Journal of Ethnopharmacology 148 (2013) 701–713

Contents lists available at SciVerse ScienceDirect

Journal of Ethnopharmacology

journal homepage: www.elsevier.com/locate/jep

Medicinal plants and their uses by the people in the Region of Randa, Djibouti

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ARTICLE INFO

Article history:
Received 6 December 2012
Received in revised form
3 May 2013
Accepted 8 May 2013
Available online 22 May 2013

Keywords:
Traditional medicinal plants
Ethnobotanical leads
ICF
Randa
Djibouti

ABSTRACT

Ethnopharmacological relevance: The article presents the local knowledge on medicinal plants and their relevance in managing health problems. Important ethnobotanical leads are given with priority species and disease categories, casting insight on future phytochemical and pharmacological studies.
Aim of the study: The use of traditional medicinal plants has been an integral part of the traditional healthcare systems in Djibouti. However, scientific studies on the traditional herbal healing systems of the various cultural groups have never been undertaken. This study has, therefore, aimed at assessing plant-related ethnomedicinal knowledge of the people in Randa Region; prioritising the plants with respect to common disease categories and inferring about prospects of new pharmacological products.
Materials and methods: Interview-based ethnobotanical field study was carried out to document the plant-based ethnomedicinal knowledge handed down to the present by the oral tradition of people living in 24 villages in Tadjourah District of Randa Region (north Djibouti). Informant Consensus Factors (ICF) and Fidelity Level (FL) values of the medicinal plants were calculated to check the level of informant agreement and the healing potentials of the species.
Results: A total of 91 plant species that belong to 72 genera and 40 families were documented. Most of these species (92%) were collected from non-cultivated areas. Their local names and traditional uses in medicine were also studied. The plant family Fabaceae was represented by the highest number of taxa (17 species). Strong informant agreements hinted at good healing potentials of some species as shown by high values of consensus factors for eye diseases (0.98), mouth diseases (0.93), kidney problems (0.89) and microbial infections (0.84). *Dodonea angustifolia*, *Solanum cordatum*, *Grewia erythraea*, *Acalypha indica*, *Acacia etbaica*, *Fagonia schweinfurthii*, *Solanum coagulans*, *Senna alexandrina* and *Grewia tembensis* scored high FL values emerging as promising priority species for future pharmacological screening against microbial infections.
Conclusion: The results of this study may inspire further ethnobotanical and ethnopharmacological research and investigations toward drug discovery in Djibouti and beyond.

1. Introduction

With a population of 818,159 and a total area of 23,200 km^2 Ministere des Finances, 2009, Djibouti is part of the Horn of Africa and has three major officially recognised ethnic groups that include Somalis, Afars and Arabs. Each ethnic group in Djibouti has its own language with a writing system, and its own history and traditional medical practices. A long period of interaction among ethnic groups has been going on in the multi-nationality Region of Randa where the present research was undertaken. These communities have interacted and are interacting with the plants of the area in general and with medicinal plants in particular.

In many developing countries, overexploitation of natural resources for medicinal use and other purposes are closely linked with rapid population growth, increasing cattle grazing and dryness of the environment (Kelbessa, 2013). Popular species, which are slow growing and slow reproducing, are especially vulnerable to excessive collection. In a similar way, many medicinal plant species of Djibouti are threatened and faced with the danger of extinction (Kelbessa, 2013). Paradoxically, no attention has been given to the study, conservation and prioritisation of promising traditional medicinal plant species in Djibouti.

Abbreviations: ETH, National Herbarium; AAU, Addis Ababa University; ICF, informant consensus factor; FL, fidelity level index; RI, relative importance value.

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0378-8741/$ - see front matter © 2013 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.jep.2013.05.033

In countries where western medicine is inaccessible to the rural population or too expensive with poor community acquiescence, the majority of the inhabitants rely on traditional herbal remedies. The reliance on traditional herbal medicine in such countries has been sustained by the additional fact that most health centres and hospitals are located far away from the rural people, and the communication system is poor. On the other hand, the herbal medicines are affordable, accessible and acceptable to the community. The majority of the population, therefore, resorts to traditional medicine as its primary healthcare systems wherein traditional herbal medicine looms very high (Fleurentin and Pelt, 1982; Samuelsson et al., 1991; Wondimu et al., 2007).

Despite its significant contribution to the society, especially in dealing with serious health problems including new and emerging diseases, Djiboutian traditional herbal medicine has not received the attention it deserves in modern research and development. The study aims at assessing the plant-based ethnomedicinal knowledge used by the people in Randa Region of Djibouti and documentation of the traditional medicinal plants. It also has the additional purpose of preparing the ground for exploring and facilitating the way to new drug discovery by following up the important ethnobotanical leads on traditional medicinal plants of Djibouti.

2. Materials and methods

2.1. Study area

An ethnobotanical study was conducted in Tadjourah District of Randa Region in north Djibouti. The location of the study area centred around 11.8°N latitude, 42.6°E longitude, covering an area of 1191.38 km^2 that stretches over an altitudinal range of 400–1799 m a.s.l. The area receives an average annual rainfall of 250–300 mm (Nour et al., 2008). Randa Region (Fig. 1) is mostly inhabited by the Afar ethnic communities who live in villages in the vicinity of the forest area.

The population of the study area is composed of villagers who usually depend on forest products for their needs including firewood, building materials and other services including provision of medicinal plants. Most of the inhabitants are farmers while a few of them dwell in the forest. The type of livestock that the people raise depends on the long standing ethnic cultures, but generally they have goats as the main livestock type.

2.2. Data collection

The ethnobotanical information on medicinal plants was collected following standard ethnobotanical methods (Martin, 1995; Cotton, 1996) mainly through interviewing 184 respondents (117 males and 67 females) chosen by stratified random sampling. For cultural reasons, women could only respond if men gave permission and this explains the lower sample size for females. A semi-structured interview guide was used to collect data on local plant names, uses, parts used and the modes of preparation and administration of remedies. Informants were interviewed from July 2010 to February 2011. Eight key informants (traditional herbalists) were consulted to verify the information obtained from the household level and further confirmed by employing selected analytical research tools of ethnobotany (Heinrich, 2000).

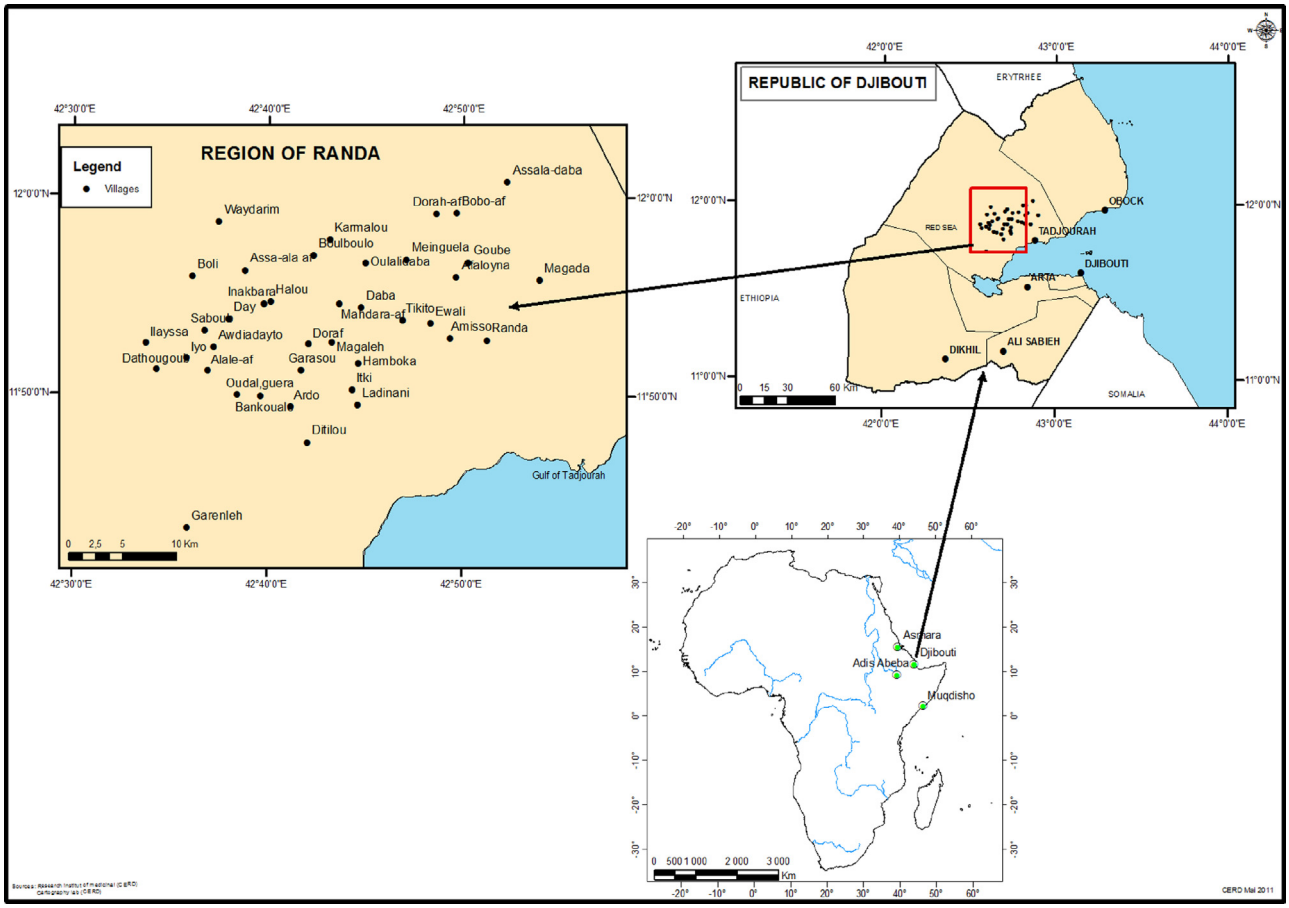

Fig. 1. Location of Randa Region in Djibouti and its villages.