STUDY OF FOLKLORE MEDICINAL PLANTS USED IN TRADITIONAL MANAGEMENT OF HUMAN AILMENTS IN BORANA ZONE, OROMIA, ETHIOPIA

Abstract of the Thesis
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The present study deals with folklore medicinal plants used in traditional management of human ailments in Borana zone, Oromia, Ethiopia. Ethiopia is located in the NE Africa between 3°N and 15°N latitude and 33°E and 48°E longitude. The Borana zone is geographically located between 3°24'20" and 6°36'01"N latitude and 36°42'58" and 40°46'31"E longitude. It is located in the southern part of Oromia National Regional State.

The indigenous peoples of the study area are called Borana, Guji and Gabra, the branches of the Oromo ethnic group in Ethiopia. Oromo is the largest ethnic group in eastern Africa. They speak Afan Oromo (Oromo language), a language in the eastern Cushite family of the Afro-Asiatic languages. The local people of the study area are well known for their traditional democratic, social and political administrative system called the "Gada" System ("raaba-gadaa"). "Raaba-gadan" is a system of classes of generations in which a new generation takes the leadership of the "yaa'aa" (the ritual and itinerant village) every eight years and performs a number of national rituals at different sacred sites. In other words, the "Gada" System is a system of age grade classes ("luba") that succeed each other every eight years in assuming military, economic, political and ritual responsibilities.

The main focus of this study is to investigate the uses of various traditional medicinal plants which are used by the local people of the study areas. The finding of the study will try to answer the following research questions.

- Are there medicinal plants, which local people use to treat their own health problem and/ or human ailments?
• What are medically important plants species used by local people of the study areas?
• How do the local people obtain and use the plant species to treat various human diseases?
• What is the current status of the medicinal plants?
• How do local people conserve medicinal plants?
• Which part of the medicinal plants is useful to treat human ailments?

In the current study area, Borana Zone, studies of folklore medicinal plants have not been conducted prior to this time. Thus the findings of this study is important in that the documentation of indigenous knowledge on the utilization of biological resources including medicinal plants is of immense value to biodiversity planners and scientists in developing strategies in conservation, utilization and generation of wealth from bio-resources. In addition, it will help people of the study area to be aware of problems associated with medicinal plants and give attention for the threatened medicinal plants.

The general objective of the present study is to record and analyse folklore medicinal plants and associated traditional knowledge of the communities in Borana Zone, Oromia, Ethiopia. The study has the following specific objectives:

• To identify plant species used for medicinal purposes in treating human health problems in the study areas;
• To gather, record, and document indigenous knowledge of the people on medicinal plants in the study areas;
• To identify plant parts used to treat diseases, method of preparation and route of administration as implemented by the local people in the study areas;
• To assess the role of traditional practices and indigenous knowledge in maintaining medically important plant species; and
To find out the threats and local methods used by indigenous people to conserve medicinal plants.

Study of folklore medicinal plants in traditional management of human ailments was conducted from October 2012 to August 2014 in Borana Zone, Oromia National Regional State, Ethiopia. The study covered systematically selected nine districts out of 13 districts of the zone. Within the selected nine districts, 59 *kebeles* (the smallest administrative unit) were selected systematically based on the accessibility, availability, abundance and diversity of traditional healers. A total of 163 (112 male (68.7%) and 51 female (31.3 %)) key informants and/or locally well-known traditional healers between the ages of 20 and 85 were selected based on recommendations from elders and local authorities.

Ethnobotanical techniques were employed to collect data on knowledge and management of medicinal plants used by the peoples in Borana Zone as described in Martin (1995) and Cotton (1996). Standard methods of botanical collection and techniques of herbarium preparations were followed as suggested by Jain and Rao (1978) and Jain (1995).

Group discussions, interviews and field observations were used to collect data. Collected data were entered into Excel spreadsheet and summarized. A descriptive statistical method of data analysis, such as percentage and frequency were employed to analyse and summarize the data on medicinal plants, associated knowledge as well as use values and conservation. Medicinal values, parts used, methods of preparation, dosage, route of application, diseases treated and other use values were analysed through descriptive statistical analysis. Sex and age distribution of traditional healers and relative frequency of families and life forms of medicinal plants were tabulated and analysed statistically. Histogram, bar graphs and pie-charts were drawn and proportions were then determined.
Sorensen’s Similarity Coefficient (1948) was used for phytogeographic comparison to evaluate the relationship in species distribution (abundance) between the reported medicinal plants of the study area and medicinal plant species diversity of India in general and Andhra Pradesh in particular.

The approaches and methodologies described by Jain (1977, 1989), Kapur and Kapur (1997) have been followed systematically for ethnobotanical enumeration. Under enumeration, the recent botanical names, family names, synonyms and vernacular names (in Afan Oromo/Oromo language) were given. Voucher specimen collection number, geographic distribution and locality, plant description, medicinal use as reported by the traditional healers and other uses have been recorded for each medicinal plant species. Recorded medicinal plants were described based on the Flora of Ethiopia and Eritrea Volumes (1-7). The plant species were arranged alphabetically and photographs captured (plates) were presented for each medicinal plant species as of the list under enumeration.

The peoples of the study area and surroundings visit and prefer to traditional healers for various reasons viz., lack of substitute to get better medication for some of the diseases in the modern health care system, easy access of traditional healers and low cost treatment of traditional medicines. Knowledgeable healers especially elders in the study areas treat human ailments by their special preparations made from plants with in kind charge (culturally a kilo of sugar and tea, coffee and pounded tobacco leaves) and sometimes even for free for the less fortunes.

As informed by elders, the local communities express the value of their health by using poems, proverbs and songs in their day-to-day life events. The indigenous local peoples of the study area have rich folklore knowledge of their environments and traditionally
classified the landscape, soil and vegetation types based on a combination of physical and vegetation attributes interrelated with suitability.

During field visit it was observed that some healers hesitate to reveal the claimed medicinal plants and others showed interest to be paid for their knowledge. In addition, the pastoralist and agro-pastoralist did not want to indicate medicinal plants for many reasons, the major ones being the traditional belief that if it is told, the plant may lose its effectiveness, and they fear that the local communities may misuse the medicinal plants.

Transfer of knowledge among the community in the study areas has mainly been taking place from the father to the trusted eldest son or selected well behaved son from his father through long time exposure and experience gained. Yet this knowledge could not be transferred freely outside blood relationship of traditional healers.

Sex distribution of the traditional healers depicts that 112 (68.7%) were male and 51 (31.3%) were female. This indicates that there is no equal access in the family to get folklore knowledge of medicinal plants. The proper transfer of folklore knowledge of medicinal plants takes place through the men line which could have contributed for the women to have less knowledge as compared to men.

Age distribution of the informants shows that 105 (64.4 %) of the traditional healers are above the age 50 and only 23 (14.1 %) of the traditional healers were between the age of 20 and 40, while 35 (21.5 %) of the healers were at the middle age (41-50). The fact that the younger age group (21-40) are more exposed to modernization than older ones (41 and above) could have contributed to have less folklore knowledge of medicinal plants.
A total of 135 medicinal plant species belonging to 107 genera and 58 families were collected and identified in the study areas. Among these Fabaceae represented by 12 species (8.9 %), Euphorbiaceae 9 species (6.7 %) and Anacardiaceae 8 species (5.9 %) which ranked first, second and third respectively. Rhamaneae and Tiliaceae represented by 5 species (3.7 %) each; Burseraceae, Capparidaceae, Cucurbitaceae, Rutaceae and Solanaceae represented by 4 species (3.0 %) each; Amaranthaceae, Apocynaceae, Asteraceae, Boraginaceae, Lamiaceae, Rubiaceae, Celastraceae represented by 3 species (2.2%) each; Acanthaceae, Asclepiadaceae, Balanitaceae, Commelinaceae, Flacourtiaceae, Meliaceae, Moraceae, Myrtaceae, Oleaceae, Polygonaceae, Rosaceae, Salvadoraceae, Sapindaceae and Verbenaceae represented by 2 species (1.5 %) each and the remaining 27 families represented by one species (0.7 %).

Regarding the habit diversity, shrubs were the most commonly used for medicinal purpose. They were represented with 61 plant species (45.2 %), followed by 36 species (26.7 %) of trees, 25 species (18.5 %) of herbs and 13 species (9.6 %) of climbers.

Out of 135 medicinal plant species recorded 115 species (85.2 %) were collected from the wild vegetation and 20 species (14.8 %) were harvested from cultivation. The local communities mostly use roots (30.8 %) for preparation of medicines and leaves take the second proportion (28.1 %). The principal methods of preparations were reported to be through decoction, which accounts for 29.5 %, followed by crushing and powdering (22.5 %).

The majority of folklore plant medicines were prepared from single plant species and few are prepared from combinations of different plant species. Some of the preparations are taken with different additive substances like honey, sugar, butter, salt, milk, coffee, tea and
water. These additives are important to minimize discomfort, improve the taste and reduce adverse effects.

Large numbers of medicinal plants about 81.4% were reported to be used in fresh form, 11.6% of medicinal plants were used in dry form and very few medicinal plants were reported to be used either in dry and/or in fresh form (7%). The most common route was oral that covers 63.3%, dermal application is the second (30.5%) and only few medicinal plants through nasal, eye drop and eardrop which account 6.2%. The findings of the present study reveal that there is lack of precision and standardization in the determination of doses.

In the present study area sixty five human ailments were treated by folklore knowledge of traditional healers using medicinal plants. The curing ability (efficacy) of each of the recorded medicinal plants ranges from only one type of disease to multiple types of diseases. Eleven medicinal plants (8.1%) cure only one type of disease e.g., *Aerva lantana* (L.) Schultes, *Commiphora Africana* (A. Rich.) Engl., *Embelia schimperi* Vatke. One hundred twenty four medicinal plants (91.9%) cure two or more different types of diseases e.g., *Acacia nilotica* (L.) Del. and *Zanthixylum chalybeum* Engl. each cures thirteen different types of diseases.

Similarly, one ailment can be treated with multiple plant species or a single plant species. For example, stomach-ache is treated with forty-one species of medicinal plants, diarrhoea with thirty-six species, malaria with 32 species of medicinal plants, intestinal parasites with 31 species of medicinal plants, different types of sexually transmitted diseases with 50 species of medicinal plant and headache with 30 species of medicinal plants etc.

In the current study area, some plants were reported to have other use values in addition to their medicinal use. Of the total 135 medicinal plants recorded in the study area,
one hundred eleven species (82 %) were identified as having higher use value diversity (2-7) while twenty four species (18%) were used as only medicinal plants.

In addition to medicinal use, the use value categories include 54 species (40%) with fodder use value, 57 plant species (42.2 %) with wild food use value (edible), 21 plant species (15.6 %) with hygienic use value, 24 plant species (17.8 %) with live fencing use value, 49 plant species (36.3 %) with fuel (firewood and charcoal) use value, 24 plant species (17.8 %) with house and traditional huts construction use value, 20 plant species (14.8) with ritual use value and 61 plants (45.2 %) with farm implements, household utensils and tools, bee hives, support sticks, live shade and others.

According to informants’ response the most mentioned threats to medicinal plants of the study area are agricultural expansion and overgrazing. In addition, exploitation for fire wood, charcoal production, timber production and construction have significant threatening impact on the biodiversity of medicinal plants. Informants in the study area stated that threat due to agricultural expansion and overgrazing is resulted from population growth and subsequent need of farm plot and grazing land which in turn has caused the loss of habitats and species of medicinal plants.

Some destructive methods of harvesting such as up-rooting, bark peeling and stem cutting are practiced in the locality. Such unsuitable harvesting techniques of these plant parts may lead to disappearance of these valuable resources, if some conservation measures are not taken. More serious threat comes due to overexploitation of medicinal plants for other purposes such as for timber, fuel, construction and fodder. These factors could result in loss of different species of medicinal plants and consequently that of associated indigenous knowledge.
Moreover, informants reported that the young generation refused to know or use traditional medicines and a lot of invaluable information could be lost whenever traditional practitioners die without sharing their knowledge to others. Modernization has also its own role on the decline of folklore knowledge of medicinal plants.

It was found that, there is little practice of bringing medicinal plants under cultivation. The local people in the study area have brought only about twenty seven (20 %) medicinal plant species of the total collected medicinal plants under cultivation. As a result many medicinal plants are under serious threats. The cultivation effort is usually due to other uses of these medicinal plants such as food, fodder, spice, live fence and shade. Indigenous practices, various cultural and seasonal restrictions of collecting medicinal plants have contributed to the management and conservation of medicinal plants in the area. It is therefore, recommended that people need to be encouraged to cultivate medicinal plants in their home garden. The participation of the local people and awareness raising through training or education on sustainable utilization and management of plant resources should be encouraged.

Phytogeographic comparisons of medicinal plants were carried out between the present study area and India in general and Andhra Pradesh in particular. The similarity analysis showed that there is insignificant abundance similarity of medicinal plant species in the areas compared (QS= 0.08), rather it showed very large dissimilarities (1-0.08= 0.92). This insignificant (negligible) similarity and/or very large dissimilarity is may be due to the variation in ecological factors in general of the two sampled areas.