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Floristic Composition and Ethnobotanical Description of Plants of Sabaloka Area- River Nile State, Sudan

Adam Bashir[1], Ahmed Ali Mustafa[2], Hatil El-kamali[1], Maha Kordofani[3]

[1] *Department of Botany, Faculty of Science and Technology, Omdurman Islamic University, Sudan.*

[2] *Department of Botany and Microbiology, Faculty of Science, University of Gezira, Sudan.*

[3] *Department of Botany, Faculty of Science, University of Khartoum, Sudan*

Corresponding Email address: adabashiiir@gmail.com, adabashiiir@oiu.edu.sd

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Abstract

The floristic compositions of the study area have not been well studied before. The aim of the present study is to survey and document the floristic composition and medicinal uses of the plants of the study area. The present study was carried out during the period 2016 - 2018, through several extensive and intensive field trips that covered different habitats (valleys & River Nile banks) of Sabaloka area central Sudan. Floristic studies included collection, preparation, identification, classification, vernacular names and updating plant species synonyms. A total number of 144 plant species (117 Dicotyledonous & 27 Monocotyledonous) were identified belonging to 108 genera and 40 families. The family Poaceae was the biggest, including the highest number of genera and species, followed by the Leguminosae (Fabaceae) family. From the identified species of the present study, 46 species were found to have medicinal values, and these represented (32%), of the total plant species of the study area. Scientific names of 26 species and 9 families were updated to their new names. The present study indicates that Sabaloka area has a diverse floristic composition with useful plants for medicinal uses that may be of potential future benefits.

Keywords: Sabaloka area, River Nile banks, Floristic composition, Sudanese medicinal plants.

Introduction:

Sudan has a long history of biological exploration and was one of the first tropical African regions to be extensively used by European scientists and explorers in the early 1800s (Darbyshire *et al.* 2015). The most floristic studies on Sudan were reported by Broun and Massey (1929), Andrews (1950,52,56) and El Amin (1990) who studied the trees and shrubs in Sudan. All these studies were regarded as the main references of the flora of the Sudan . In addition to that regional studies of the flora were carried out in Sudan that include e.g. study by Andrews (1947) in Erkowit, Abdalla. *et al*.(2010) in Northeastern Sudan, Elsafori *etal*.(2012) who studied the flora of Um Rimmitta area, White Nile State and Mohamed *et al*. (2016) studied the trees and shrubs in northeastern Sudan. Recently Darbyshire *et al*. (2015) updated the flora of Sudan and South Sudan as an annotated checklist. According to Harrison and Jackson (1958) the vegetation of Sudan was classified into different ecological zones.

Studies of medicinal uses of plants in Sudan were encountered by different researchers, e.g. ELGhazali *et al.* (1994 & 2003) in the White Nile Province and Ingassana area respectively, Doka and Yagi(2009) and EL-Kamali(2009)in West Kordofan, Musa *et al*,(2011) in the Blue Nile State and Issa *et al*. (2018) in Algoz area (South Kordofan). In addition to that the biological and chemical analysis of different medicinal plants were studied by Mohamed *et al*. (2010).

Methods:

Collection of Plant Species:

Plant species were collected from different sites of the study area at different times of the year during 2016 to 2018. The whole plant was collected in the case of herbs, branches in the case of shrubs and trees. Finally the specimens were labeled and deposited in the herbarium of Department of Botany, Faculty of Science, University of Khartoum.

Identification of Plant Species:

The specimens were identified by using local, regional floras, and compared with already identified herbarium specimens. Additional information were extracted from the libraries of universities and electronic sources. Traditional and medicinal uses of some plants were taken from local communities and literature review.

Names and Synonyms of Plant Species:

Nomenclature and Synonyms were updated according to the available recent literature and electronic sources such as International Plant Names Index (IPNI) and The Plant List web sites (http://www.ipni.org and http://www.the plant list.org, respectively). Vernacular names of species were recorded from local community within the study area and also extracted from other floristic studies of flora of Sudan e.g. Andrews (1953, 1957).

Results and Discussion:

A total number of 144 plant species (117 Dicotyledons and 27 Monocotyledons) (Fig.1) belonging to 108 Genera and 40 families were identified (Fig.2). Families and genera have been arranged alphabetically in a checklist (Table 1) and their vernacular names as well as medicinal uses were recorded. Scientific names of plants of the study area were updated. The biggest family is Poaceae which recorded the highest number of genera and species (18 and 22 respectively) followed by Leguminosae/Fabaceae (Table 2). However, the other families recorded lesser number of species and these are: Asteraceae, Euphorbiaceae, Amaranthaceae, Capparaceae, Boraginaceae. This is similar to the findings of Abdelkreem & Ibrahim (2016) who studied the Flora and vegetation of an archeological habitat in North Sudan , they reported a total of 133 species, belonging to 42 families, where the biggest families were Poaceae (17 species) and Mimosaceae (11 species). Also Abdalla and Elkhalifa (2010) studied the trees and Shrubs at lower Atbara River Basin, Northeastern Sudan, and reported that the biggest family was Fabaceae (Leguminosae).

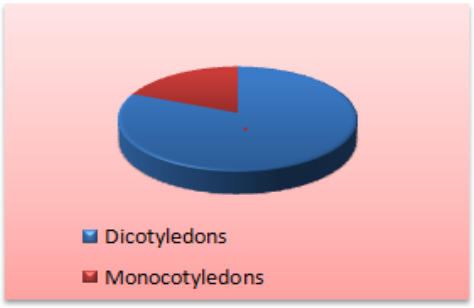


Fig. 1. % age of dicotyledonous and monocotyledonous plants of study area

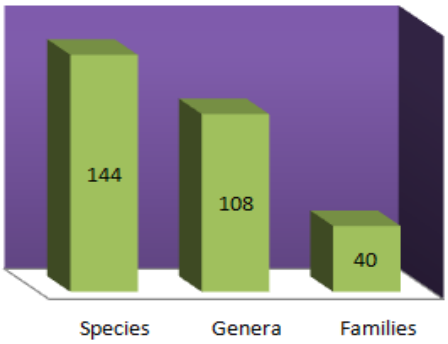


Fig. 2. Number of families, Genera and species of study area

The statistical analysis applied in the current study was descry

Table 1: Checklist of Plant species and their medicinal uses {Sabaloka area- Sudan }

Family	Species	Vern. Name	Medicinal and traditional uses
Acanthaceae	*Blepharis ciliaris* (L.) B.L.Burtt	Begial	Urine retention
	Ruellia genduana C.B.Clarke		
	Peristrophe bicalyculata		
Aizoaceae	*Limeum viscosum* (J.Gay) Fenzl. spp. *.viscosumvar. viscosum*		
	Trianthema portulacastrum L.	Rabaa	Analgesic , stomachic, blood diseases , anemia
	Zaleyapentandra (L.)Jeffr **.**	Rabaa	Stomach upsets , gastritis
	Aerva javanica (Burm.f.)Juss.ex Schult.	Ras al-shaib	Potent
Amaranthaceae	*Alternanthera sessilis* (L.)	Abo-tamarah	
	Amaranthus graecizans L.	Lissan al-tair sagir	
	Amaranthus spinosus L	Lissan al-tair	
	Amaranthus viridis L.	Lissan al-tair kabir	Constipation
	Chenopodium album L.	Zirbeeh	
	Calotropis procera	Ushar	Scorpion bite
Apocynaceae	(Aiton.)W.T. Aiton		
	Leptadeniaheterophylla	Lowees	Jaundice , Dandruff
	Leptadeniapyrotechnica (Forssk.) Dence	Marakh	Anti-rheumatic
	Ageratum conyzoides L.	Rehan al-groof	
	Ambrosia maritime L .	Damssiesa	Hypertension , diabetes , spasms , kidney stone
Asteraceae			
	Eclipta prostrata (L.) L.	Tamar al-ghanam	Eye diseases
	Pluchea dioscoridis (L.) DC.	Rehaan	
	Pulicariacrispa Sch.Bip.	Tugur	
	Pulicaria undulata (L.) C.A.Mey	Rapul	
	Senecioaegyptius L.		
	Sonchus oleraceus L.	Moleita	
	Xanthium brasilicum Vell.	Rantook	
Arecaceae	*Hyphaene thebaica* (L.) Mart.	Doum	Alimentary
	Lepidium niloticum Sieber ex Steud.		
Brassicaceae	*Morettia philaeana* L.	Morettia	
	Rorippa indica (L.)Hiern		
	Echium rauwolfii Del.	Kohali	
	Heliotropium baciferum Forsk.	Danab el agrab	
	Heliotropium ovalifolium Forsk	Danab el agrab	
Boraginaceae	*Hiliotropium sudanicum* F.W.Andr.	Danab el agrab	
	Heliotropium supinum L.	Radaa ; Ghubeyra	
	Cadaba farinose Forsk.	Sureih	Flatulence
	Capparis deciduas (Forsk.)	Tundob	Against jaundice
Capparaceae	*Edgew*.		
	Capparis oblongifolia Forssk	Erg al-mahabba	Abdominal pains , malaria
	Cleome gynandra L.	Tamaleka	Improve eyesight , worm expulsion
	Cleome scaposa DC.		Cancer , tumors

	Maerua crassifolia Forssk.	Sarih	Wounds
	Convolvulus arvensis L .	uleeg	
Convolvulaceae	*Convolvulus fatmensis* Kunze	Tubar	
	Cuscuta hyalina Roth.	Hamool	
	Ipomoea carnea Mart.(Choisy)	Aweer	
	Citrullus colocynthis L.	Handal	
Cucurbitaceae	*Cucumismelo* L .	Humeid; Ajur	
	Luffa cylindrica (L.)M.Roem	Leef	
Cyperaceae	*Cyperus esculentus* L.	Seida	
	Cyperus bulbosus Vahl	Seida	
	Cyperus rotundus L.	Seida	Kidney stone
	Kyllinga alba Nees	Seida	
Elatinaceae	*Bergia suffruticosa* (Del.) Fenzl.	El-rimt	Eczema
Euphorbiaceae	*Chrozophora plicata* (Vahl.) A. Juss. ex	Taroub	Wounds
	Ricinus communis L.	El khirwi	Drastic purgative , cosmetic preparation, disinfectant
	Euphorbiaforskalii J.Gay.	Um lobaina	
	Euphorbia hirta L.	Um el laban	Nausea , vomiting
	Euphorbia indica Lam.	Um el laban	
	Euphorbiaprostrata Aiton.	Um lobaina	Skin diseases
	Phyllanthus reticulatus Poir.	Korbongo	
Lamiaceae	*Basilicum polystachyon* (L.) Moench		
	Faidherbia albida (Delile) A.Chev.	Haraz	Scorpion bite
	Acacia ehrenbergiana Hayne.	Salam	
Leguminasae	*Acacianilotica* spp. *nilotica* (L.)	Sunut	Malaria ,Furuncles , Phlegmatic cough
	Acaciaoerfota (Forssk.) Schweinf	Laaut	Teeth ache, Headache, Snakebite
	Acacia seyal Delile.	Talih	Diarrhea , Dysentery
	Acacia tortilis spp.*raddiana* (Savi)	Syal	
	Acacia tortilis spp.*spirocarpa* (A. Rich)	Sumar	
	Acacia tortilis spp. *tortilis*	Samur	
	Crotalaria thebaica (Delile)DC.		
	Indigofera hochstetteri Bak.	Hireesh,	
	Indigofera oblongifolia Forssk.	Dahassir	
	Mimosa pigra L	Al-sit al - mostahia	Heart problems , head colds , toothaches
	Parkinsonia aculeata L.	Sesaban abo-shoka	
	Prosopis juliflora (Sw.)DC.	Mosquiet	
	Rhynchosia minima (L.) DC.	Adan el far	
	Senna alexandrina Mill.	Sanna Makka	Laxative
	Senna italica Mill.	Sanna Makka	Constipation
	Senna occidentalis (L.)Link	Sim al-dabib	Jaundice , Diabetes , intestinal ulcer
	Senna obtusifolia(L) H.S.Lrwin & Barneby	Kawal	Jaundice
	Sesbania sesban (L.) Merrill	Sesban	
	Tephrosia opolinea (Del.) DC.	Amayoga	
	Tephrosia vicioides Schltdl.		
	Trigonella glabra Thunb	Handagog	
Loranthaceae	*Plicosepalus acaciae (Zucc)*	Abu Hamada	
Lytheracae	*Ammannia coccinea* Rottb.		
	Ammannia sp.		
	Abutilon panosum (Forst. f.)	Hambouk	Jaundice

Malvaceae	Schlecht		
	Corchorus depressus Stocks .	Um steeh	Sexual diseases (urino-genital)
	Corchorus olitorius L.	Molukhia	
	Corchorus fascicularis Lam.	Khudra	
	Grewia tenax (Forssk.) Fiori	Gudaim	Poultice ,chest complaints
	Hibiscus trionum L.	Wikat al-khala	
	Sida spinosa L.	Shidayda	
Molluginaceae	*Glinus lotoides* L.	Rabaat al-bahar	
	Mollugo cerviana (L.)Ser.		Eyesight
Nyctaginaceae	*Boerhaevia erecta* L.	Tarba	
	Boerhaevia repens L.	Troob, Tarba	
Onagraceae	*Ludwigia erecta* (L.) H.Hara		
	Cistanche phelypaea (L.) Cout.	Nar al-aasad	
Orobanchaceae	*Orobanchecrenata* Forssk .	Hlook	
	Strigahermonthica (Delile) Benth.	Budah	Diabetes
Papveraceae	*Argemone mexicana* L.	Khash Khas	
Pedaliaceae	*Rogeria adenophylla* J.GayexDelile		
Poaceae	*Aristida adscensionis*	Gaw	
	Aristida hordacea Kunth	Gaw	
	Aristida mutabilis Trin.&Rupr.	Gaw	
	Brachiaria eruciformis (Sm.)	Umkeriaat	
	Cenchrus ciliaris L.	Hasskaniet	Kidney pain
	Cynodon dactylon (L.) Pres.	Nageel balady	Edema (dropsy)
	Dactyloctetinum aegypticum (L.) Willd.	UmAssabi	
	Desmostachyabipinnata (L.) Stapf .	Halfa	
	Dichanthium annulatum (Forssk)Stapf	Lukh	
	Digitaria ciliaris (Retz.)Koelr	Shaar el banaat	
	Dinebra retroflexa (Vahl)Panz.		
	Echinochloa colona (L.) Link	Defra	Diabetes
	Eragrostis japonica (Thunb.) Trin	Damblab	
	Eragrostis cilianensis (All.) Janch	Banu	
	Lasiurus hirsutus Boiss .	Garaza	
	Panicum hygrocharis Steud.	Ein Al- egla	
	Panicum turgidum Forssk	Thumam	
	Phragmites australis (Cav.) Trin.ex Stedud	Boos	
	Schoenfeldia gracilis Kunth.	Danab al-naga	
	Sorghum arundinaceum (Dew.) stapf.	Adar	
	Stipagrostis hirtigluma (Steud.exTrin.&Rupr.)DeWinter	Gaw	
	Tragus berteronianus Schult.	Lussaig	
Polygalaceae	*Polygala erioptera* DC.		
Polygonaceae	*Persicaria glabra* (Willd.)M.	Tumsaaheya	
Portulaceae	*Portulaca oleracea* L.	Rigla	
	Portulaca quadrifida L.	Um mamleeha	

Rhamnaceae	*Ziziphus spina-christi* (L.) Willd.	Sedir	Stomach ache ,Urine retention ,Diarrhea, Dysentery ,Malaria
Rosaceae	*Potentilla supina* L.		
Salvadoraceae	*Salvadora persica* L.	Arak	
Salicaceae	*Salixmucronata* Thunb.	Safsaf	
Sapindaceae	*Cardiospermum halicacabum* L.	Hambok	
Solanaceae	*Datura stramonium* L.	Sikairan	Source of commercial hyocyamine
	Physalis angulata L.		
	Solanum dubium Fresen.	Gubbein	Jaundice
	Solanumamericanum Mill.	Einab al diib	
Tamaricaceae	*Tamarix nilotica* (Ehrenb.) Bunge.	Tarpha	Inflammatory diseases , AIDS,Cancer, atherosclerosis
Typhaceae	*Typhaangustifolia* L.	Um-briambeeta	
Urticaceae	*Forsskaolea tenacissima* L.	Lussaig	
Vahliaceae	*Vahlia digyna* (Retz.) Kuntze		
Zygophyllaceae	*Balanitesaegyptica* (Linn.)Del	Higgleeg	Worms expulsion
	Fagonia cretica L.	Um shweika	Skin allergy
	Tribulus terrestris L.	Dereesa	

Table (2): Number of genera and species of plant families in Sabaloka area

Family		Genera	Species
1.	Acanthaceae	3	3
2.	Aizoaceae	3	3
3.	Amaranthaceae	4	6
4.	Apocynaceae	2	3
5.	Asteraceae	8	9
6.	Arecaceae	1	1
7.	Brassicaceae	3	3
8.	Boraginaceae	2	5
9.	Capparaceae	4	6
10.	Convolvulaceae	3	4
11.	Cucurbitaceae	3	3
12.	Cyperaceae	2	4
13.	Elatinaceae	1	1
14.	Euphorbiaceae	4	7
15.	Lamiaceae	1	1
16.	Leguminasae	12	23
17.	Loranthaceae	1	1
18.	Lytheracae	1	2
19.	Malvaceae	5	7
20.	Molluginaceae	2	2
21.	Nyctaginaceae	1	2
22.	Onagraceae	1	1
23.	Orbanchaceae	3	3
24.	Papveraceae	1	1
25.	Pedaliaceae	1	1
26.	Poaceae	18	22
27.	Polygalaceae	1	1
28.	Polygonaceae	1	1
29.	Portulaceae	1	2
30.	Raminaceae	1	1
31.	Rosaceae	1	1
32.	Salicaceae	1	1
33.	Salvadoraceae	1	1
34.	Sapindaceae	1	1
35.	Solanaceae	3	4
36.	Tamarixaceae	1	1
37.	Typhacae	1	1
38.	Urticaceae	1	1
39.	Vahliaceae	1	1
40.	Zigophyllaceae	3	3

Conclusion

The present study explored that Sabaloka Area (Sudan) has rich flora where about 144 plant species belong to 108 genera and 40 families with useful plants for medicinal uses .The checklist of this flora will contribute in updating the Sudan flora.

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