An ethnobotanical survey of medicinal plants used by communities of Northern Kordofan region, Sudan

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ABSTRACT

Ethnopharmacological relevance: The present study provides significant ethnopharmacological information on plant species used in North Kordofan region, western Sudan. The study was undertaken with an aim to document the medicinal uses of the species known to some Northern Kordofan communities.
Material and methods: The study was conducted between 2012 and 2013. The plants were identified and voucher specimens prepared. Information was collected by means of semi-structured interviews with 258 informants (195 men and 63 women). In addition, the use value (UV) of the species was determined and the informant consensus factor (ICF) was calculated for the medicinal plants researched in the study. Further analysis was carried out to compare results with previous studies from the study area and other regions of Sudan.
Results: A total of 44 plant species representing 24 families were found to be commonly used in the treatment of 73 different human health problems. The families most represented were Leguminosae (18%), Caesalpiniaceae (9%), Malvaceae (9%), Asclepiadaceae (6.8%) and Combretaceae (6.8%). The highest number of plant species are used against digestive system disorders (23 species) followed by microbial infections (21 species) and dermatology (19 species). Among all the plant parts leaves (20%), roots (19%), fruits and bark (14% each) were the most preferred plant parts used by the informants. There was strong agreement among the informants as to the usages of the plants (informant consensus factor 0.63–0.93). The most important plants on the basis of use-value were *Acacia nilotica*, *Acacia seyal*, *Balanites aegyptiaca*, *Cassia occidentalis*, *Cassia senna*, *Guiera senegalensis* and *Tamarindus indica*.
Conclusion: This study has helped to document information that may otherwise be lost to future generations. This is the first ethnobotanical study in which statistical calculations about plants are carried out by means of the ICF and UV methods in the study area. Plants with high ICF and UV values should be subjected for further phytochemical and pharmacological investigation for scientific validation.

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1. Introduction

In Sudan, similar to other developing countries, traditional medical practices play an important role, and 90% of population particularly those who are living in frontiers and rural areas depend mainly on herbal medicine for the treatment of various types of diseases (Koko et al., 2000). This experience could be attributed to cultural acceptability, easy availability of local medicinal plants (El Kamali, 2009) and economic affordability as compared to modern medicine.

Urban and rural people of North Kordofan region (Western Sudan) inherited a rich traditional medicinal knowledge but unfortunately the region remains unexplored and no comprehensive account of traditional local remedies is available. The only works existing for a few areas of this region are compiled by El Ghazali et al. (1997a) and El Kamali (2009). There is, therefore, a need to document medicinal plants in this region before the provider of information disappears. Meanwhile most of these plants were already endangered by the arid/semiarid climatic conditions and man-made activities (El Kamali, 2009). Therefore the main aim of the present study was to document and identify different uses of the indigenous medicinal plants used by the locals of Northern Kordofan with emphasis on those have never been described in the ethnobotanical literature of Sudan and to find out new or rare uses of medicinal plants.

2. Material and Methods

2.1. Study area

North Kordofan region is situated in the mid-west of Sudan. It

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is located between latitudes 12° 43′–13° 42′ N and longitudes 30° 14′–31° 55′ E. The region has a varying climate, ranging from desert and semi-desert in the north, to rich savanna in the south (El Tahir et al., 2010). Arid and semi-arid zones cover the largest part of the region and the soil ranges from sand dunes "goz" in the north, to the clay so-called "gardud" soils in the south (Harrison and Jackson, 1958). The rainy season varies from about three months or less in the north to about four months in the south, with rains occurring between June and October. Northern part of the region is generally covered with low desert and semi-desert scrub, whereas the central part is covered with *Acacia senegal* savanna and the south is covered with broad-leaved savanna woodland *Acacia seyal* and *Balanites aegyptiaca* (El Tahir et al., 2010). Four localities of North Kordofan state namely, Shiekan, El Nehoud, Um Rwaba and Bara were included in this study. Fig. 1 shows the locations map of the study area.

2.2. Population

Kordofan region has a total population of about 3.25 million which is about 15% of the total population of Sudan (El Tahir et al., 2010). Ethnically, population composition in the region can be classified as nomadic and sedentary tribes. The major groups are all Arabs including Kababish, Kawahla, Hamer, Hawawir and the Maganin tribes (El Kamali, 2009). The sedentary groups, which also are mainly Arabs, include Dar Hamid, Danagla, Gawamaa and Bedaireia. A few sedentary tribes are non-Arabs; they are mainly of Hausa and Fulani origin and have come from West Africa (El
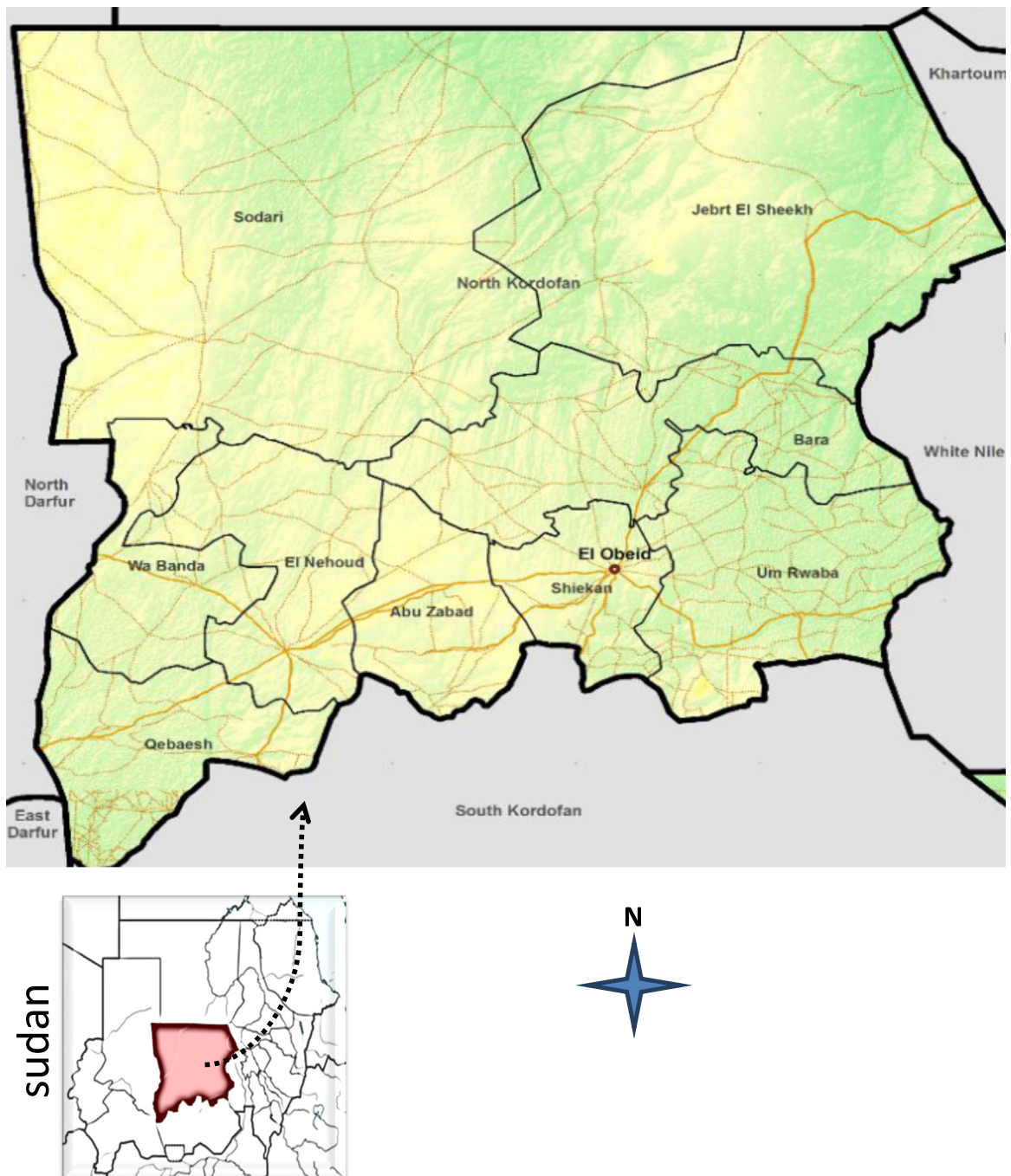

Fig. 1. Study area. Map showing North Kordofan state with the four localities where the survey was carried out.