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Ethno Botanical Study of Traditional Native Plants in Al Ain UAE

Anwar Sajjad*, Syed Adnan, *** Hasnain Alam, ***** Elyasa Abdel Razig Mohamed**

*Department of Environmental Sciences, University of Haripur, KPK Pakistan (*anwarsajjad7@gmail.com*)
** Department of Forestry University of Eastern Finland, Joensuu (*syedadnan_gis@yahoo.com*)
*** Department of Biotechnology International Islamic University Islamabad Pakistan (*hasnain.phdbt5@iiu.edu.pk*)
***** Barari Forest Management Department of Nurseries (*a.raziq@barari.ae*)

Abstract

Plants are the basis of sophisticated traditional medicine practices, and have been used for thousands of years by local people in UAE. This study aims to explore the potential ethno-medicinal plants in Al-Ain area of UAE, which would provide a baseline information for future studies. We used questionnaire survey and collected 59 native medicinal plants data throughout the study area. Use Index and frequency were applied to calculate the relative importance of each plant. Results showed that the highest and lowest important plants were *Suaeda aegyptiaca* (UV = 0.82), and *Calotropis procera* (UV=0.11), respectively. Furthermore, 49% of respondents were found using leaves, followed by whole plant (18%), root (14%), seed (11%), fruit (9%), flower (5%), gum (4%), bark (4%) and dried plant (2%) for different treatments which include snakebite, childbirth, hepatitis, earache, kidney, swellings, purgative, headache, bruises, paralysis, cataracts, migraine, jaundice, painful joints. Finally, harvesting of roots and whole plants is a major threat to the conservation of these medicinal plants diversity, and it need appropriate measures to ensure sustainable utilization.

Keywords: Ethno-medicinal Native plants, Use Index,

1. Introduction

A medicinal plant is a plant which has been used for medical purpose at one time or another. Different plants have different role in medicines especially in traditional medicine. Plants have been the basis for medical treatments through much of human history, and such traditional medicine is still widely practiced today (Bako et al., 2005).Traditional medicine has not only played a very important role in providing healing but has also contribute to the discovery of most pharmaceutically active substances in plants (Principe, 1991; Pearce and Puroshothaman, 1992) which have been used in the commercial production of drugs. It has been estimated that,

up to 90% of the population in developing countries rely on the use of medicinal plants to meet their primary health care needs (WHO, 2002). According to (Schippmann *et al.*, 2002) stated that worldwide more than 50,000 plant species are used for medicinal purposes. Gulf countries have a rich tradition of herbal medicine, (Ghazanfar, 1994) which blended with Greek practices to become what is known as the unani (Greco-Arab medicine) system. According to (Sakkir *et al.*, 2012) also reported that numerous traditional systems of medical treatment were used in the Arabia. A number of native plants were used in the past for cosmetic purposes. Most of the native plants are used for bone settings, cupping and cauterization. Besides that these plants play a critical role in the development of human cultures around the whole world. Many of the modern medicines are produced indirectly from native plants. The United Arab Emirates (UAE) is habitat of terrestrial species, including flowering plants, ferns, bryophytes, and mosses. In gulf countries the United Arab Emirates (UAE) is the 4th largest country of angiosperms species. Although in UAE the peoples are used medicinal plants from many years but literature on most plants are not present. The (ZCHRTM, 2005) reported that 29 plants species are Traditional Medicine species. There is no complete list of medicinal plants of the region. Medicinal plants have a promising future because there are about half million plants around the world, and most of them their medical activities have not investigate yet, and their medical activities could be decisive in the treatment of present or future studies. Keeping in view the above, present study is aimed to document and underlines to explore the potential ethno-medicinal Plants of study area. The present research work was focused to document the indigenous knowledge of unexplored area district Al Ain UAE.

2. Materials and Methods

2.1 Description of study area

Al Ain (Arabic: العين, al-ʿayn) known as Garden City of the Gulf. It is located in the eastern region of Abu Dhabi Emirate just south of Dubai. The total population of Al Ain is 650,000. The mean annual rainfall of Al Ain is 96 mm and the average relative humidity is 60%. The city is a popular tourist destination with first class hotels, shopping malls, golf resort, wild-life Parks, restaurants, water-adventure Parks. The area is also dominated from native plants and wildlife.

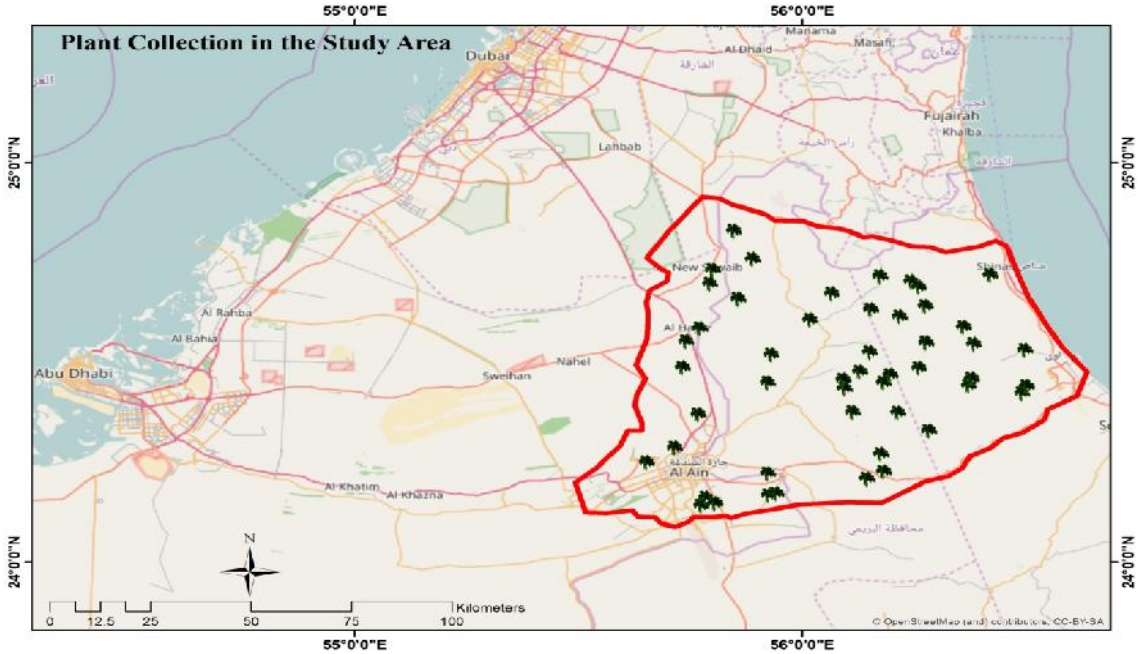


Figure.1. Show different medicinal plants in Study area Al Ain UAE

2.2 Collection of Data and Identification of Native Plants

The research was conducted during 2015–2016 and data was collected from district of Al-Ain of UAE. From the study area 59 native plants were collected for indigenous medicinal knowledge. These 59 medicinal plants were divided into classes like trees, shrubs and herbs as shown in table 2. During the surveys, attempts were made to collect all possible information regarding the traditional use of medicinal plants. The primary survey approach was made to collect the information from the local people about medicinal plants through questionnaire filling survey. The total questionnaires of the study were 100 and filled from different people e.g Male, Female and from the Expertise who have knowledge about native plants. The questionnaires mainly consist of local name of the plant, parts use, and medicinal use. For other data like local name, scientific name and family of plants were checked in book of wild flower of the United Arab Emirates (M.V.D.JONGBLOED, 2003). Some of the plants were identified from Barari native plants nursery al Salamat.

Table.1; Number of the respondents interviewed in the study area Al Ain.

S.no	Respondents	Person age above 35 year	Person age below 35 year	Total interviewed persons
1	Male	22	43	65
2	Female	13	16	29
3	Expertise	2	4	6
	Total			100

2.3 Analysis of data

The data of the field survey were putted in SPSC software to determined frequency of citation .

2.3.1 Use value (UV)

According to (Manzoor *et al.*2013) used an index to explore the relative importance of medical plants. Use value formula is UVi=∑ Ui/Ni. Where UVi shows use value of a plant species, Ui shows the particular plant importance which was collected from respondents and Ni shows the total respondents' species.

3. Results and Discussion

This is the first study to find out the Ethno botanical Study of Traditional Native Plants at Al Ain UAE. Native Plants are a huge source of medicines, especially in traditional medicine, which are practical used in the treatment of different disease. The study area Al Ain is dominated from natural flora. Recently many of the local people of the study area are used native plant for health care but in UAE No documented information was exist on the cultivation of Native plants except Barari native plants nursery is the one plants nursery which grow the native plants.

3.1. Diversity of Medicinal Plants

Total 59 medicinal native plants belong to 31 families including shrubs, herbs and trees. Six plants were the members of family *Fabaceae* followed by five plants of family *Poaceae,* four plants of family *Asphodelaceae* three plants of family *Amaranthaceae, Apocynaceae, Brassicaceae, Lamiaceae, Solanaceae* and two plants, each of family , *Asteraceae, Boraginaceae,Capparaceae, ,Leguminosae, Moraceae, Polygonaceae, , Zygophyllaceae* and one each of family *Acanthaceae, Arecaceae, Convolvulaceae, Compositae, Cucurbitaceae, Cleomaceae, Euphorbiaceae, Lythraceae, Malvaceae, Moringaceae, Resedaceae, Rhamnaceae, Salvadoraceae, Sapindaceae and Tamaricaceae* in study area. The study area is mostly covered by desert ecosystem and dominance of *Fabaceae.* According to (Ghazanfar *et al., 2010)* reported that UAE Red Data Plant List present those plants which have higher medicinal importance and in (table, 2) showed that higher and least medicinal valve plants of the study area threatened situation.

Table.2; Ethno-medicinal knowledge of commonly used medicinal plants in Al Ain UAE

S. No.	Name	Local name	Family	Part used	Medicinal use	FC	UV
1	*Acacia tortilis*	سمر	*Fabaceae*	Gum	Infections, jaundice stomach acidity,	2	0.28
2	*Acacia ehrenbergiana*	السلم - سلم	*Fabaceae*	Gum resin, leaves	The mixture used for Fever, swellings rheumatism	2	0.32
3	*Aerva javanica*	آرى	*Amaranthaceae*	Flowers, Leaves	Mixing with water used for stopping bleeding,anthelmintic, antibacterial	3	0.47
4	*Alhagi graecorum*	عاقول/الحاجي	*Fabaceae*	Whole plant	jaundice, cataracts, migraine, painful joints and for Blood purifying	4	0.75
5	*Aloe vera*	صبار	*Asphodelaceae*	Leaves	skin rashes	1	0.15
6	*Arnebia hispidissima*	كحيل – فنون	*Boraginaceae*	Root	Skin and hair diseases	1	0.13
7	*Asphodelus tenuifolius*	بروق	*Asphodelaceae*	Seeds, Whole plant	Laxative, diuretic, vinegar burned and smoke inhaled to treat toothache.	3	0.78
8	*Blepharis ciliaris*	شوك الضب	*Acanthaceae*	Seeds, Flower	Hemorrhoids, burn wound, inflammations and for stopping bleeding.	1	0.56
9	*Boswellia sacra*	لبان	*Brassicaceae*	Whole plant	Stomach problem, gum problem, thoracic disease and kidney stone	2	0.73
10	*Calotropis procera*	عشر	*Apocynaceae*	Leaves and stems	Dried used to fill aching hollow teeth	1	0.11
11	*Calligonum comosum*	أرطا	*Polygonaceae*	Leaves and stems	Toothache, young used as salad.	2	0.68

12	*Capparis cartilaginea*	شفلح	*Capparaceae*	Leaves and stems	Childbirth,earache, kidney,Purgative problems,headache, bruises,paralysis, swellingsand snakebite	4	0.79
13	*Citrullus colocynthis*	حنظل	*cucurbitaceae*	Fruits and leaves	Used for Diabetes and hypoglycemia	1	0.63
14	*Cleome amblyocarpa*	خنيزة - عفينة	*Cleomaceae*	Leaves	Abdominal and rheumatic pain	1	0.53
15	*Convolvulus arvensis*	حب الريشة	*Convolvulaceae*	Leaves and roots	hemostatic, snakebite and for sedative	2	0.69
16	*Cymbopogon citratus*	صخبر	*Poaceae*	leaves	Used for womb infection	1	0.35
17	*Cynodon dactylon*	ثيل – نجيل	*Poaceae*	Roots and leaves	Hemorrhoids, cough, wounds and for kidney problems.	1	0.15
18	*Datura stramonium*	سيكران	*Solanaceae*	Seeds, leaves and root	Fever in catarrh, cerebral, diarrhea, skin complications diseases and antispasmodic.	3	0.78
19	*Dodonaea viscosa*	دودونيا	*Sapindaceae*	Leaves and flower	Used for treating toothache	1	0.23
20	*Dipterygium glaucum*	ألكا	*Capparaceae*	Whole plant	Used to treat respiratory diseases and for Infection	1	0.34
21	*Echinops spinosissimus*	شوك الجمل	*Asteraceae*	Whole plant	Nerve tonic, diuretic and cough suppressant	1	0.47
22	*Euphorbia larica*	عزبج	*Euphorbiaceae*	Latex	Latex used for skin problems.	1	0.13
23	*Fagonia indica*	حلاوي	*Zygophyllaceae*	Leaves, stems and roots	Used for abdominal colic, Kidney stone, dyspepsia, diarrhea and fever.	2	0.81
24	*Farsetia aegyptiaca*	مشاري	*Brassicaceae*	Whole plant	Toothache, sore eyes gingivitis	2	0.72

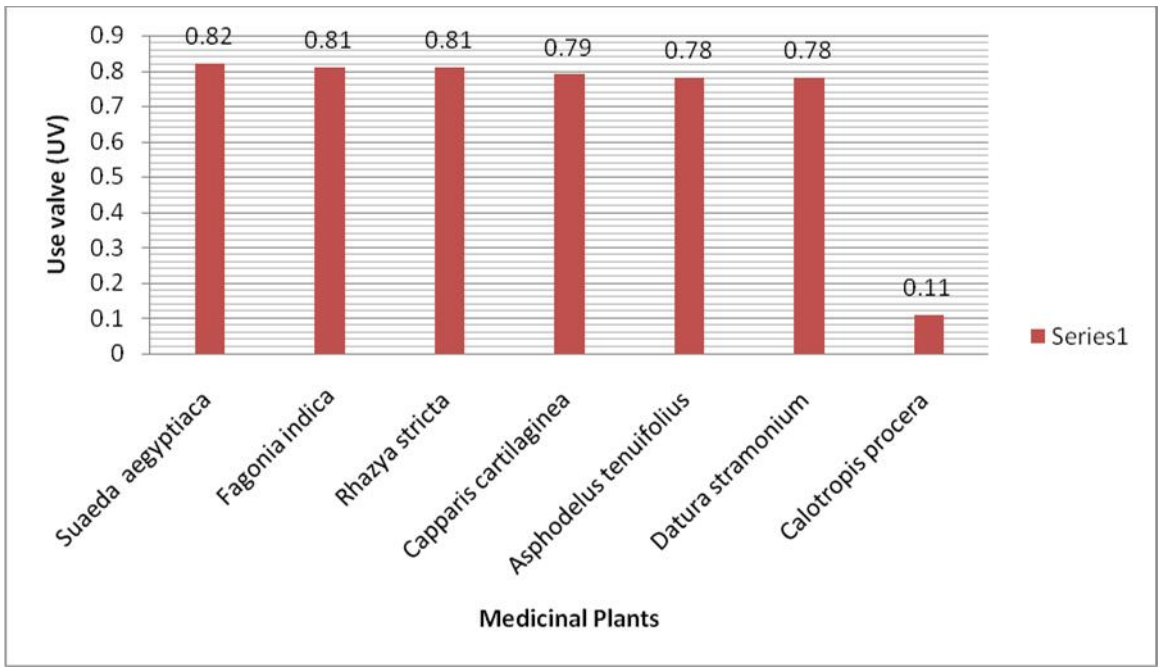
25	*Ficus cordata*	تين	*Moraceae*	Leaves and gum	Skin allergy, scorpion stings melancholic	2	0.70
26	*Haloxylon salicornicum*	الرمث	*Amaranthaceae*	Stems	Ringworm, Intestinal problems and for hypoglycemia	3	0.74
27	*Heliotropium bacciferum*	رمرام	*Boraginaceae*	Leaves	scorpion bites and snake bites	1	0.75
28	*Indigofera caerulea*	كسار	*Fabaceae*	Roots	swellings and snake bites	2	0.73
29	*Lawsonia inermis*	حنا	*Lythraceae*	Leaves	Mouth ulcers fevers, anti-inflammatory, anesthetic	3	0.75
30	*Leptadenia pyrotechnica*	مرخ	*Asclepiadaceae*	Branches and stems	antibacterial diuretic and for Insect biting	2	0.46
31	*Lycium shawii*	قصد	*Solanaceae*	Stem	diuretic, laxative and tonic	1	0.46
32	*Malva parviflora*	خبيز	*Malvaceae*	Whole plant	Respiratory system, mouth inflammation, dermal diseases and used for external bandages	2	0.76
33	*Morus nigra*	تـــوت	*Moraceae*	Root, leaves and Fruit	Cough,fever,toothache,inflamed eyes and headache	1	0.59
34	*Moringa peregrina*	شوع	*Moringaceae*	Seed oil	Constipation, stomach cramp and for swellings	2	0.71
35	*Nerium oleander*	دفلة	*Apocynaceae*	Leaves	coughs and bronchitis	1	0.22
36	*Ochradenus arabicus*	علقة	*Resedaceae*	Fruits	used for digestive system	1	0.70
37	*Ocimum forskolei*	ريحان	*Lamiaceae*	Leaves	Used for ear aches or for insect bites , colds, headaches	2	0.68
38	*Pergularia tomentosa*	غلقة	*Asclepiadaceae*	Whole plant	Used for skin problems, as an expectorant and as a purgative	2	0.76

39	*Panicum antidotale*	ثمام	*Poaceae*	Leaves	Cough, Carminative and for nausea	2	0.25
40	*Panicum turgidum*	ثمام	*Poaceae*	Above-ground part	Used for abortifacient and for treatment of wounds and removing eye spot	1	0.28
41	*Prosopis cineraria*	غاف	*Leguminosae*	Leaves and bark	used as eye drops and bark used for rheumatism and applied to scorpion bites	1	0.55
42	*Pulicaria undulata*	مهتدي	*Compositae*	Leave and branches	used for Measles, insects expulsion	1	0.72
43	*Phoenix dactylifera*	نخيل التمر	*Arecaceae*	pollen and fruits	The male inflorescence used as an aphrodisiac and as a general tonic	2	0.74
44	*Pluchea dioscoridis*	بارانــوف	*Asteraceae*	Whole plant	Used for deodorant, skin ailments and juice of leaves used as ear drops	1	0.68
45	*Rhazya stricta*	حرمل	*Apocyaceae*	Whole plant	used to improving bad breath, chest pain, fevers skin rash conjunctivitis, constipation and for diabetes	3	0.81
46	*Rhynchosia minima*	بغـل	*Fabaceae*	Whole plant	The whole plant used as hypoglycemia and for abortive	1	0.47
47	*Rumex vesicarius*	حماد	*Polygonaceae*	Leaves and seeds	Leaves and seeds used as nematocide an antidote for scorpion stings	1	0.68
48	*Salvadora persica*	مسواك آراك	*Salvadoraceae*	Leaves	applied for oral disease and for scorpion sting and skin blisters	2	0.77
49	*Salvia aegyptiaca*	خزام	*Lamiaceae*	Seeds	The seeds used as a demulcent for piles and for diarrhea	1	0.45
50	*Senna italica*	عشرج	*Leguminosae*	Leaves and seeds	used to treat stomach cramps and for constipation	1	0.62

51	*Solanum incanum*	عرســـم/زهـــر العيون	*Solanaceae*	Leaves and seeds	Applied for cough, cold and for asthma	2	0.59
52	*Sporobolus spicatus*	ضغريم	*Poaceae*	Juice, Infusion	Used for diabetes and for nerve tonic	1	0.23
53	*Suaeda aegyptiaca*	سويد/حتلس	*Amaranthaceae*	Stem and leaves	Applied for dizziness, snuff for headaches, hysteria, nausea, and for gum infections	2	0.82
54	*Tamarix aphylla*	طرفة اتل	*Tamaricaceae*	Leaves	Dried leaves applied on wounds to stop bleeding.	1	0.31
55	*Tephrosia apollinea*	ظفرة	*Fabaceae*	Roots and leaves	Earache,cough,bronchitis and for wounds	1	0.33
56	*Thymus bovei*	زعتر	*Lamiaceae*	Leaves	Disinfectant, colic, cough, anti worms anti-stomach problem	2	0.74
57	*Tribulus terrestris*	زهرة	*Zygophyllaceae*	Fruits	Used for sexual function in humans and improve athletic performance	1	0.49
58	*Ziziphus spina christi*	سدر	*Rhamnaceae*	Leaves, fruits and bark	Powder of leaves is used for skin sores and inflamed joints, snake bites and fruit used for chest pains.	2	0.64
59	*Zilla spinosa*	سلاء , شقع	*Brassicaceae*	Dried plant	Used for Urinary tract diseases	2	0.73

3.2. Relative importance of plants

To explore the importance/ value of use of native medicinal plants in terms of their traditional use of the study area compared higher use value to the least used medicinal plants (Table 2 and figure 2). Relative importance/value of use value reflects the importance of medicinal plants in terms of their traditional use at the study area. the figure 2.3 showed that *Suaeda aegyptiaca* reported the highest use value (0.82) followed by the *Fagonia indica* and *Rhazya stricta* have same (0.81). The (Ahmed *et al.*, 2014) in Pakistan reported that *Fagonia indica* use value was 0.74. *Capparis cartilaginea* use value (UV) was (0.79) and in Egypt (Mahmoud, T. and Gairola, S., 2013) reported that *Capparis* is the most characteristic medicinal plant. *Asphodelus tenuifolius* and *also Datura stramonium* have same use valve (0.78). (M. Ullah *et al.*, 2013) reported that *Datura stramonium* have more use valve in kpk, Pakistan. Least use value was reported by the *Calotropis procera* (0.11).



Figue.2; Relative importance of plants

3.3. Plant parts used for indigenous medicines

The study area local community were used herbaceous plants mainly roots, leaves, seeds, fruits and whole plants for different ailments. Among plant parts leaves were the most frequently used part (49%) followed by the whole plant (18%), root (14%), seed (11%), fruit (9%), flower (5%), gum (4%), bark (4%) and dried plant (2%). the (table 2) showed that most of the Local people used plants for snakebite, childbirth, hepatitis, earache, kidney, swellings, purgative, headache, bruises, paralysis, cataracts, migraine, jaundice, painful joints etc. The (Clement *et al.*, 2015) also reported that roots, leaves and seeds were the mainly superior parts in herbal medicines because they have a high meditation of bio-active compounds.

4. Conclusion

Important medicinal plants, reported in this study have been screened for Ethno botanical Study. Medicinal plants in study area are under stress because of human activities such as camping, grazing, construction etc. Medicinal plants are those plants that are used (parts, extract etc) in treating and preventing specific ailments and diseases that affect human beings. In this study 59 plants were taken from the respondent out of which more than 40 plants have medicinal valve. Use Index was applied to calculate the relative importance of each plant The *Suaeda aegyptiaca* reported the highest medicinal valve while least medicinal valve plant is *Calotropis procera*. I was recommended that young generation about medicinal plants have no knowledge, education level should be raised to create good thinking, better ability and awareness.

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