

A Survey of Medicinal Uses of Gash Delta Vegetation, Eastern Sudan

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Abstract. The present study is a pioneer in surveying the vegetation of Gash Delta, Eastern Sudan for medicinal uses. First, information is given on location, climate, soils and inhabitants. Plants of the area are then identified through field trips and by using the botanical literature available. Using information obtained from inhabitants, coupled with those extracted from literature, medicinal plants of the study area are documented by botanical names and families. Information on the common diseases that are treated by the plants of the area are given. 30% of the whole number of plants of the area are found to have medicinal uses. These are documented with the diseases they treat and methods of application.

Key words: Medicinal, Vegetation, Gash, Delta Sudan.

Introduction

The present work is complementary to the flora study (Elkhalfa et. al, 2003) carried for Gash Delta, eastern Sudan. The flora of the Gash Delta was selected for investigation in the present study for a number of reasons. First, a large number of specimens previously collected from the study area were encountered in various herbaria and need to be updated and incorporated in the main flora of the Sudan. Moreover, the last few years witnessed good rainy seasons in the study area. In addition, Gash Delta, besides its importance from agricultural point of view, possesses a great deal of fodder and medicinal plant species, some of which might be eliminated without being recorded.

The present study aimed to document the common medicinal uses of the plants of Gash Delta, Eastern Sudan and consequently highlight their economic importance.

Gash Delta lies approximately between latitudes 15° 28' and 16° 26' North and longitudes 35° 56' and

36° 26' East. The Delta stretches to about 110 km. North-East of Kassala town.

The climate of the study area is described by two meteorological stations located at Kassala and Aroma towns for the period 1961-1990 as follows: Average temperature at Kassala is 41.6 °C in May to 16.5 °C in January, while it is 42.6 °C and 14 °C at Aroma, respectively.

The rainy season (July-September) is with mean annual rainfall of 251mm per annum at Kassala, and 193mm at Aroma.

Relative humidity varies from 27% in April to 60% in August at Kassala, and from 27% to 48% at Aroma.

Materials and Methods

The authors collected four specimens from each plant species in the study area. The fresh specimens were collected during four field trips in the different seasons of the year. The collection sites were Bushara village, Wad Sharifi, Kassala, Gammam, Makali, Aroma, Degain, Hadalia and Wagar. Materials collected

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were examined initially for identification, and further analysis was carried out. All specimens were kept in the herbarium of the Medicinal and Aromatic plants Research Institute, National Center for Research, Khartoum, and compared with old collections. Further confirmation was made by comparison with the specimens from Botany Department Herbarium, University of Khartoum.

Famous previous studies on Sudan flora including Andrews (1952), Braun et al (1991), El Amin (1990) and Sahni (1968) were consulted for botanical classification. Moreover, literature concerning medicinal plants of the Sudan e.g. Bebawi, and Neugebohrn, (1991), El Ghazali (1983 and 1985)

and Thirakul (1984) were also reviewed. Random samples of inhabitants were interviewed concerning the medicinal uses of the plants in their area. Using information taken from inhabitants, coupled with those extracted from literature, medicinal plants of the study area and their usage for treating different diseases were identified and documented.

Results and Discussions

Out of (163) plant species that represent the flora of the Gash Delta [1], fifty plants were found to have common medicinal uses in the area. These plants (classified in table 1) represent about 30% of the vegetation there. The literature on medicinal plants of

Table 1. Common medicinal plants of Gash Delta, Eastern Sudan.

No.	Plant	Family	No.	Plant	Family
1	<i>Hygrphila auriculata</i> (Schumach) Heine	Acanthaceae	29	<i>Luffa echinata</i> Roxb	Cucurbitaceae
2	<i>Trianthema portulacastrum</i> L.	Aizoaceae	30	<i>Faidherbia albida</i> (Del.) A. chev.	
3	<i>Zaleya pentandra</i> (L.) Jeffrey	Aizoaceae	31	<i>Acacia nilotica</i>	Leguminosae
4	<i>Achyranthes aspera</i> L.	Amaranthaceae	32	<i>Senna italica</i> L.	Leguminosae
5	<i>Aerva javanica</i> (Burm.f.) Schultes	Amaranthaceae	33	<i>Senna obtusifolia</i>	Leguminosae
6	<i>Alternanthera pungens</i> Kunth.	Amaranthaceae	34	<i>Senna occidentalis</i>	Leguminosae
7	<i>Celosia argentea</i> L.	Amaranthaceae	35	<i>Boerhavia repens</i> L. var. <i>diffusa</i> (L.) Hook	Nytaginaceae
8	<i>Hyphaene thebaica</i> (L.)	Arecaceae (palmae)	36	<i>Argemone mexicana</i> L.	Papaveraceae
9	<i>Aristolochia bracteolata</i> Lam	Aristolochiaceae	37	<i>Portulaca oleracea</i> L.	Portulacaceae
10	<i>Calotropis procera</i> (Aiton) Aiton.	Asclepiadaceae	38	<i>Portulaca quadrifida</i> L.	Portulacaceae
11	<i>Acantahospermum hispidum</i> DC.	Asteraceae	39	<i>Ziziphus spinacristi</i> (L.) Desf.	Rhamanaceae
12	<i>Ageratum conyzoides</i> L.	Asteraceae	40	<i>Salvadora persica</i> L.	Salvadoraceae
13	<i>Xanthium brasiliicum</i> waller	Asteraceae	41	<i>Physalis angulata</i>	Solanaceae
14	<i>Balanites aegyptiaca</i> (L.) Del.	Asteraceae	42	<i>Solanum incanum</i>	Solanaceae
15	<i>Euphorbia aegyptiaca</i> Boss	Balanitaceae	43	<i>Solanum nigrum</i> L.	Solanaceae
16	<i>Euphorbia heterophylla</i> L.	Euphorbiaceae	44	<i>Withania somenifera</i> (L.) Dunal.	Solanaceae
17	<i>Euphorbia hirta</i> L.	Boraginaceae	45	<i>Corchorus olitorius</i> L.	
18	<i>Ocimum basilicum</i> L.	Lamiaceae	46	<i>Cyndon dactylon</i> (L.) pers.	Poaceae
19	<i>Ricinus communis</i> L.	Euphorbiaceae	47	<i>Eleusine indica</i> L.	Poaceae
20	<i>Cordia sinensis</i> Lam		48	<i>Cissus quadrangularis</i> L.	Vitaceae
21	<i>Heliotropium bacciferum</i> Forssk	Boraginaceae	49	<i>Chloris virgata</i> Sw.	Poaceae
22	<i>Boscia senegalensis</i> (Per.) Lam		50	<i>Tribulus terrestris</i> L.	Zygophyllaceae
23	<i>Capparis decidua</i> (Forssk.) Edgew	Capparidaceae			
24	<i>Cleome gynandra</i> (L.) Briq.				
25	<i>Citrullus colocynthis</i> (L.) Schard	Cucurbitaceae			
26	<i>Cucumis dipsaceus</i> Spach.	Cucurbitaceae			
27	<i>Cucumis melo</i>	Cucurbitaceae			
28	<i>Lagenaria siceraria</i> (Holina) Standl	Cucurbitaceae			

Table 2. Public medicinal uses of the plants of Gash Delta, Eastern Sudan.

Medicinal use	Plant No. (as in table 1)	Method of application
Diuretic	1, 8, 44, 47	aqueous extract of the whole plant
	28, 37	fresh peeled seeds taken with honey
	33	root extract
	40	oil taken
	46	Decoction of rhizomes
	50	Fruits taken orally
Anti-tumor	1, 9	poultice of the burned parts
For back pain	1	poultice of the whole plant
Astringent	2	aqueous extract of the whole plant
	7, 37	Seeds taken orally
	16, 39	Leaves extract
	30	Bark decoction
	31	aqueous extract of the fruits
	39, 50	Fresh root extract
	42	
Bites:		maceration of the whole plant
Scorpion bite	3, 15, 25	root rubbed
	9, 48	latex used externally
	10	root extract
Snake bite	37, 42	powdered bark taken
	40	
Anti-septic	4	dry roots used externally
	49	soaked leaves used
Rheumatism	4, 44	dry roots externally
	14, 19, 23	fumigation of branches
	22	leaves mixed with sesame oil
	32	poultice of powdered roots
Aphrodisiac	5	fumigant of the whole plant
	43	Seeds taken orally
For cough	6, 18	aqueous extract of the whole plant
	12	decoction of roots
	30	Bark decoction taken orally
	46	Decoction of rhizomes
Worm eradication	7, 9, 23, 37, 39	Leaves taken orally
	14, 28, 37, 39	fruits taken orally
	24, 37	seeds taken orally
Abdominal pains	9, 12, 39	root extract
	14, 26, 34, 39, 40	fruits taken orally
	39	root extract
	41, 48	leaves extract

table 2 cont.

Measles	10, 34	Plant used externally
	39	
Cutaneous nodules	10	latex used externally
	34	plant used externally
Eezema	10	latex used externally
Jaundice	10	Infusion of roots taken with flour
Bilharzia	11	Decoction of the whole plant
	14	Fruits
	22	Root decoction
Ulcer	13	Fruits taken orally
	45	Whole plant extract
Toothache	13, 19	Fruit extract as gurgle
	23	Green stems chewed
	31, 45	Roots chewed
	38	Leaves chewed
Malaria	14, 20	decoction of roots
Laxative	14, 44, 47	Fruits
Purgative	15, 19, 32, 35	Whole plant extract
	25, 29, 32, 34, 43	Seeds taken orally
Skin abscess	17, 21, 23, 44	Whole plant poultice
Anti-asmatic	17, 23	Plant inhalation
	42	Root extract
Fever	18	Whole plant poultice
Gout	18	Whole plant poultice
Worm eradication	18	Leaves decoction
Nervous disorder	19	Whole plant extract
Muscular pains	22	Leaves poultice
Skin allergy	25, 43	Infusion of fruit mesocarp mixed with sesame oil
		taken externally
Diabetes	25, 37	Fruits taken only
Digestive	27	Seeds taken orally
Leprosy	30	Bark decoction taken orally
Oral and throat infection	31, 50	Gurgle with fruit extract
Ophthalmia	31	Plant water extract
	32	Crushed seeds
Dysentery	31	Fruit extract
	42	Root extract
Eczema	33	Plant extract
Psychotic excitement	36	Leaves and fruit extract

the Sudan pointed to their medicinal importance, and some of the interviewed local inhabitants confirmed this. The present study, however, elaborates on the diseases treated by these plant materials, parts of plants used and method of application. All this is documented as shown in table 2. Thirty seven medicinal treatments and uses are documented. These botanical treatments cover a wide range of human body diseases. They are recorded for the treatment of the digestive, urinary, dermatological, respiratory, sexual, muscular, nervous and blood diseases or disorders, besides eye, throat and oral problems. However, digestive treatments come at the top as eleven plant treatments are given as astringents, eleven for worm eradication, ten for abdominal pains and nine as purgative. Next, come the urinary problems as ten treatments are given as diuretic. Similarly, nine treatments are given for the scorpion and snake bites, and eight for rheumatism. Skin diseases are also among the common diseases treated by the plants of the area as four treatments are given for skin abscesses and two for each of skin allergy and skin nodules (Table 2).

This study is, therefore, a pioneer work in such medicinal survey for this particular area in the Sudan. However, further studies, chemical and pharmaceutical, are recommended to confirm the public medicinal values of these plants as most of the botanical treatments applied have proved to be effective in the area for some years.

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مسح للنباتات الطبية في دلتا القاش، شرق السودان

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الملخص: تُعتبر الدراسة الحالية رائدة في مسحها للنباتات الطبية في دلتا القاش بشرق السودان. أعطت الدراسة معلومات عن الموقع و المناخ و التربة و السكان و تمّ تعريف النباتات من خلال رحلات ميدانية و باستخدام المراجع النباتية. و باستخدام المعلومات المستقاة من بعض السكان المحليين مع الدراسات السابقة للنباتات الطبية في السودان تمّ توثيق النباتات الطبية للمنطقة بالأسماء العلمية و العوائل. أُعطيت معلومات عن معالجة الأمراض الشائعة بنباتات المنطقة و وُجد أنّ 33٪ من نباتات المنطقة لها فوائد طبية و وُثقت بنوع المرض و طريقة معالجته.

كلمات دليلة: استخدامات طبية ، نباتات، دلتا القاش، السودان.