically beneficial, but others are harmful to people and animals because of their byproducts [3]. Medicinal plants include a wide variety of secondary metabolites that protect them against adverse conditions, including glycosides, alkaloids, phenolics, flavonoids, and terpenoids [5]. These plants, which are widely distributed and utilized by native populations for therapy of different ailments, are known as poisonous plants due to their toxic qualities [6, 7].

The presence and concentration of chemical substances, the age of the plant, the use of its parts, the stage at which its fruits are ripening, the type of soil, temperature, humidity, etc. are some of the variables that affect a species' toxicity, which varies from species to species [8]. Ingesting toxic substances internally, absorbing them through the body, touching them and irritating the skin, or breathing them in through the respiratory system are all ways that toxins can enter the body [9]. Certain harmful substances can even be utilized to cure illnesses in people successfully [10]. Certain portions of poisonous plants, such as shoots, leaves, blossoms, seeds, bark, or even latex, might be toxic in certain situations, while in others the entire plant is [11] hazardous. The identification and use of plants for therapeutic reasons has been aided by ongoing study and advancements in plant understanding [12]. and their profiles of toxicity [13]. The majority of people are unaware of how poisonous most of the nearby plants are, which may be dangerous if they come into touch with them or even consume them. When animals inadvertently graze on most toxic plants, they

become poisoned [14]. Therefore, the greatest method to reduce unintentional poisoning from toxic plants is to educate people about the detrimental effects that plants have on humans and other animals, as well as their toxicity.
Al-Jabal Al-Akhadar has a unique, relatively high biodiversity that acts as a refuge for many species such as birds and wild animals . The background of the area shows that it was free of all natural resources except natural vegetation because it was relied on for the livelihood of the local population. Many plant species were a source of food and medicine for peopleThe main activities throughout history have been grazing, gathering wood for fuel, honey production for bees, gathering medicinal species and wood products. In fact, the study area is rich in medicinal and aromatic species, some of which are poisonous plants.
Cyrene is located about 10Km east of the city of Al-Bayda, in the north east of Libya [15]. It is found on the second terrace of Al- Jabal Al- Akhdar, at an elevation of around 600 meters, this historic city was established in 631 BC by Greek dealers who frequented the coasts of eastern North Africa [16]. It is regarded as one of the most beautiful spots in the world, having been placed first at the London International Tourism Fair. It was the home of the now- extinct silphium plant, which had tremendous medical and economic value [15]. This study came to fill the lack of information and aims at the initial inventory of the types of poisonous plants in the region, defining them, preparing a list of them, and distributing these species within groups such as species, genera, and forms different life.

METHODS

The study area

Cyrene is situated in the city of Shahat, which is located east of the city of Al-Bayda, 10 km away in the north-east of Libya. [15]. Its area is about 11,306561 hectares, and the height is between (555: 578) meters .It lies between N 32 49°′23.952” E21°51′11.1888”. Latitude on the North East region, Al Jabal Al-Akhdar. (Figure 1).

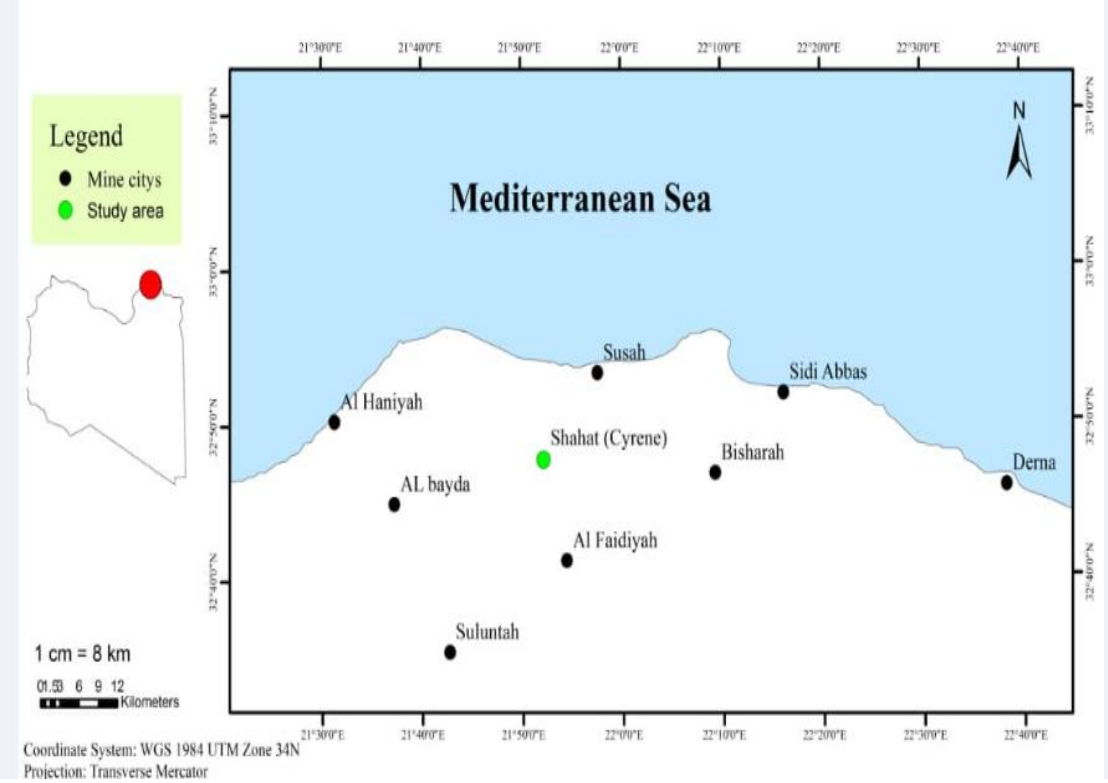

Figure 1. The study area

Specimen Collection and Identification

In order to determine the vegetation cover, the study area was visited throughout the year (2021–2022). Poisonous plants were counted and recorded scattered in this area and pictures were taken of the types of plants present.
The samples were dried for two weeks with presses, plant samples were preserved in a weed leaf by glue. The plant samples were identified in the Silphium herbarium, Botany Department, Science Faculty, Omar Al-Mukhtar University , using the Libyan Flora Books.

RESULTS

The results of preliminary survey of Shahat, AL-Jabal AL-Akhdar show that the area has flora of 50 species of flowering plants distributed in 41 genera and 27 families, two families were Gymnosperms, and the other 25 families were Angiosperms. Dicotyledons were addressed by 39 species 2 sup species 33 genus 20 families, Monocotyledons were represented by 6 species 6 genus 5 families. Our results showed that the most representative life forms of poisonous plants were therophytes with 20 species (40%), followed by geophytes with 9 species (18%), phanerophytes with 8 species (16%), and Nano-phanerophytes with 6 species (12%), Chamaephytes 5 species (10%), and Heleophytes 2 species (4%).

Table 1. Poisonous species, their life forms, and used part.

No.	Family	Scientific name	Life form	Local name	Used part	References
1.	Alliaceae	*Allium roseum* L.	G	Ghazul	Leaves and Bulbs.	Flora of Libya
2.	Amaryllidaceae	*Narcissus elegans* (Haw.)Spach.	G	Nargis	Bulbs	Flora of Libya
3.	Apocynaceae	*Nerium oleander* L.	N.Ph	Defla	The entire plant	Kotb, 1985
4.	Apiaceae	*Ammi majus* L.	Th	Khalla	Fruits when consumed in large quantities.	Flora of Libya
5.		*Thapsia garganica* L.	Ch	Derias	The entire plant	Flora of Libya
6.	Araceae	*Arisarum vulgare* Targ. Tozz.	G	Weden Essaloqi	Tuber	Flora of Libya
7.	Asteraceae	*Senecio leucanthemifolius* Poiret.	Th	Aloghwan	Leaves	El-Gadi 1989
8.		*Sonchus oleraceus L.*	Th	Tefaf	Milky juice.	Flora of Libya
9.		*Xanthium spinosum* L.	Th	--------	Seedling.	
10.	Boraginaceae	*Borago officinalis* L.	Th	Lesan Althawr	Consume a plant continuously for a long time.	Kotb 1985
11.		*Echium angustifolium* Mill.	Ch	Henna alagrab	Its barbed hairs spread throughout most of the plant are an obstacle to grazing animals and contain alkaloids.	Flora of Libya
12.		*E. sabulicola* Pomel.	Th	\\\\	\\\\	Flora of Libya
13.		*Heliotropium europaeum* L.	Ch	Ramram	Seeds and young shoots.	Flora of Libya
14.	Brassicaceae	*Sinapis alba* L.	Th	Khardal,	The entire plant, especially seeds and fruits.	Flora of Libya
15.	Capparaceae	*Capparis spinosa* L	H	Kabbar	Seeds and fruits	Flora of Libya
16.	Clusiaceae	*Hypericum triquetrifolium Turra*	H	Bugrat	The entire plant	Flora of Libya
17.	Cupressaceae	*Cupressus sempervirens. ver.horizontalis* (Mill.)Gordon	Ph	Al-sarow	leaves.	Kotb 1985
18.		*C. sempervirens* L. *ver. Sempervirens*	Ph	\\	\\\\\\	Kotb 1985
19.	Euphorbiaceae	*Euphorbia retusa* L.	N.Ph	Halablab	Milky juice	Flora of Libya
20.		*E.dendroides* L	N.Ph	Halablab	\\	Flora of Libya
21.		*E. peplus* L.	Th	Lebbena	The entire plant, especially milky juice	Kotb, 1985
22.		*Mercurialis annua* L	Th	Halbob	Milky juice and volatile oils.	Kotb, 1985
23.		*Ricinus communis* L	N.Ph	Kharwa	The seed.	Kotb, 1985
24.	Fabaceae	*Anagyris foetida* L.	Ph	Kharroub El-Klab	Toxic to humans and animals because it contains alkaloids Cytisine Anagyrine	Kotb, 1985
25.		*Lathyrus aphaca* L.	Th	Bega	The entire plant, especially seeds.	Kotb, 1985
26.		*Robinia pseudoacaia* L.	Ph	Chagarat	The inner shell of the stem,	Kotb, 1985

				Algarad	branches, tender leaves and seeds.	
27.	Iridaceae	*Iris sisyrinchium* L.	G	Kaab teeb	Rhizomes.	Flora of Libya
28.	Lamiaceae	*Rosmarinus offcinallis L.*	N.Ph	Kleel	Volatile oils.	Flora of Libya
29.	Lauraceae	*Laurus nobilis* L.	Ph	Ghar - Rand	Leaves when consumed in large quantities..	Flora of Libya
30.	Liliaceae	*Ornithogalum umbellatum* L.	G	-------	The entire plant, especially bulbs	Flora of Libya
31.		*Urginea maritima*(L.)Baker.	G	Faroon	The entire plant, especially bulbs	Flora of Libya
32.	Moraceae	*Ficus carica L.*	Ph	Karmus	Fruits and latex from the stems.	Kotb, 1985
33.	Oleaceae	*Olea europaea* L.	Ph	Zaitoon	Leaves.	Flora of Libya
34.	Oxalidaceae	*Oxalis pes-caprae* L.	G	Hommeida	The entire plant	Flora of Libya
35.	Papaveraceae	*Papaver rhoeas* L.	Th	Zeghalil	The entire plant	Kotb 1985
36.	Pinaceae	*Pinus halepensis* Mill.	Ph	Senouber	Leaves	Kotb 1985
37.	Polygonaceae	*Rumex pulcher* L.	Th	Hommadet Hmam	The entire plant	Kotb 1985
38.	Primulaceae	*Anagallis arvensis* L. *ver arvensis*	Th	Ain Algatuus	Roots and leaves.	Flora of Libya
39.		*Anagallis arvensis* L.*caerulea* (L.) Gouan	Th	\\	\\	\\
40.		*Cyclamen rohlfsianum* Aschers.	G	Rakaf	Tubers	Kotb 1985
41.	Urticaceae	*Urtica pilulifera* L.	Th	Horreiq	The bristles touched the body.	Flora of Libya
42.	Ranunculaceae	*Adonis microcarpa* DC.	Th	Ain el buma	Flowers, leaves and roots.	Flora of Libya
43.		*Ranunculus asiaticus* L.	G	Harir	Succulents.	Flora of Libya
44.		*R. bullatus ssp.cyrenaicus* (Pamp.)Maire.	Ch	\\	\\	\\
45.		*R. cyclocarpus* Pamp.	Th	\\	\\	\\
46.		*R. trilobus* Desf.	Th	\\	\\	\\
47.	Solanaceae	*Datura innoxia* Mill.	Ch	Datura	The entire plant	Flora of Libya
48.		*Nicotiana glauca* Graham.	N.Ph	akkuzemusa	The entire plant	Flora of Libya
49.		*Solanum nigrum ver nigrum* L.	Th	Enab –Al-deib	Unripe small fruits.	Flora of Libya
50.		*Solanum nigrum ver villosum* L.	Th	\\\\	\\\\	Flora of Libya

Table 2. Life forms of Poisonous species.

Life form	No. of species
Therophytes	20
Geophytes	9
Phanerophytes	8
Nano-phanerophytes	6
Chamaephytes	5
Heleophytes	2

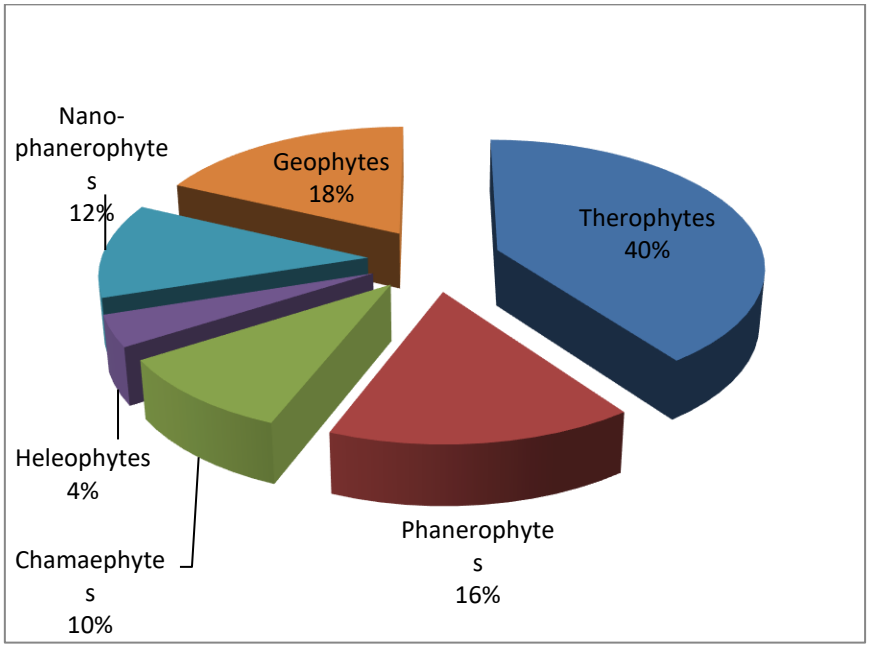

Figure 2. Life forms of poisonous plants in Cyrene (Shahat)Al-Jabal Al-Akhdar.

DISCUSSION

Therophytes comprised the majority of the spectrum of life forms found in toxic plants in Shahat; similarly, [19] showed that Therophytes constituted 36% of the dominating life form population. The majority of the plants that are now in place are annuals, which can withstand high summer temperatures. These plants are representative of the Mediterranean area, what's more, our consequences of are in accordance with other exploration did in different Al-Jabal Al-akhdar regions [17, 18]. There is a remarkable similarity between this ecological spectrum and other locations of the Mediterranean basin. With three genera and three species, Asteraceae, Fabaceae, and Boraginaceae had the most genera documented in the research region, followed by Apiaceae, Liliaceae, and Primulaceae with two genera and two species, according to the analysis of the distribution of the species. One gender and one species were used to represent many families. Asteraceae, with 46 species, were the larger family, according to earlier research on the vegetation of the valleys of Al-Jabal Al-Akhdar [20]. The Asteraceae family was also the largest in the Sidi Bouras region, where 130 species were recorded [21]. Our results agreement with Alzerbi *et al*., (2016, 2018) in their comprehensive analysis of Wadi Al-Kouf plants, as a number of poisonous plant species were recorded in this study, such as; *Solanum nigrum* L. *Euphorbia charachias* L. *Thapsia garganica* L. *Neirium oleander* L. *Hypericum triquetrifolium* Turra. Similarly, many studies have indicated the types of poisonous plants that were recorded in our current study [24,1]. Some of these poisonous plants are has medicinal uses known in Folk Medicine [22-24]. Poisonous plants can be classified on the basis of the chemicals they possess such as alkaloids, glycosides [25].

CONCLUSION

Some of poisonous plants were gathered for their high medical value and are now classified as vulnerable species owing to overexploitation. As a result, it is critical to create plans for the protection of these plants and to educate people about their toxicity, particularly to young people. More research is required to fully comprehend the intricate mechanism of action of these toxic.

Conflict of interest. Nil

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قائمة مرجعية للنباتات السامة في القيرواني (حرم أبولو) شحات الجبل الأخضر ، ليبيا

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قسم النبات ، كلية العلوم ، جامعة عمر المختار ، ليبيا

المستخلص

الأهداف. كان الهدف الأساسي لهذه الدراسة هو التعرف على النباتات السامة في القيروان (حرم أبولو) شحات- الجبل الأخضر، ليبيا. **الطرق.** أجريت الدراسة في الفترة ما بين أكتوبر 2021 إلى مايو 2023. وتم جمع العينات النباتية وتسجيل مجموعة متنوعة من البيانات، بما في ذلك العائلة والاسم العلمي والاسم المحلي وشكل الحياة والجزء المستخدم.**النتائج.** ووفقا للدراسة، هناك 50 نوعا مختلفا من النباتات السامة، مرتبة في 41 جنسا و 27 عائلة. تنتمي عائلتان إلى عاريات البذور والـ 25 عائلة المتبقية تنتمي إلى كاسيات البذور. يتم تمثيل ثنائيات الفلقة بـ 39 نوعًا 2 أنواع فرعية و33 جنسًا و20 عائلة. يتم تمثيل أحاديات الفلقة بـ 6 أنواع و 6 أجناس و 5 عائلات. كان هناك 20 نوعًا من النباتات الثيروفيتية، وهي أكثر أشكال الحياة شيوعًا بين أنواع النباتات السامة (40%)، تليها النباتات الجيوفيتية 9 أنواع (18%)، والنباتات الفانيروفية 8 أنواع (16%)، والنباتات النانوية 6 أنواع (12%). ، الشامايفيت 5 أنواع (10%)، والنباتات الهيليوفيتية نوعان (4%). **الخاتمة.** وتعتبر هذه الدراسة الأولى من نوعها لتوثيق النباتات السامة في المنطقة، وإعداد قائمة بها، حيث لم تتم دراستها من قبل، وجاءت لسد النقص في المعلومات.

الكلمات الدالة. الجبل الاخضر, القيرواني ، الشحات ، النباتات السامة.