

A field study on some economically important plants with therapeutic uses in southwest Sinai, Egypt

H. M. El-Sayed^{1,*}, S. M. Ismaeil¹, A. H. Marie², S. G. Salama³

¹ Botany and Microbiology Department, Faculty of Science (Girl's Branch), Al-Azhar University, Cairo, Egypt

² Botany and Microbiology Department, Faculty of Science (Boy's Branch), Al-Azhar University, Cairo, Egypt

³ Botany and Microbiology Department, Faculty of Science, Damanhour University, Damanhour, Egypt.

*Corresponding author E-mail: hebaelsaied2861.el@azhar.edu.eg (H. El-Sayed)

ABSTRACT:

Traditional medicine which relies mainly on medicinal plants could be one of the solutions to overcome the shortage of food and medicines in the developing countries, so these plants should be preserved. Egypt is one of the countries that contain many of medically important plants. A field study was carried out to identify some plants of economic and medicinal importance in South Western Sinai, Egypt, with an explanation of the plant parts used and their various uses. A total of 119 medicinal and economic plant species were recorded in the study area. Asteraceae, Amaranthaceae, Poaceae and Zygophyllaceae, were the most common families represented in this study. The most used plant parts are the whole plant, followed by the flowering branches, leaves, seeds, roots, rhizomes and fruits. The most medicinal and economical uses of the recorded species includes: grazing, antimicrobial activities, antioxidant, stomach and abdominal pain, fuel wood, diuretic and treatment of urinary diseases, wounds, skin diseases, rheumatic pains anticancer, respiratory and pulmonary diseases, antipyretic, aromatic source, edible food, liver diseases, diarrhea, sexual diseases, eye diseases and anemia treatment. Many of these species have multi medicinal and economic benefits, while few of them have limited benefits.

Keywords: Medicinal plants; South Western Sinai, treatment of many diseases.

INTRODUCTION

The "backbone" of conventional medicine is comprised of medicinal herbs. About 80% of people on the earth use drugs made from medicinal plants to treat many diseases (Sandhya et al., 2006). Furthermore, a variety of medications and chemotherapy treatments can be created using medicinal plants (UNESCO, 1998). Studies on the significance of economic and therapeutic plants are insufficient. Singh, 2015 tell us about the importance of medicinal plants which have a promising future because there are around 500,000 plant species in the globe whose medicinal and economic value has not yet been established. Hassan (2012) reported that when utilized as a treatment, medicinal plants provide the following benefits: synergistic medicine, official medicine's assistance, and preventative medicine. Joy et al., 1998 explained that in addition to the standard botanical categorization, medicinal plants can also be categorized based on the component used, habit, habitat, and therapeutic significance. There is a lot of research focusing on antioxidants which extract from plant sources because of their importance in treating many diseases, especially natural antioxidants, in the treatment and prevention of diseases. Rafieian-Kopaie and Baradaran (2013) reported that much research has shown the ability of

antioxidants to eliminate many diseases, also (Täckholm, 1974 and Boulos, 2000) explained that according to geographical position, new available reclaimed areas, soil conditions, climatic, qualified scientists, low-cost manufacture and new technologies, also there are abundance and biodiversity of medicinal and aromatic plants in Flora of Egypt. Elzoghbiy et al., (2022) and Singh (2015) reported that The significance research of medicinal plants has not enough. Since the therapeutic and commercial value of about 500,000 plant species throughout the world has not yet been established, the future of medicinal plants.

El-Demerdash (2001) clarified that many of the medicinal plant ingredients found in Egypt's traditional folk medicine, available at neighborhood herb stores, are harvested from mountains and waste areas, such as the Saint Katherine region.

Täckholm (1974) reported that the Sinai Peninsula and its three subregions—the Mediterranean coastal region, the Isthmic desert (El-Tih and the area north of Wadi Tumilat), and Sinai proper (the rocky plateau south of El-Tih)—have roughly 1247 species in total. These species are grouped into 94 families, 46 of which are endemic, 346 of which are non-endemic and unique to the Sinai Peninsula (absent from the Western Desert,

Eastern Desert, and Nile area), and 855 of which are found both in Sinai and other parts of Egypt. Although they account for approximately 49.9% of all plant species in Egypt, the endemic species and subspecies on the Sinai Peninsula comprise the majority of the country's endemic species (76.2%). According to Dagmar (2006), all plant organs, including leaves, flowers, roots, seeds, and fruits, were employed. These were then applied in a variety of pharmacological forms, such as creams, pastes, lotions, teas, drops, and others. Finding the useful and medicinal plants that are found in South Western Sinai is the goal of this research. On the plants found in this region, several phytochemical prospective investigations can be carried out to determine the benefits of these plants in the treatment of various ailments. Some studies on medicinal plants have revealed that most of them have significant antioxidant activity because they are beneficial in the treatment and prevention of diseases for conventional medicine, and synergistic medicine according to (Hassan, 2012; Rafieian-Kopaie and Baradaran, 2013 and Mekky et al., 2023).

STUDY AREA

The western coast of the Sinai Peninsula (eastern coast of Suez Gulf) is bounded by the Gulf of Suez in the west and the limits of the coastal desert and wadis that drain into it in the east. It extends from El-Shatt (Lat. 30 °N) in the north to Ras Muhammed (Lat. 27°40 N) in the south for about 340 km. The study area is located in the southern section of the western coast of Sinai, and lies between latitude 30° to 28°N and longitude 33° to 34° E, along the eastern side of the Gulf of Suez. It is bounded by the Gulf of Suez from the west and the limits of the coastal plain and wadis of Sinai from the east. The plain is broad in its northern part but narrows south of Gebel Hammam Faraon (Zahran and Willis, 1992). It covers five main areas representing different vegetation types, altitude variations, land form types and climatic variations. These areas Oyoun Musa, Ras Sudr, Abu Zenima, El- Tor and Ras Mohammed. Seventy seven stands were selected to represent the vegetation of the study area as the following Oyoun Musa to wadi Gharandl stands from 1 to 8, Hammam Faraon stand 9, Wadi Abu Zenima and its runnels stands from 10 to 21, Abu Zenima – El Tor coastal road sites from 22 to 30, El Tor – Ras Mohammed coastal road sites from 31 to 34, Ras Mohammed – Oyoun Musa - new road sites from 35 to 41, Oyoun Musa – Ras Sudr to beginner of wadi Abu Zenima sites from 42 to

50, East of Abu Zenima sites from 51 to 70 and Abu Zenima – Oyoun Musa – new road sites from 71 to 77. Fig. (1).

MATERIALS AND METHODS

The study area was investigated by the author over a period of three years from 2021-2023 to identify the medicinal and economic plants in that area. A total of seventy seven stands, with 10 quadrates (10 x 10 m) were surveyed using the quadrates method. All plant species were identified, according to Täckholm (1974) and Boulos (1999, 2000, 2002, 2005, 2009). The scientific names were updated after (<https://www.worldfloraonline.org/>). Voucher herbarium specimens were incorporated in the herbarium of the Department of Botany, Faculty of Science (Girls), Al-Azhar University. Creating a study area map using ESRI Arc GIS version 10.8 software. Stands were chosen at locations where either dense vegetation or change in species composition was encountered.

RESULTS AND DISCUSSION

Approximately 119 species of commercial and therapeutic significance from 32 families and 95 taxa were identified in the current study. The most prevalent families were Asteraceae, Amaranthaceae, Poaceae, and Zygophyllaceae, with 18 species (15%), 17 species (14%), 11 species (9%), and 7 species (5%), in that order. Brassicaceae and Fabaceae accounted for 5% of the total with six species apiece. Solanaceae and Geraniaceae were represented by 3% and 4%, respectively, while Caryophyllaceae and Apocynaceae accounted for 4% (5 species each). Three species each from the families Boraginaceae, Plantaginaceae, Polygonaceae, and Tamaricaceae comprised 2% of the total. There was one species from each of the six families (Capparaceae, Convolvulaceae, Cleomaceae, Nitrariaceae, Euphorbiaceae, and Resedaceae) representing 1% of the total. In contrast, a single species represented 12 groups (Table 1). The whole plant was the most plant used parts, followed by the flowering branches, leaves, seeds, roots, rhizomes and finally fruits (Fig. 3).

The most medicinal and economical uses of the recorded species includes: grazing, antimicrobial activities, antioxidant, stomach and abdominal pain, fuel wood, diuretic and treatment of urinary diseases, wounds, skin diseases, rheumatic pains anticancer, respiratory and pulmonary diseases, antipyretic, aromatic source, edible food, liver

diseases ,diarrhea, sexual diseases, eye diseases and anemia treatment (Fig. 4) .

According to (Täckholm, 1974) there are several plants of medicinal and commercial significance in the study region, some of which are rare and extremely rare, and some of which are endemic to South Sinai. According to (Mahmoud and Gairola, 2013) *Cleome droserifolia* is used medicinally to treat wounds, diabetes, urinary tract pain, and antibiotics. *Cleome arabica*, a plant used as a tonic and appetizer, was noted by (Youssef, 2013) as one of the plants included in the current study. Among the species that have been identified in the research area is *Matthiola arabica*. Anemia is treated with this herb (Tounekti et al., 2019). There are several authors from all over the world studied medicinal plants such as Fourment and Roques (1941), Keys (1976), Schauenberg and Paris (1977), Bellakhdar, (1978), Namukobe et al. (2011), Bidak et al., (2015), Singh, (2015) and Shivakoti and Ramesh (2015). Nasseib *et al.*, 2023 recorded that families with the most representation about Wadi Feiran, South Sinai, Egypt were Poaceae, Asteraceae, and Amaranthaceae also the flowering branches, and leaves are the most used plant parts in addition to the whole plant, while the most medicinal and economical uses of the recorded species include grazing, fuel wood, diuretics, analgesics for stomach and abdominal pain, treatment wounds, skin diseases and aromatic sources. Many of these species have multi medicinal and economic benefits. This study agree with the present study with some minor changes.

According to (Cox & Balick, 1994) found that most of the plants are used in traditional medicine, can used as a source of novel therapeutic agents directly. The desert plants are capable of rapid growth where conditions are favourable and they stay dormant or inactive, or may have a delayed start of growth where soil moisture is low or temperatures are extreme. It is evident that more than 42% of the total numbers of species are used for grazing, followed by antioxidant and antimicrobial activity. The antibacterial and antioxidant properties of certain traditional Egyptian medicinal plants investigated by El-Zayat et al. (2021).

CONCLUSION

In current study, about 119 species related to 32 families have economic and medicinal importance was recorded in South Western Sinai. Asteraceae, Amaranthaceae, Poaceae

and Zygophyllaceae, were the most common families represented in this study. The whole plants and flowering branches were the most important used parts of the plant followed by leaves, seeds, root, rhizome fruits and fruits.

The survey indicated that, the study area has contain on a lot of medicinal plants to treat simple and complicated human disease. Many people are still continue to depends on medicinal plants, because well-knowledge healers have good interactions with patients and this would improve the quality of healthcare delivery. Further attention is necessary on plant species which are having high fidelity level. The plants with high use value and informant .

ACKNOWLEDGEMENTS

The authors are grateful to staff members of the Department of Botany Herbarium, Faculty of Science (Boys), Al-Azhar University for providing them necessary facilities and support to carry out this work and also many thanks to all the authors mentioned in this research.

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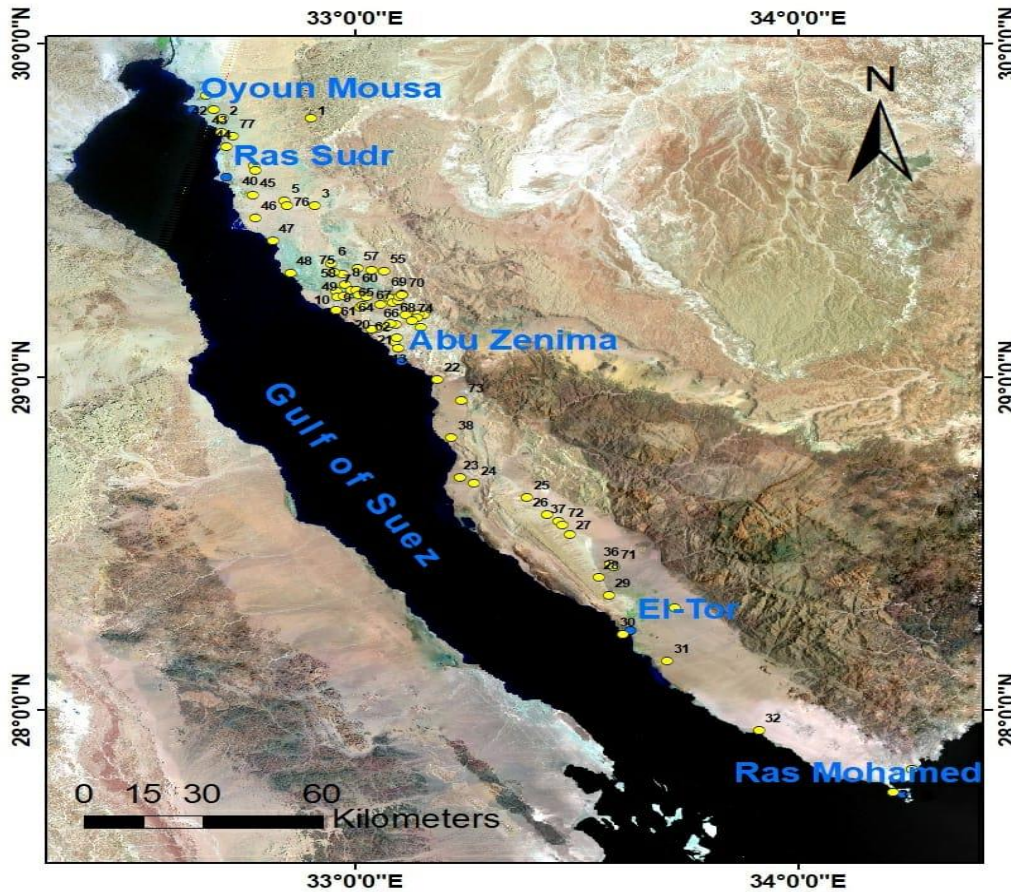


Figure 1: Location map of the 77 stands selected in South Western Sinai

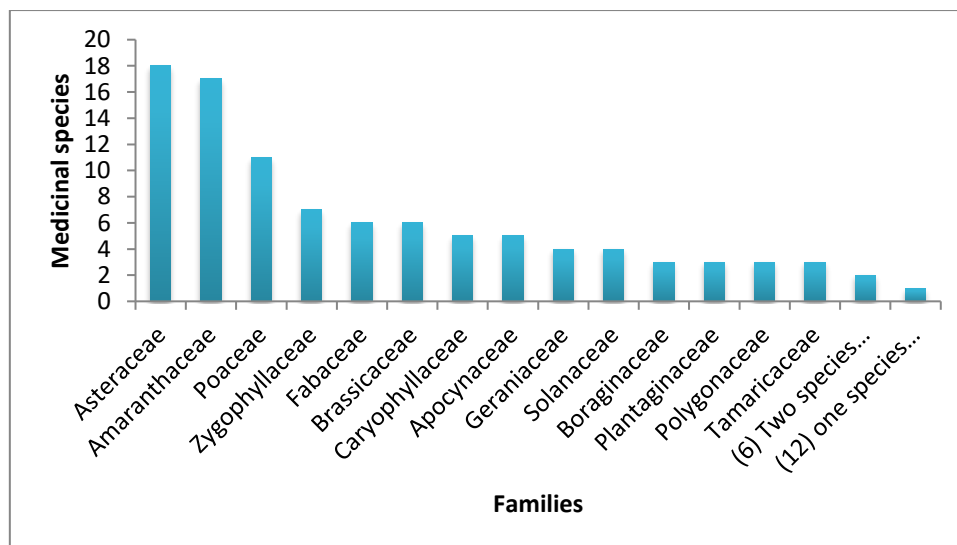


Figure 2: Graphical representation of 32 Families recorded in South Western Sinai, Egypt.

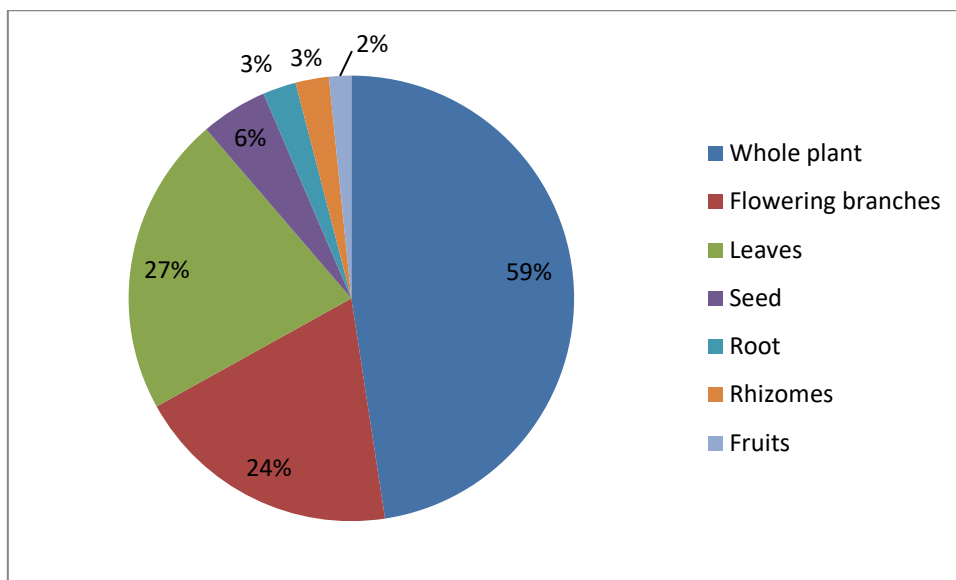


Figure 3: Used parts of plant species recorded in South Western Sinai, Egypt.

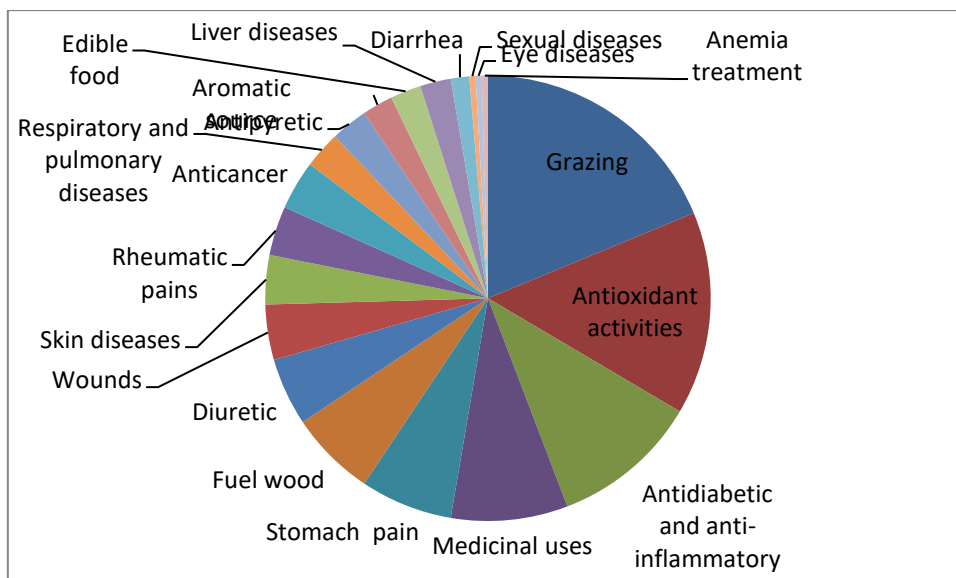


Figure 4: Shows the number of species in relation to medicinal and economic uses in South Western Sinai, Egypt.

Table 1: Economic and therapeutic uses of some recorded species.

| Family | Species | Part used | Economic and medicinal uses | References |
|--|--|--------------------|--|---|
| Amaranthaceae | <i>Aerva javanica</i> (Burm.f.) Juss. ex Schult. | Whole plant | Snake, toothache, and insect's bites | Youssef, (2013) |
| | <i>Anabasis articulata</i> (Forssk.) Moq. | Flowering branches | Used in folk medicine to treat skin conditions such as eczema, grazing plants and other ailments, including diabetes, headache, and fever | Bidak <i>et al.</i> , (2015), AlJoufi, (2022) |
| | <i>Anabasis setifera</i> Moq. | Flowering branches | Used in treat parasites and leprosy. | Bailey and Danin, (1981) |
| | <i>Arthrocnemum macrostachyum</i> (Moric.) K.Koch | Whole plant | Antioxidant, anti-inflammatory, antidiabetic and antimicrobial | ElNaker <i>et al.</i> , (2020) |
| | <i>Atriplex halimus</i> L. | Flowering branches | Grazing plants and fuel wood and Aromatic source and antacid powder, , antibacterial, antiviral, anti-diabetic, antioxidant ,anti-cancer, anti-fungal properties and molluscicidal . | Bidak <i>et al.</i> , (2015), Walker <i>et al.</i> , (2014), Ali <i>et al.</i> , (2021) |
| | <i>Atriplex leucoclada</i> Boiss | Flowering branches | Molluscicidal, antioxidant, antibacterial, anti-cancer , antiviral, anti-diabetic, and anti-fungal properties. | Ali <i>et al.</i> , (2021) |
| | <i>Bassia indica</i> (Wight) A.J.Scott | Flowering branches | Grazing plants and antitumor, inflammatory, anticholinesterase, and anti-tyrosinase | Bidak <i>et al.</i> , (2015), Othman <i>et al.</i> , (2022) |
| | <i>Bassia muricata</i> (L.) Asch. | Flowering branches | Grazing plants, antidiabetic , antioxidant, antimicrobial, , and anti-inflammatory. | Bidak <i>et al.</i> , (2015), Gheraissa <i>et al.</i> ,(2022) |
| | <i>Dysphania ambrosioides</i> (L.) Mosyakin & Clemants | Fruits | Diuretic, stimulant, anthelmintic and stomachic | Fournier, (1948) |
| | <i>Chenopodium murale</i> L. | Flowering branches | Aromatic source, as anthelmintic, antispasmodic, diaphoretic, emmenagogues, stomachic, amenorrhea, as an abortifacient and for the relief of asthma, catarrh, and migraine. | Bidak <i>et al.</i> , (2015), Omer <i>et al.</i> , (2017) |
| | <i>Cornulaca monacantha</i> Delile | Leaves | Antimicrobial, antidiabetic, antioxidant, cytotoxicity, anti- arthritic and hepatoprotective | Badawy <i>et al.</i> , (2023) |
| | <i>Halocnemum strobilaceum</i> (Pall.) M.Bieb. | Whole plant | Anticancer, dysmenorrhea, antimicrobial, antioxidant, insecticides against pests, hair loss, traditional medicine to treat fever, jaundice, and headache | Nsernakhaei and Zahraei, (2021) |
| | <i>Halopeplis perfoliata</i> (Forssk.) Bunge ex Ung. - Sternb. | Seeds | Antioxidant | Rasool <i>et al.</i> , (2019) |
| | <i>Haloxylon salicornicum</i> (Moq.) Bunge ex Boiss. | Whole plant | Anti- inflammatory, antipyretic, analgesic and antioxidant | Riaz <i>et al.</i> , (2013) |
| | <i>Haloxylon scoparium</i> Pomel | Whole plant | Skin inflammatory, diabetes and scorpion stings | Hafidha and Abdelkrim, (2023) |
| | <i>Salsola imbricata</i> Forssk. | Whole plant | Antioxidant capacity, play a protective role in liver diseases and possess a high. | Shehab <i>et al.</i> , (2015) |
| <i>Suaeda vermiculata</i> Forssk.ex J.F. Gmel. | Whole plant | Grazing | Heneidak, (2008) | |
| Apiaceae | <i>Deverra tortuosa</i> DC. | Whole plant | Aromaticwith volatile, edible, fuel wood, grazing and medicinal uses | Heneidak, (2008) |
| Apocynaceae | <i>Calotropis procera</i> (Aiton) Dryand. | Whole plant | Respiratory system and antibacterial | Youssef, (2013) |
| | <i>Cynanchum acutum</i> L. | Whole plant | Antimicrobial and antioxidant activities | Demir <i>et al.</i> , (2011) |
| | <i>Gomphocarpus sinaicus</i> Boiss. | Whole plant | Hemorrhagic, rhinorrhagia and metrorrhagia | Youssef, (2013) |
| | <i>Leptadenia pyrotechnica</i> (Forssk.) Decne. | Whole plant | Cytotoxic activities, antimicrobial, wound healing, antitumor, antioxidant, anti-lipoxygenase, anthelmintic, anti-atherosclerotic, antidiabetic and hypolipidemic . | Fatma, (2019) |
| | <i>Pergularia tomentosa</i> L. | Whole plant | Skin diseases | El-Ghazali <i>et al.</i> ,(2010) |
| Arecaceae | <i>Phoenix dactylifera</i> L. | Whole plant | It is used as an antidiarrheal, grazing, edible, fire wood, medicinal uses, | Heneidak, (2008) |

| Family | Species | Part used | Economic and medicinal uses | References |
|-----------------------------|---|--------------------|--|--|
| | | | ornamental and uses in industry. | |
| Asteraceae | <i>Achillea fragrantissima</i> (Forssk.) Sch.Bip. | Whole plant | Stomachache and anthelmintics. | El-Zayat <i>et al.</i> , (2021). |
| | <i>Artemisia judaica</i> L. | Whole plant | Analgesic, antispasmodic | Mahmoud and Gairola, (2013) |
| | <i>Asteriscus graveolens</i> (Forssk.) Less. | Leaves | Gum diseases, Stomach pain, Fever, Toothache. | Bammou <i>et al.</i> , (2015) |
| | <i>Calendula arvensis</i> L. | Whole plant | Grazing and medicinal uses | Heneidak, (2008) |
| | <i>Carthamus eriocephalus</i> (Boiss.) Greuter | Whole plant | Grazing | Heneidak, (2008) |
| | <i>Centaurea aegyptiaca</i> L. | Whole plant | Grazing | Heneidak, (2008) |
| | <i>Pluchea dioscoridis</i> (L.) DC. | Whole plant | Astringent, antipyretic, antiinflammatory, hepatoprotective, diaphoretic in fevers, smooth muscle relaxant, nerve tonics, laxatives and for the treatment of dysentery, lumbago, leucorrhoea, dysuria, hemorrhoids, gangrenous ulcer and disorders causing cachexia. | El-Zalabani <i>et al.</i> , (2012) |
| | <i>Brocchia cinerea</i> Vis. | Whole plant | Grazing and medicinal uses | Heneidak, (2008) |
| | <i>Echinops spinosissimus</i> Turra | Whole plant | Fire wood, grazing and medicinal uses | Heneidak, (2008) |
| | <i>Echinops macrochaetus</i> Fresen. | Seeds | Antitumor, antiimutagenic and cytotoxicity | Berhanu, (1996) |
| | <i>Pulicaria undulata</i> sub sp. <i>Undulata</i> | Whole plant | Aromatic with volatile, edible, grazing and medicinal uses | Heneidak, (2008) |
| | <i>Launaea nudicaulis</i> (L.) Hook.f. | Flowering branches | Grazing plants, rheumatism, cuts ulcers, bilious fever, swellings, eczema eruptions and. | Bidak <i>et al.</i> , (2015) El-Newary <i>et al.</i> , (2021) |
| | <i>Picris cyanocarpa</i> Boiss. | Leaves | Treatment of indigestion, against intestinal nematodes, other Parasites and antioxidant. | Snežana <i>et al.</i> , (2011) |
| | <i>Pulicaria arabica</i> Cass. | Whole plant | Medicinal uses | Bidak <i>et al.</i> , (2015) |
| | <i>Pulicaria undulata</i> (L.) C.A.Mey. | Whole plant | Inflammation , skin diseases and as insect repellent. | Tounekti <i>et al.</i> , (2019), Fahmi <i>et al.</i> , (2019) |
| | <i>Reichardia tingitana</i> Roth | Flowering branches | Grazing plants, antibacterial, antifungal, antidiabetic, antihelminthic, immunostimulatory, and anticancer properties. | Bidak <i>et al.</i> , (2015), Salama <i>et al.</i> , (2022) |
| | <i>Senecio glaucus</i> L. | Whole plant | Antimicrobial activity. | El-Amier <i>et al.</i> , (2014) |
| <i>Sonchus oleraceus</i> L. | Leaves | Anti-malaria. | Namukobe <i>et al.</i> , (2011) | |
| Boraginaceae | <i>Heliotropium bacciferum</i> Forssk. | Whole plant | Skin and urinary diseases. | Tounekti <i>et al.</i> , (2019) |
| | <i>Heliotropium digynum</i> Asch. ex C.Chr. | Whole plant | Skin diseases, Liver pain and Diuretic. | Tounekti <i>et al.</i> , (2019) |
| | <i>Trichodesma africanum</i> (L.) Sm. | Leaves | Abdominal pain, mouth ulcers and chest congestion | Safa <i>et al.</i> , (2013) |
| Brassicaceae | <i>Diplotaxis acris</i> Boiss. | Flowering branches | Grazing plants antioxidant, anti-inflammatory | Bailey and Danin, (1981) |
| | <i>Diplotaxis harra</i> Boiss. | Leaves | Used as a rub against scabies in animals | Bellakhdar, (1978) |
| | <i>Farsetia aegyptia</i> Turra | Flowering branches | Grazing plants, antispasmodic, treat rheumatic pain, as a cooling medicine after repeated fever and antidiabetic | Bidak <i>et al.</i> , (2015), Benchelah <i>et al.</i> , (2000) |
| | <i>Matthiola arabica</i> Boiss. | Seeds | Anemia treatment | Tounekti <i>et al.</i> , (2019) |
| | <i>Moricandia sinaica</i> Boiss. | Leaves | Antipyretic activities and anti-inflammatory . | Elmekkawy <i>et al.</i> , (2020) |
| | <i>Zilla spinosa</i> Prantl | Flowering | Grazing plants and treatment of gall bladder and kidney stones and/or ailments, | Bidak <i>et al.</i> , (2015), El-Toumy <i>et</i> |

| Family | Species | Part used | Economic and medicinal uses | References |
|-----------------|---|--------------------------------------|---|---|
| | | branches | antifungal, anticancer, antirheumatic. | <i>al.</i> , (2011) |
| Capparaceae | <i>Capparis cartilaginea</i> Decne. | Leaves | Rheumatism, joint pain and wounds. | Safa <i>et al.</i> , (2013) |
| | <i>Capparis spinosa</i> L. | Leaves | Joint, rheumatism and abdominal pain. | Safa <i>et al.</i> , (2013) |
| Caryophyllaceae | <i>Gymnocarpos decandrus</i> Forssk. | Flowering branches | Grazing plants , anti-inflammatory, fuel wood, Antidiabetic, analgesic and diuretic activities. | Bidak <i>et al.</i> , (2015), Seham <i>et al.</i> , (2021) |
| | <i>Gypsophila capillaris</i> C. Chr. | Whole plant | Antioxidant, immunomodulatory effects , anti-inflammatory, anti-oedemic and antimicrobial. | Katarzyna <i>et al.</i> , (2022) |
| | <i>Paronychia argentea</i> Lam. | Whole plant | Grazing and medicinal uses | Heneidak, (2008) |
| | <i>Pteranthus dichotomus</i> Forssk. | Whole plant | Grazing and medicinal uses | Heneidak, (2008) |
| | <i>Spergularia diandra</i> (Guss.) Heldr. | Whole plant | Grazing | Heneidak, (2008) |
| Cleomeaceae | <i>Cleome amblyocarpa</i> Barratte & Murb. | Whole plant | Fuel wood and Aromatic source, diabetes, rheumatism, colic, pain and digestive disorders. | Heneidak, (2008) |
| | <i>Cleome droserifolia</i> (Forssk.) Delile | Leaves | Urinary tract pains, diabetes, wounds, and antimicrobial antioxidant antidiabetic, and diuretic effect. | Mahmoud and Gairola, (2013), El-Naggar <i>et al.</i> , (2005) |
| Convolvulaceae | <i>Cressa cretica</i> L. | Whole plant | Fuel wood and medicinal uses | Heneidak, (2008) |
| | <i>Convolvulus arvensis</i> L. | Roots | Antihemorrhagic | Bellakhdar, (1978) |
| Cucurbitaceae | <i>Citrullus colocynthis</i> (L.) Schrad. | Flowering branches and Seeds or pulp | Anti-leprosy, cancer, common cold, cough, asthma, bronchitis, jaundice, joint pain, Anthelmintic properties. A black tar-like substance extracted from the seeds is used to treat skin disease , toothache, wound, mastitis, and in gastrointestinal disorders such as indigestion, constipation, dysentery, gastroenteritis, colic pain and different microbial infection. | Eddouks <i>et al.</i> , (2002) |
| Ephedraceae | <i>Ephedra alata</i> Decne. | Leaves | Respiratory problems, hypertension, and body weakness | Lakhdari <i>et al.</i> ,(2016) |
| Euphorbiaceae | <i>Chrozophora oblongifolia</i> (Delile) A.Juss. ex Spreng. | Leaves | Gastrointestinal tract Problems. | Tounekti <i>et al.</i> , (2019) |
| | <i>Euphorbia retusa</i> Forssk. | Whole plant | Grazing and medicinal uses | Heneidak, (2008) |
| Fabaceae | <i>Alhagi maurorum</i> Medik. | Leaves | Antioxidant, antimicrobial and cytotoxic Activities | Sulaiman, (2013) |
| | <i>Astragalus eremophilus</i> Boiss. | Whole plant | Antibacterial and antioxidant | Perrone <i>et al.</i> , (2013) |
| | <i>Astragalus sieberi</i> DC. | Flowering branches | Grazing plants and as, anti-viral immunostimulant, antiprotozoal wound healing, anti-inflammatory and possess cytotoxic activities. | Bidak <i>et al.</i> , (2015), Salem <i>et al.</i> , (2020) |
| | <i>Astragalus tribuloides</i> Delile | Whole plant | Grazing | Heneidak, (2008) |
| | <i>Retama raetam</i> (Forssk.) Webb. | Leaves | Used as a purgative and anthelmintic. | Bellakhdar, (1978) |
| | <i>Trigonella stellata</i> Forssk. | Flowering branches | Aromatic , anthelmintic, carminative, antipyretic colic, flatulence, dysentery, diarrhea dyspepsia with loss of appetite, spleen, rickets, gout, and diabetes besides , chronic cough, dropsy, enlargement of liver and the insect repellent properties | Bidak <i>et al.</i> , (2015), Jain <i>et al.</i> , (1996) |
| Geraniaceae | <i>Erodium cicutarium</i> (L.) L'Hér. | Roots | Toothache, anti-diarrhea, diuretic, stomachic, antihemorrhagic, typhoid fever drug. | Safa <i>et al.</i> , (2013), Al-Snafi, (2017) |
| | <i>Erodium crassifolium</i> L'Hér. | Whole plant | Grazing | Heneidak, (2008) |
| | <i>Erodium glaucophyllum</i> (L.) L'Hér. | Whole plant | Useful against diarrhea, astringent, allergy, and oxytocin., antiinflamm | Al-Said <i>et al.</i> , (1990),(Lakhdari <i>et al.</i> , (2016) |

| Family | Species | Part used | Economic and medicinal uses | References |
|----------------|--|--------------------|---|--|
| | <i>Erodium laciniatum</i> (CAV.) Willd. | Whole plant | Grazing and medicinal uses | Heneidak, (2008) |
| Lamiaceae | <i>Lavandula coronopifolia</i> Poir. | Leaves | Stomachache, antioxidant, antimicrobial, α -glucosidase inhibitory, and hepatoprotective | Mahmoud and Gairola, (2013), Emam <i>et al.</i> , (2021) |
| Juncaceae | <i>Juncus rigidus</i> Desf. | Whole plant | Grazing, medicinal uses, fuel wood and uses in industry | Heneidak, (2008) |
| Malvaceae | <i>Malva parviflora</i> L. | Whole plant | Grazing plants, cough, ulcers in the bladders, gastroente, intestinal infections, colitis, tonsillitis, , As a cataplasm, rectal injection or gragle according to the case ritis, cholesterol, antioxidant, lipid-lowering, anti-hypertensive, , analgesics, emollient, pectoral girdle, arteriosclerosis antid, ruff, demulcent, softening of tumors and abscess | Bellakhdar,(1978), Rizk and ElGhazaly, (1995), Hassan, (2005) Abdel-Ghani <i>et al.</i> , (2013) |
| Menispermaceae | <i>Cocculus pendulus</i> (J.R.Forst. & G.Forst.) Diels | Roots | Antipyretic, treatment of intermittent fever, biliousness and, antipyretic, diuretic, cholagogue, internal parasites antibleorrhagic, menstrual cycle troubles, and rheumatic pain. | Oliver, (1986), Safa <i>et al.</i> , (2013) |
| Nitrariaceae | <i>Peganum harmala</i> L. | Leaves | Used as antirheumatic, teeth pain and stomach problems. | El-Zayat <i>et al.</i> ,(2021). |
| | <i>Nitraria retusa</i> (Forssk.) Asch. | Whole plant | Grazing, fuel wood, ornamental, edible and medicinal uses | Heneidak, (2008) |
| Orobanchaceae | <i>Cistanche phelypaea</i> (L.) Cout. | Whole plant | Medicinal uses | Heneidak, (2008) |
| Plantaginaceae | <i>Globularia arabica</i> Jaub.& Spach | Whole plant | Grazing, fuel wood and medicinal uses | Bidak <i>et al.</i> , (2015) |
| | <i>Kickxia aegyptiaca</i> (L.) Nábělek. | Flowering branches | Antiviral activity against SARS-CoV-2 antioxidant and antibacterial | Bidak <i>et al.</i> , (2015) |
| | <i>Plantago ciliata</i> Desf. | Whole plant | Grazing | Heneidak, (2008) |
| Plumbaginaceae | <i>Limonium pruinosum</i> (L.) Chaz. | Whole plant | Fuel wood and grazing | Heneidak, (2008) |
| Poaceae | <i>Cynodon dactylon</i> (L.) Pers. | Rhizomes | Diuretic, Decoctions of root are used in secondary syphilis and irritation of urinary organs. The plant is astringent, hyperdipsia sweet, cooling, hemostatic, depurative, vulnerary, constipating, diuretic and tonic and is useful in impaired conditions of pitta and kapha, , burning sensation, hematuria, leprosy hemorrhages, wounds and diarrhea. | Fourment and Roques, (1941), Jananie <i>et al.</i> , (2011) |
| | <i>Hordeum vulgare</i> L. | Whole plant | Anti-ulcerative, antioxidant, antiproliferative, antidiabetic, antidepressant, anti urolithic, antifungal and hypoglycemic, | Nutan <i>et al.</i> ,(2021) |
| | <i>Hordeum murinum</i> L. | Flowering branches | Grazing plants anti-inflammatory, hypocholesterolemia, emollient, refrigerant, sedative, stomachic, tonic properties, used as a poultice for burns and wounds, anti-lactagogue, diuretic, antioxidant, aphrodisiac, antiviral, antiprotozoal, astringent, demulcent, digestive, expectorant, febrifuge and antimutagenic., | Bidak <i>et al.</i> , (2015), Sinha <i>et al.</i> , (2012) |
| | <i>Imperata cylindrica</i> (L.) Raeusch. | Rhizomes | Diuretic, antipyretic and hemostatic | Keys, (1976) |
| | <i>Lolium perenne</i> L. | Whole plant | Stopping diarrhea and hemorrhage | Schauenberg and Paris, (1977) |
| | <i>Panicum turgidum</i> Forssk. | Flowering branches | Edible food and Grazing plants, used as a wound-dressing, antidiabetic. | Hossain <i>et al.</i> , (2009) |
| | <i>Cenchrus divinus</i> (J. F. Gmell.) Verloove, Govaerts & Buttler | Leaves | Antioxidant activity | Aldhebiani and Mufarah, (2017) |
| | <i>Phragmites australis</i> (Cav.) Trin. ex | Whole plant | Grazing plants, as diuretic. It is also used as antipyretic by the infusion | Arı <i>et al.</i> , (2015), Hassan, (2005) |

| Family | Species | Part used | Economic and medicinal uses | References |
|----------------|--|---------------------------|--|--|
| | Steud. | | method. It is also stated that it quenches thirst | |
| | <i>Polypogon monspeliensis</i> (L.) Desf. | Whole plant | Grazing plants, antimicrobial potentials and cytotoxic effect . | Hassan, (2005), Fatima <i>et al.</i> , (2019) |
| | <i>Sorghum bicolor</i> (L.) Moench | Whole plant | Biofuel crop production | Malobane <i>et al.</i> , (2018) |
| | <i>Stipagrostis obtusa</i> (Nees&Meyen) Hitchc. | Whole plant | Grazing | Heneidak, (2008) |
| Polygonaceae | <i>Calligonum polygonoides</i> L. | Whole plant | Fuel wood , grazin and medicinal uses | Heneidak, (2008) |
| | <i>Rumex dentatus</i> L. | Seeds | Menstruation regulator and stops bleeding during menstruation | Safa <i>et al.</i> , (2013) |
| | <i>Emex spinosa</i> (L.) Campd. | Flowering branches | Edible food and grazing | Bidak <i>et al.</i> , (2015) |
| Resedaceae | <i>Caylusea hexagyna</i> (Forssk.) M.L.Green | Whole plant | Grazing and medicinal uses | Heneidak, (2008) |
| | <i>Ochradenus baccatus</i> Delile | Whole plant | Back pain and fistula | El-Ghazali <i>et al.</i> , (2010) |
| Rutaceae | <i>Haplophyllum tuberculatum</i> (Forssk.) A.Juss. | Whole plant | Fuel wood and medicinal uses | Heneidak, (2008) |
| Solanaceae | <i>Hyoscyamus muticus</i> L. | Leaves | As cigarettes against asthma ant Parkinsonism, CNS stimulant. | Boulos, (1966) |
| | <i>Hyoscyamus aureus</i> L. | Flowering branches | Pesticidal effects | Akram and Ayman, (2019) |
| | <i>Lycium shawii</i> Roem. & Schult. | Leaves | Gastric ailments, wound healing. | Safa <i>et al.</i> , (2013) |
| | <i>Solanum nigrum</i> L. | Flowering branches | Vaginal diseases | Bellakhdar, (1978) |
| Tamaricaceae | <i>Reaumuria hirtella</i> Jaub.& Spach. | Leaves | Antioxidant and anti-microbial | Mohamed <i>et al.</i> , (2018) |
| | <i>Tamarix aphylla</i> (L.) H.Karst. | Leaves | Wound infection, antioxidants, and Stomachache. | El-Ghazali <i>et al.</i> , (2010) |
| | <i>Tamarix senegalensis</i> DC | Flowering branches | Grazing plants, antidiabetic, hypolipidemic, antifungal, antibacterial, and antioxidant. | Alshehri <i>et al.</i> , (2021) |
| Typhaceae | <i>Typha domingensis</i> Pers. | Rhizomes | Wounds | Bellakhdar, (1978) |
| | <i>Tribulus terrestris</i> L. | Leaves | Diuretic, astringent, and bladder pains. | Ducros, (1930) |
| Zygophyllaceae | <i>Zygophyllum album</i> L. f. | Whole plant | Antioxidant, anti- acetylcholineesterase, antidiabetic, anti- inflammatory, antihyperlipidemic, antihypertensive. Traditional uses are diabetes, dermatitis, spasms and dysmenorrheal | Shawky <i>et al.</i> , (2019) |
| | <i>Zygophyllum arabicum</i> (L.) Christenn. Byng | Flowering branches | Grazing plants, fuel wood and edible food. | Bidak <i>et al.</i> , (2015) |
| | <i>Zygophyllum coccineum</i> L. | Leaves , fruits and seeds | Anthelmintic, diuretic, antioxidant, anti-hypertensive, antimicrobial and antifungal. Traditional uses are gout, rheumatic pain and hypertension | Mahmoud and Gairola, (2013), Shawky <i>et al.</i> , (2019) |
| | <i>Zygophyllum dumosum</i> Boiss. | Whole plant | Antimicrobial and antifungal. Traditional uses are gout, rheumatic asthma and hypertension | Shawky <i>et al.</i> , (2019) |
| | <i>Zygophyllum glutinosa</i> (Delile) Christenn.Byng | Leaves | Skin disease, body weakness, and muscle spasm | Lakhdari <i>et al.</i> , (2016) |
| | <i>Zygophyllum simplex</i> L. | Leaves | Eye disorders, worm killing, anti oxidant, anti – inflammatory, analgesic, antimicrobial and antifungal . Traditional uses are glaucoma, inflammation, fungal infection and hyperglycemia accompanying diabetes. | Safa <i>et al.</i> , (2013), Shawky <i>et al.</i> , (2019) |



Photo 1: Shows two of the medicinal plants (*Zilla spinosa* and *Launaea nudicaulis*)



Photo 2: one of the medicinal plants (*Hyoscyamus muticus*)



Photo 3: The research team while collecting samples from one of the wadies in the Abu Zenima area and the coastal road.



Photo 4: Shows one medicinal plant (*Erodium cicutarium*)



Photo 5: Shows one economic plant (*Diplotaxis acris*)

دراسة حقلية على بعض النباتات الهامة اقتصاديا ذات الإستخدامات العلاجية في جنوب غرب سيناء، مصر

هبة محمد سعيد السيد¹، صفاء محمد اسماعيل¹، عبدة مرعي حامد²، شجاء جمال سلامة³

¹ قسم النبات والميكروبيولوجي، كلية العلوم (فرع البنات)، جامعة الأزهر، القاهرة، مصر.

² قسم النبات والميكروبيولوجي، كلية العلوم (فرع البنين)، جامعة الأزهر، القاهرة، مصر.

³ قسم النبات والميكروبيولوجي، كلية العلوم، جامعة دمنهور، دمنهور، مصر.

* البريد الإلكتروني للباحث الرئيسي: hebaelsaied2861.el@azhar.edu.eg

الملخص العربي:

الطب التقليدي الذي يعتمد بشكل رئيسي على النباتات الطبية يمكن أن يكون أحد الحلول للتغلب على النقص في الغذاء والدواء في الدول النامية، لذا يجب الحفاظ على هذه النباتات. تعتبر مصر من الدول التي تحتوي على العديد من النباتات ذات الأهمية الطبية. أجريت دراسة ميدانية للتعرف على بعض النباتات ذات الأهمية الاقتصادية والطبية في منطقة جنوب غرب سيناء بمصر مع شرح أجزاء النبات المستخدمة واستخداماتها المختلفة. تم تسجيل 119 نوعاً من النباتات الطبية والاقتصادية في منطقة الدراسة. كانت Asteraceae و Amaranthaceae و Poaceae و Zygophyllaceae هي أكثر العائلات شيوعاً المثلة في هذه الدراسة. الأجزاء النباتية الأكثر استخداماً هي النبات بأكمله، تليها الفروع المزهرة والأوراق والبذور والجزور والريزومات والفاكهة. تشمل الاستخدامات الطبية والاقتصادية للأنواع المسجلة: الرعي، الأنشطة المضادة للميكروبات، مضادات الأكسدة، آلام المعدة والبطن، حطب الوقود، مدر للبول وعلاج أمراض المسالك البولية، الجروح، الأمراض الجلدية، الآلام الروماتيزمية المضادة للسرطان، أمراض الجهاز التنفسي والرئة، خافض للحرارة، عطري المصدر، أغذية صالحة للأكل، أمراض الكبد، الإسهال، الأمراض الجنسية، أمراض العيون وعلاج فقر الدم. والعديد من هذه الأنواع لها فوائد طبية واقتصادية متعددة، في حين أن القليل منها له فوائد محدودة.

الكلمات الاسترشادية: النباتات الطبية، جنوب غرب سيناء، علاج العديد من الأمراض.