Analysis and recordings of orally transmitted knowledge about medicinal plants in the southern mountainous region of Korea

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ABSTRACT

Aim of the study: This study aims to analyze and record orally transmitted knowledge of medicinal plants from the indigenous people living in the southern mountainous region of Korea. This article is the first study of its kind.

Materials and methods: Data was collected through the participatory rural appraisal (PRA) method involving interviews, informal meetings, open and group discussions, and overt observations with semi-structured questionnaires.

Results: The investigation reveals that the indigenous people have used 217 species of medicinal plants distributed in 177 genera belonging to 77 families with 691 different uses. The representative families were Asteraceae (13.5%) followed by Fabaceae (8.2%), Araliaceae (6.1%), Rosaceae (5.8%), Cucurbitaceae (4.1%), Poaceae (3.0%), Liliaceae (2.7%), and Apiaceae (2.6%). On the whole, 21 kinds of plant-parts were used and prepared in 26 various ways by the people for medicinal purposes. The informant consensus factor (ICF) values in the ailment categories were veterinary ailments (0.88), pains (0.84), cuts and wounds (0.77), and respiratory system disorders (0.76). In terms of fidelity levels, 41 plant species showed 100% of fidelities.

Conclusion: In recent years, the Korean society has been a heavy loss of traditional practices due to a rapid decrease of the senior population. This pressing circumstance raises the level of urgency for the preservation of indigenous knowledge from extinction. A priority should be given first for collecting and recording indigenous knowledge from the natives inhabiting the national parks and environmental preservation areas.

1. Introduction

Located at the verge of central and southern region of the Korean peninsula, North Jeolla Province is divided into two parts; western plain region and eastern mountainous region. The western plain region has been engaged in paddy-field farming since the ancient times, and yet this tradition is currently under attack by a rapid rise of industrialization and modernization. In contrast, the eastern mountainous region contains comparatively less areas of rice paddies and therefore has been engaged in dry-field farming. This area was even considered as a typical backcountry of Korea back about 10 years ago. On account of the special geographical setting, much of the Korean traditional culture and the ecosystem in this mountainous region have been conserved.

Many investigations on the diverse flora of North Jeolla Province were conducted from 1942 to 1997. The number of plant species that were recorded in the comparatively latest investigations is as follows: 1032 species (North Jeolla Provincial Government, 1984), 1300 species (Ministry of Environment, 1988), 1650 species (Ministry of Environment, 1990) and 1754 species (Kil and Kim, 1996). Medicinal plants distributed in this region add up to be 762 species (Goak et al., 1997) which is 43% of the total flora in the region.

A recent investigation of flora in the eastern mountainous region of North Jeolla Province revealed a total of 1477 species that were mostly found in Deokyu Mountain (1614 m) and Jiri Mountain (1916 m), the two representative mountains of this region (Lim, 2003). This study has discovered about 33% of the total flora in Korea, leaving an estimated total of native flora in the Korean peninsula to be approximately 4500 species.

Among ethnobotanical researches in Korea, the most comprehensive studies were conducted by Kim (1998), and Kim and Song (2008). However, there is only one ethnopharmacological study by Kim et al. (2006), with a backdrop of specific traditional culture.

For the first time, this study aims to record traditional knowledge about medicinal plants orally transmitted from generation to generation in the southern mountainous region of Korea where traditional culture and biogeographic ecosystem, fortunately, have

been relatively well conserved. The results of this study are also noteworthy in view of recent trends of most ethnopharmacological studies which tend to focus on rural populations in the industrialized countries (Pieroni, 2000; Uncini Manganelli et al., 2001; Camangi and Tomei, 2003).

Moreover, rapid progress of industrialization has taken place in Korean rural areas nowadays and only the senior citizens above 70 years of age are still holding on to the rest of the orally transmitted traditional knowledge. Thus, their deaths imply an extinction of indigenous knowledge about medicinal plants in this region (Martin, 1995; Cotton, 1996; Balick and Cox, 1999).

This study aims to analyze and record orally transmitted knowledge of medicinal plants from the indigenous people living in the southern mountainous region of Korea. This article is the first study of its kind.

In this sense, the results from this study will not only carry academic significance but also bring valuable applications to various fields in the bio-industry.

2. Materials and methods

2.1. Study area

The study area is located in the eastern mountainous region of North Jeolla Province in the southern part of Korea. Sixty-seven percent of the total area is 100–500 m above the sea level including Jinan highlands, Janggea-Jansu basin and Namweon-Osu basin. Thirty-two percent of the study area is 500–1910 m above the sea level forming Sobaek Mountains and Noryeong Mountains (Fig. 1). The study area is divided into six cities/counties in its administrative district and measures 3799.79 km^2 in area (North Jeolla Provincial Government, 1989). The total population in 2009 is 224,741 (North Jeolla Provincial Government, 2009).

2.2. Investigation method

Field investigations were conducted throughout 26 sites starting from July 2008 to May 2010 (Fig. 1). We interviewed 41 key informants (17 men and 24 women) who have lived over 50 years around the investigation area. The average age of the informants was 71 (49–92 years old). They have hardly been affected by modern culture and education.

Proper data were collected through the participatory rural appraisal (PRA) method where the informants also become investigators themselves, involving interviews, informal meetings, open and group discussions, and overt observations with semi-structured questionnaires (Kim and Song, 2008).

The contents of semi-structured questionnaires were organized according to the questionnaire organization method (Martin, 1995; Kim et al., 2006). Basic inquiry was made about diverse ethnopharmacological information including local names, plant-parts used, ailments, methods of preparation, manufacturing and adminstration, dosages, and usable durations regarding each of the medicines (Martin, 1995; Kim et al., 2006; Poonam and Singh, 2009).

After the precise identification of plants in accordance with reports from the informants (Lee, 1979, 2002), all the plant specimens were collected during either their flowering or fruiting seasons and were organized following the normal specimen manufacturing method (Martin, 1995). The voucher specimens were deposited in the herbarium at Jeonju University for preservation.

2.3. Quantitative analysis

The informant consensus factor (ICF) was used to identify the ethnopharmacological importance of the collected plant species (Heinrich et al., 1998, 2009) and to analyze the agreement degrees of the informants knowledge about each category of ailments (Andrade-Cetto, 2009). It was calculated by the following formula: ICF = $n_{ur} - n_t/n_{ur} - 1$, where n_{ur} is the number of mentions in each category of ailments and n_t is the number of plant species used.

The fidelity level (FL) was employed to determine the most important plant species used for treating certain diseases by the local herbal practitioners and literate elders living in the study area (Alexiades, 1996; Ali-Shtayeh et al., 2000). It was calculated by the following formula: FL (%) = $N_p \times 100/N$, where N_p is the number of the informants that mentioned the specific plant species used to treat certain ailment, and N is the total number of informants who utilized plants as medicines for treating any given ailments.
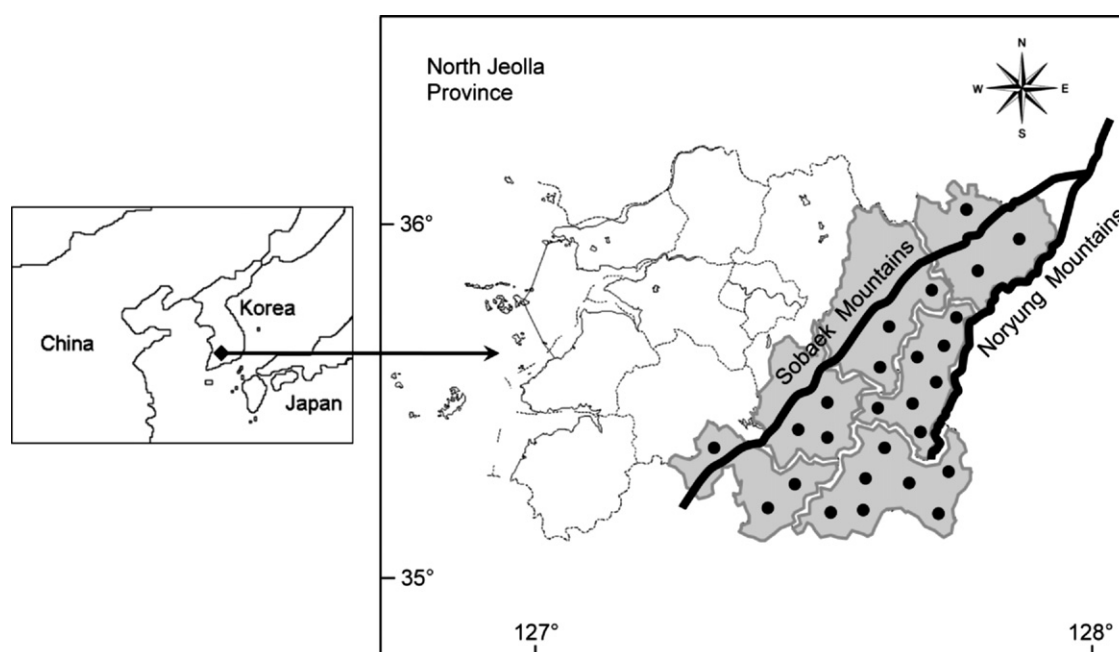

Fig. 1. Study areas for interviews.