



Research article

Traditional use of medicinal plants among the Barti tribe community in Fangoga area, Sennar State, Sudan

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Abstract: In Sudan, traditional healing practice by herbalists is prevalent among tribes in remote areas that are deprived of modern health care. Barti tribe is a small Arabic speaking community moved from North Darfur state in early dry periods to the Fangoga area in Sennar State. In this study ethnobotanical survey on traditional medicinal plants used by this community was conducted in July 2016. The data was collected from a total of 85 informants with a mean age of 62 years using semi-structured questionnaires. Informants were asked about the plants and the harvested parts they use to cure the prevalent diseases, methods of preparing the herbal remedy, and administrative details. The study documented 53 medicinal plants used to treat various ailments. The most utilized plant families were Leguminosae followed by Apocynaceae and Malvaceae. Based on plant habits, herbs recorded the highest proportion of the medicinal plants (36%) followed by trees (34%) and shrubs (30%). Of the total plants 77% are wild and 23% are cultivated species. Commonly treated diseases are jaundice, rheumatic pain, stomach pain, and snake bites. Further pharmacological and phytochemical research studies are needed to identify active components in the reported plants, and their efficiency to cure the diseases.

Keywords: Ethno-medicine - Barti - Fangoga - Sudan.

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INTRODUCTION

Ethnobotanical studies are often useful in revealing plants used in herbal medicine by locals in remote rural areas in developing countries. According to the World Health Organization (WHO) 80% of the world's people depend on traditional medicine as an important component of their health care system (Cotton 1997) and more than 50,000 of the world flowering plants are used for medicinal purposes (Schippmann *et al.* 2002). In Sudan, the majority of the tribal people are nomads. They have simple and effective remedies to treat common ailments. The main source of their traditional remedies is mainly plants. It is usually undertaken by knowledgeable members of the community who transmit the use of medicinal plants and their properties orally to their younger generations. To preserve this valuable knowledge, the Medicinal and Aromatic Plants Research Institute (MAPRI) has taken the initiative to document valuable ethnobotanical data and traditional knowledge. MAPRI has published several studies on the ethnomedicine of different places in Sudan. These documentations cover Erkowit, Nuba Mountains, White Nile Province, Kordofan, Khartoum State, and Ingassana Areas (El Ghazali 1986, El Ghazali *et al.* 1987, 1994, 1997, 1998, 2003). Musa *et al.* (2011) documented the medicinal plants used to cure disease by locals in the Blue Nile State, south-eastern Sudan where rural population displacement due to war and dam constructions on the. Madani *et al.* (2014) documented the medicinal plants in Gaab El Lagia oasis, West Dongola in northern Sudan where the area is affected by the agricultural activities of El kababeesh pastoral tribe recently settled and turned to agriculture and increasingly clear land for this purpose. This study represents the first documentation of the indigenous knowledge on utilization of medicinal plants by the Barti

tribe community who suffer from drought in western Sudan and moved from Milleet area to Fangoga area in Sennar State

MATERIALS AND METHODS

Study area

Fangoga area (13° 25.396' N, 33° 18.658' E) is located in Sennar state, about 35 km west of Sennar town (Fig. 1). It is a small community of 6500, inhabited by Arabic speaking Barti tribe who moved to the area from Milleet (50 km North of Alfashir in North Darfur) before 1956. The main occupation in this area is farming growing sorghum and sesame. The area has no industrial establishment. The maximum annual rainfall does not exceed 600 mm with rainiest months being July, August and September. The maximum average temperature never exceeds 43°C while the minimum does not drop below 12°C with the hottest months being April, May and June. (Source: Sudan Meteorological Corporation). The area is located in a vegetation zone known as the low rainfall savannah in which the annual herbs are represented mainly by members of the family Poaceae and tree species are dominated mainly by *Acacia* spp.

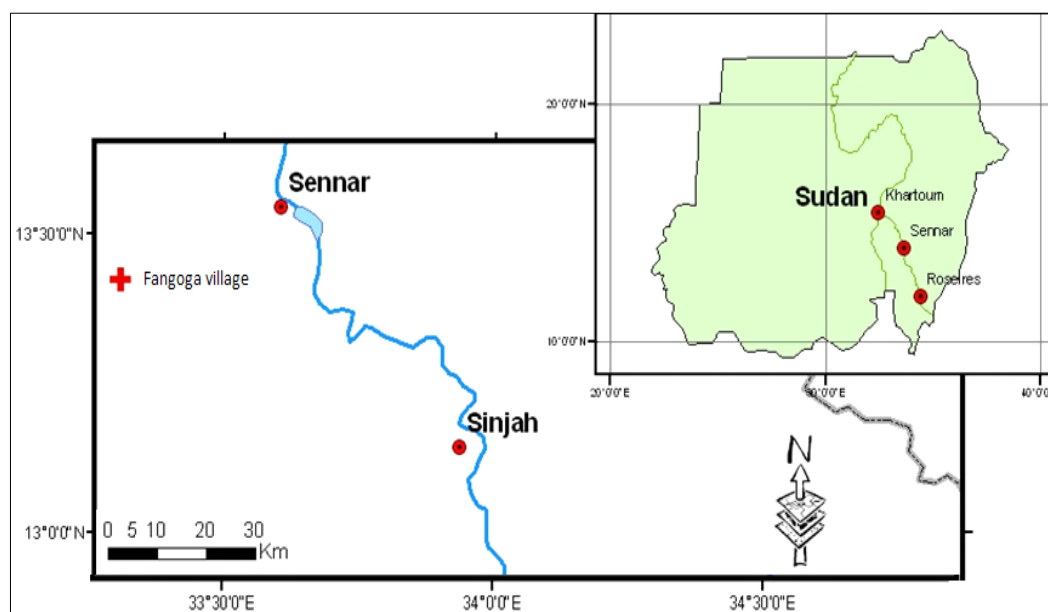


Figure 1. Location of the study area.

Ethnobotanical data collection

Ethnobotanical information was obtained in July 2016 by interviewing local people using a semi-structured questionnaires and from group discussions organised at informants' homes with the assistance of some local people known to the authors. Interviews were conducted among randomly selected people in the local market while informants in the group discussion include some traditional healers, herbal medicine practitioners, and old men and women. Documentation was taken from a total of 85 informants. Ages of the informants ranged from 45 to 80 years with a mean of 62 years. Informants were asked about the medicinal plants and the harvested parts they use to cure the prevalent diseases, methods of preparing the herbal remedy, and administrative details.

RESULTS AND DISCUSSION

This study represents the ethnomedicinal plants used by the local people in the tribal community Barti in Fangoga area. The study records 53 plant species used to treat various ailments table 1. The most utilized plant families were Leguminosae (13 species) followed by Apocynaceae (four species) and Malvaceae (three species). The most used plants belong to the genus *Acacia*. Based on plant habits, herbs recorded the highest proportion of the medicinal plants (36%) followed by trees (34%) and shrubs (30%). 77% of the medicinal plants grow naturally in the study area while 23% were cultivated species (Fig. 2). Using of plant materials from natural resources could negatively affect the density and diversity of these medicinal plants. *Hibiscus sabdariffa* L., *Trigonella foenum-graecum* L., *Foeniculum vulgare* Mill. and *Coriandrum sativum* L. were the most cultivated species used in Fangoga area. They were used to treat digestive disorder and respiratory infections. . The most plant parts used for the treatment of various ailments were fruits and leaves (Fig. 3). Commonly treated diseases were jaundice, rheumatic pain, stomach pain, and snake bites. Leaf and fruit decoction were the common preparation method of the remedies. It is observed that using of fruit decoction of *Acacia nilotica* (L.) Delile

were reported by other authors as an effective remedy to treat cough, sour throat, and fever in different areas in Sudan (El Ghazali 1986, El Ghazali *et al.* 1987, Musa *et al.* 2011, Madani *et al.* 2014).

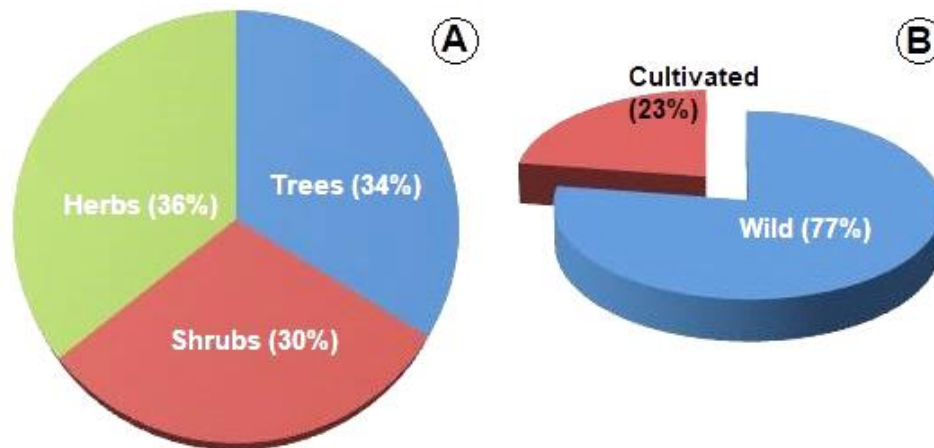


Figure 2. Ethnomedicinal plants: **A**, Life forms; **B**, Proportions of cultivated and wild species.

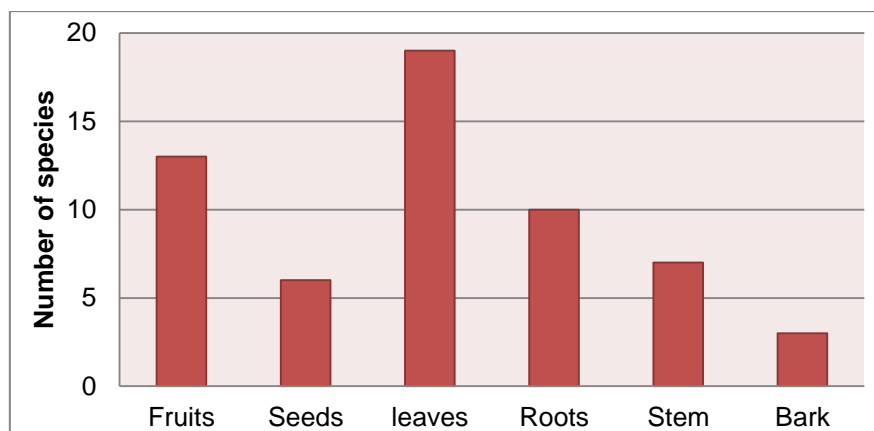


Figure 3. Different plant parts of the ethnomedicinal plants used in the study area.

Table 1. List of ethnomedicinal plants used by local people in Fangoga area, Sennar state, Sudan.

S.N.	Botanical name	Local name	Habit	Plant part used	Preparation	Administration	Ethno-medicinal use
1	<i>Acacia nilotica</i> (L.) Delile	Garad	Tree	Fruit	Decoction	Oral	Cough, Sour Throat, Fever
2	<i>Hibiscus sabdariffa</i> L.	Karkady	Shrub	Flower	Decoction	Oral	Respiratory infections
3	<i>Solenostemma Argel</i> (Delile) Hayne	Hargal	Herb	Leaf	Decoction	Oral	Stomach pain
4	<i>Trigonella foenum-graecum</i> L.	Hilba	Herb	Seeds	Decoction	Oral	Digestive disorder
5	<i>Datura stramonium</i> L.	Sakaran	Shrub	Seeds	Raw Powder	Oral External	Hemorrhoid Toothache
6	<i>Acacia seyal</i> Delile	Taleh	Tree	Leaf	Paste	External	Tonsillitis
7	<i>Prosopis chilensis</i> (Molina) Stuntz	Miskeet	Tree	Stem	Burnt	Fume	Rheumatic pain
8	<i>Aerva javanica</i> (Burm.f.) Juss. ex Schult.	Gobaish	Herb	Fruits	Raw	Oral	Malaria
9	<i>Aerva javanica</i> (Burm.f.) Juss. ex Schult.	Gobaish	Herb	Leaf	Decoction	Oral	Jaundice
10	<i>Albizia lebbek</i> (L.) Benth.	Arad	Shrub	Root	Paste	External	Snake ant venom
11	<i>Boswellia papyrifera</i> (Caill. ex Delile) Hochst	Trag trag	Shrub	Gum	Decoction	Oral	Respiratory inflammation
12	<i>Foeniculum vulgare</i> Mill.	Shmar	Herb	whole	Maceration	Oral	Stomach pain/ arthritis
13	<i>Prunus mahaleb</i> L.	Mahlab	Shrub	Leaf	Maceration	Oral	Stomach pain
14	<i>Psidium guajava</i> L.	Gawafa	Tree	Leaf	Paste	External	Abscess
15	<i>Psidium guajava</i> L.	Gawafa	Tree	Fruit	Decoction	Oral	Intestinal pain
16	<i>Psidium guajava</i> L.	Gawafa	Tree	Fruit	Raw	Oral	Intestinal pain

14	<i>Ziziphus spina-christi</i> (L.) Desf.	Sidir	Tree	Leaf Bark	Raw Decoction	Oral Oral	Stomach pain Tonsillitis
15	<i>Citrullus colocynthis</i> (L.) Schrad.	Hanzal	Herb	Fruit	Paste	External	Hemorrhoid
16	<i>Azadirachta indica</i> A. Juss.	Neem	Tree	Leaf	Paste Decoction	External Oral	Fever, Abscess Jaundice
17	<i>Mentha spicata</i> L.	Naanaa	Herb	Stem/ leaf	Decoction	Oral	Stomach Pain
18	<i>Pennisetum glaucum</i> (L.) R.Br.	Dokhon	Shrub	Fruit	Raw Maceration	Oral Oral	Rheumatic Pain Kidney pain / sexual catalytic
19	<i>Sorghum bicolor</i> (L.) Moench	Dora	Shrub	Seeds	Raw	Oral	Vomiting
20	<i>Raphanus raphanistrum</i> L.	Figil	Herb	Root	Decoction	Oral	Renal colic
21	<i>Acacia mellifera</i> (M.Vahl) Benth.	Kitir	Tree	Bark	Maceration	Oral	Snake antivenom
22	<i>Aristolochia indica</i> L.	Um Galagil	Herb	Leaf	Paste	External	Antivenom, Toothache
23	<i>Syzygium aromaticum</i> (L.) Merr. & L.M. Perry	Gronful	Herb	Fruit	Raw	External	Toothache
24	<i>Vigna unguiculata</i> (L.) Walp.	Lopia Abiad	Herb	Fruit	Paste	External	Abscess
25	<i>Senna alexandrina</i> Mill.	Senna meka	Herb	Leaf Roots	Decoction Decoction	Oral Oral	Stomach pain Rheumatic pain
26	<i>Balanites egyptiaca</i> (L.) Delile	Higleeg	Tree	Fruit	Infusion	Oral	Stomach pain, Constipation
27	<i>Cymbopogon procerus</i> (R.Br.) Domin.	Mahareib	Herb	Leaf	Decoction	Oral	Heart diseases
28	<i>Adansonia digitata</i> L.	Tabaldi	Tree	Fruit	Infusion	Oral	Dysentery, diarrhoea
29	<i>Salvadora persica</i> L.	Arak	Tree	Stem	Raw	Tooth washing	Antiseptic/ gingivitis
30	<i>Citrus aurantiifolia</i> (Christm.) Swingle	Lymoon	Tree	Stem	Burnt	Fume	Rheumatic pain
31	<i>Eucalyptus camaldulensis</i> Dehnh.	Pan	Tree	Stem	Burnt	Fume	Rheumatic pain
32	<i>Carica papaya</i> L.	Babai	Tree	Root	Decoction	Oral	Jaundice
33	<i>Punica granatum</i> L.	Roman	Tree	Fruit	Raw+ sugar	Oral	Ulcer
34	<i>Khaya senegalensis</i> (Desv.) A.Juss.	Mahogany	Tree	Bark	Decoction	Oral	Malaria
35	<i>Oxystelma esculentum</i> (L.f.) Sm.	Shaalog	Shrub	Root	Paste	External	Snake Antivenom
36	<i>Senna obtusifolia</i> (L.) H.S.Irwin & Barneby	Kawal	Shrub	Seeds	Maceration	Oral	Jaundice, Diabetes
37	<i>Ambrosia maritima</i> L.	Demseesa	Herb	Leaf	Decoction	Oral	Diabetes
38	<i>Zea maiz</i> Vell.	Aish Reef	Shrub	Fruit	Decoction	Oral	Kidney Diseases
39	<i>Phoenix dactylifera</i> L.	Al Balah	Tree	Seeds	Decoction	Oral	Uteritis
40	<i>Striga hermonthica</i> (Delile) Benth.	Boda	Herb	Leaf	Paste	External	Herpes, Toothache
41	<i>Acacia foetida</i> (Jacq.) Kunth	Laaot	Shrub	Leaf Stem stem	Paste Maceration Burnt	Eternal Oral Fume	Snake ant venom Schistosomiasis Rheumatic pain
42	<i>Tribulus terrestris</i> L.	Deriasa	Herb	Fruit	Decoction	Oral	Urogenital pain
43	<i>Coriandrum sativum</i> L.	Kaspara	Herb	Fruit	Maceration	Oral	Nosia
44	<i>Cichorium intybus</i> L.	Molaita	Herb	Leaf	Raw	Oral	Malaria/ diabetes
45	<i>Lupinus albus</i> L.	Tormos	Herb	Seeds	Boiled Raw	Oral Oral	Bone fractures Diabetes
46	<i>Capparis decidua</i> (Forssk.) Edgew	Tondob	Tree	Stem Leaf	Burnt Decoction	Fume Oral	Rheumatic pain Jaundice / spleen
47	<i>Ricinus communis</i> L.	Kheroi	Shrub	Seed	Paste	External	Skin rash
48	<i>Ocimum basilicum</i> L.	Rihan	Herb	Leaf Seeds	Decoction Raw	Oral External	Headache Eye inflammation
49	<i>Abutilon pannosum</i> (G.Forst.) Schltld.	Gargadan	Shrub	Leaf	Paste	External	Diabetes wounds

50	<i>Crateva adansonii</i> DC.	Dabker	Shrub	Stem	Paste	External	Wounds
51	<i>Lawsonia inermis</i> L.	Hena	Shrub	Leaf	Paste	External	Abscess / foot heat
52	<i>Combretum glutinosum</i> Perr. ex DC.	Habeel	Tree	Root	Maceration	Oral	Rheumatic pain/ body pain
53	<i>Calotropis procera</i> (Aiton) Dryand.	Oshar	Shrub	Stem Fruit	Maceration Poultice	External External	Hemorrhoid Mycetoma

CONCLUSION

In Sudan most of the indigenous unwritten cultural knowledge on usage of medicinal plants has been lost owing to migration and habitat changes. This paper contributes on documentation of medicinal plants used by Barti tribe community which moved from North Darfur state in early dry periods to Fangoga area in Sennar State. Results have shown that 53 medicinal plants used by traditional healers, herbal medicine practitioners, and old men and women to treat various ailments. 77% of which are wild. The most utilized plant families were Leguminosae followed by Apocynaceae and Malvaceae. The highest proportion of the medicinal plants (36%) are herbs followed by trees (34%) and shrubs (30%). Common treated diseases are jaundice, rheumatic pain, stomach pain, and snake bites. Further pharmacological and phytochemical research studies are recommended to identify active components in the reported plants, and their efficiency to cure the diseases.

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