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Study of Knowledge on Medicinal Plants in Zetaquira and Campo Hermoso Municipalities, Boyacá-Colombia

Ana Lucía Cadena González-Thiele[1] and Marten Sørensen
Department of Agriculture and Ecology, Botany Section, University of Copenhagen, Denmark

Introduction

The conservation of knowledge on medicinal plants to some extent has been reported from a few communities in rural areas. Nevertheless, the traditional knowledge that has been identified was already eroded, if not in all, then in most of the localities studied (Balick and Mendelsohn,1992; De Almeida et al., 2010). Contributions regarding conservation of traditional knowledge still remain scarce (Ladio A. et. al., 2007). The present ethnobotanical study was carried out in two representative municipalities Zetaquira and Campo Hermoso, located in Dept. of Boyacá, Colombia Fig.1. Local necessities in these municipalities press for the establishment of agriculture and cattle ranching leading to deforestation and decline of native plant diversity. At the same time, modern health care leads to loss of indigenous traditional medicinal knowledge and practices (Huertas and Medina, 1998; Pacheco, 2004; Dueñas, 2008). Therefore, the study focused on identifying local factors that promote the knowledge on introduced and native medicinal plant species, and to describe medicinal uses of plant species in both municipalities.

Two hypotheses were formulated: First, proximity to modern life conditions decreases knowledge on medicinal plant use in the municipalities of Zetaquira and Campo Hermoso; second, introduced plant species are equally popular to native species in terms of Use Value in both municipalities.

http://en.wikipedia.org/wiki/File:Colombia-boyaca-SIM.svg
Figure 1: Studies were conducted in the municipalities of Zetaquira (262 km^2, altitude 1875–3600 m a.s.l.) and Campo Hermoso (302 km^2 , altitude 500–2500 m a.s.l.), Department of Boyacá, Colombia

Material and Methods

Qualitative and quantitative methods of data collection and analyses were applied in both municipalities (Phillips and Gentry,1993; Cotton, 1996; Martin, 2004). Adults and pupils as

[1] Corresponding author. Email: analu@dsr.life.ku.dk

representative groups of the communities (O`Brien, 2010) were included in the studied groups. Within the methods: surveys and qualitative methods for data collection were applied in order to collect representative data and to obtain a view on local social factors and the state of resources of medicinal plant species (Cunningham, 2002). Subsequent calculations of Index Use Values-IUV-, and Jaccard index were completed in order to identify the value and similarities of use that medicinal plant species have within the localities (McCormick et al.,1992; Hoffman and Gallaher, 2007). Statistical tools Kruskal-Wallis test and a Generalized Linnear Model–GLM- regression were used through the analysis (Dytham,1999) (Fig.2). Forty-one adults, who represented diverse groups as farmers, housewives, healers and amateur healers, from the communities were interviewed. Twenty-five interviewees came from Zetaquira and sixteen from Campo Hermoso. Additionally, a questionnaire survey was conducted with students of local schools. Data of 195 students from Zetaquira and 177 students from Campo Hermoso could be used for further analysis (Fig. 2).

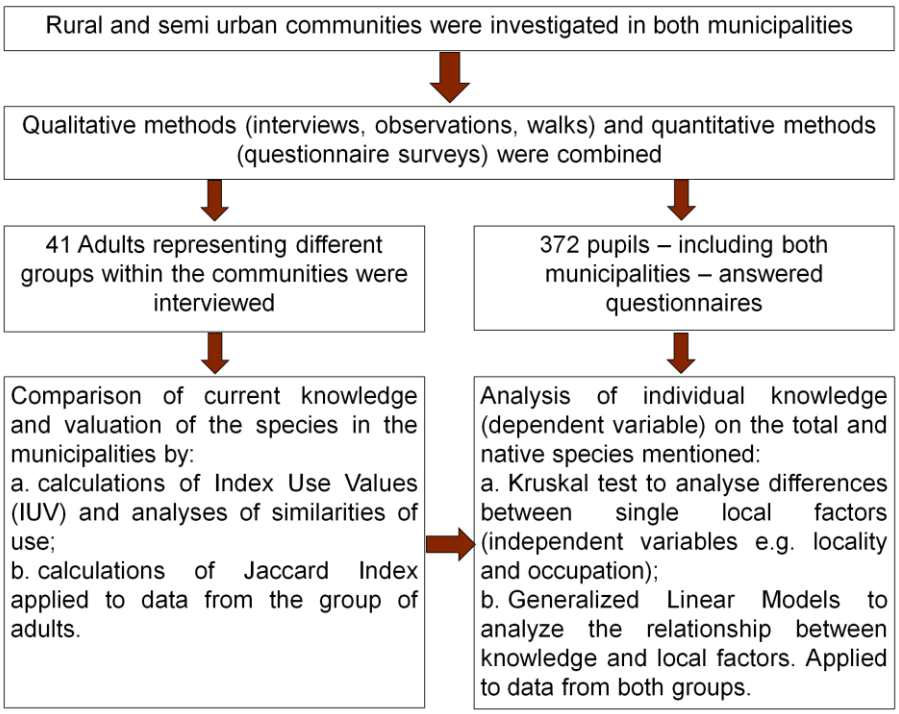

Fig.2: Diagram on applied methods in short.

Results and Discussion

Adult knowledge on introduced and native medicinal plants was related to their strata of the subsidized health service system (SISBEN) (Ewig and Hernández, 2009) and to their occupation. Regarding students' knowledge, their place of residence and level of class were the most influential factors (Fig. 3). Students described 51 medicinal plant species, while adults described 80. In total, seventy-eight species with medicinal use were identified of which 35 were native and 43 were introduced (Garcia Barriga, 1992; Fonnegra and Jimenez, 2007). The species belonged to forty-one floristic families. The most popular families were Asteraceae, Lamiaceae, Apiaceae, Rutaceae and Verbenaceae. The most popular species according to IUV were *Ruta graveolens* L. (1.16) in Zetaquira, and *Urtica dioica* L. (0.88) in Campo Hermoso. In general, students and adults knew more on introduced plant species than on native ones.

The most popular plant parts for medicinal use were leaves which in most cases were prepared by decoction or infusion and administrated orally. These medicinal plant use trends identified by the present study are comparable to other cases in terms of similarity (Toscano, 2006; Smith-Oka, 2008; Thomas et al., 2009; De Almeida et al., 2010; Njoroge et al 2010).

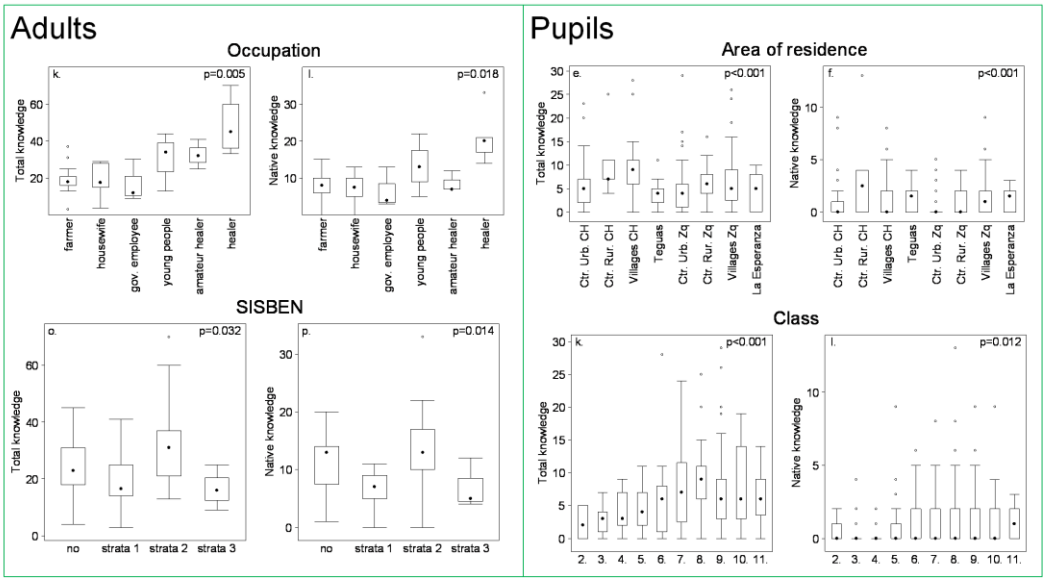

Figure 3. Results on individual knowledge.

Conclusions and Outlook

- Location and level of education determine the total knowledge of pupils on medicinal plants, but not the knowledge on native species; therefore, the first hypotheses (proximity to modern life conditions hypothesis) is accepted for total knowledge and rejected for knowledge on native species.
- Occupation and use of Colombian Subsidized Health Service System (SISBEN) determine knowledge of adults on medicinal plants. Therefore, the first hypothesis is rejected for use of SISBEN but accepted for occupation.
- In Zetaquira introduced plant species have higher use value (>0.5), but not in Campo Hermoso. Thus the second hypothesis (equal use value hypothesis) is rejected for Zetaquira and accepted for Campo Hermoso.
- Nevertheless, the results indicate that there is an ambiguity between the distribution of knowledge on medicinal plants within the localities in some cases. Some locals who live in remote areas were able to describe at some extend a high knowledge on native species while in other cases some locals who live in the proximity to the urban centrum and got high education were able also to describe a relative high knowledge in general on medicinal plant species.

The results of the study indicate that there is need to promote information and awareness in relation to cultivation and maintenance of medicinal plants, especially of native species. Then, it is suggested to use the education factor as an alternative to facilitate that children, young people and locals in general maintain and improve knowledge on medicinal plants.

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