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Ethnomedicinal practices in the highlands of central Nepal: A case study of Syaphru and Langtang village in Rasuwa district

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ABSTRACT

Ethnopharmacological relevance: The present paper documents the utilization of medicinal plants for the treatment of various human ailments in two village development committees in the Rasuwa district of central Nepal. It also evaluates the ethnopharmacological significance of the documented reports and identifies species of high indigenous priority in local therapeutics.

Materials and methods: The ethnobotanical information was collected by interviews and group discussions using standard ethnobotanical procedures. The homogeneity of informant's knowledge was validated by Informant consensus factor (F_{IC}) and the relative importance of a plant species used as medicine in the study area was calculated with the help of use value (UV).

Results: The present study identified a total of 46 medicinal plants belonging to 26 families used for the treatment of 38 human ailments. Besides medicinal uses, the study has also documented the culinary and cultural use of 13 species of medicinal plants. The most commonly used part was root constituting about 42% of the total utilized plants. The most commonly used form of preparation was paste (31.91%). We found new usage reports for 9 medicinal plants. The F_{IC} value in the present study ranged from 0.66 to 1 with 84.6% values greater than 0.8 indicating high consensus among the informants. The most preferred species was *Neopicrorhiza scrophulariflora* (UV=0.96) and the lowest used value was found for *Lyonia ovalifolia* (UV=0.32).

Conclusions: People of Rasuwa possess rich traditional knowledge in medicinal plants utilization with strong consensus among local people on the utilization of species evident by higher F_{IC} values in different ailment categories. Strong pharmacological evidence for a majority of species being currently used as medicines shows that the plants used in local therapeutics are likely to be more effective in treating different medical ailments. The bioactive compounds extracted from these medicinal plants could subsequently be used in the creation of novel drugs to treat life threatening human diseases. The species with high use values are the ones likely to be more vulnerable because of high demand and high collection pressure. Therefore, it is imperative to prioritize such species for cultivation and sustainable management in order to ensure their long term availability.

1. Introduction

Nepal is an excellent repository of cultural heritage for diverse ethnic groups and it has a rich tradition of folk practices for utilization of wild plants (Manandhar, 1993a). There exists more than 125 caste groups, and more than 123 different languages are spoken within the country (CBS, 2012). Due to its rich ethnic diversity, there is a very strong tradition in the use of medicinal and aromatic plants, both as part of the Ayurvedic system and the widespread home remedies. More than 80% of the total population of the country is said to practice traditional herbal medicines for primary healthcare (Rajbhandari and Bajracharya, 1994), which is not only a case of preference but also of situation of having no access to modern medicine. These people depend on local plant-based therapy for health care, which is cheap and easily available (Manandhar, 1998). A large number of species have medicinal value and are used under different traditional systems including

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Ayurvedic, Homeopathic and Tibetan (Shrestha et al., 2000). Besides, a large number of species are in use in remote areas as folklore medicines. The rich cultural and biological diversity of Nepal, therefore, provides immense opportunities for carrying out ethnobotanical studies (Baral and Kurmi, 2006; Rokaya et al., 2010).

In the remote villages of Rasuwa district, plant resources have an important role in local medicine. The area is biologically and culturally rich and the people possess sound traditional knowledge on the utilization of plants (Uprety et al., 2010). Due to limited access to modern healthcare facilities and other socio-economic and cultural factors, local people rely heavily on traditional medicinal practices. As a result, people have developed their own way of treating various diseases by the use of available plant resources around them. The indigenous knowledge possessed by these people can provide significant information on the pharmacological potential of many plants. Due to lack of enough studies and proper scientific documentation, this valuable knowledge is in a state of peril. On the other hand, less availability of the resources due to overexploitation in the recent years has imposed serious threat to this valuable indigenous knowledge. Although some ethnobotanical documentation (Joshi and Edington, 1990; Shrestha and Shrestha, 2000; Shrestha et al., 2002; Uprety et al., 2010), trade data analysis (Yonzon, 1993) as well as threat assessment of important medicinal plants (Shrestha and Shrestha, 2012) exist for Rasuwa district and surrounding areas, these studies have not fully represented all areas within the district and there are still large parts which have remained unexplored. Therefore, it was felt necessary to conduct an ethnomedicinal survey in these regions and explore ethnopharmacological potential of useful medicinal plants. With the aim of documenting indigenous knowledge on the utilization of wild plants, we have undertaken this study in two major Village Development Committees (VDCs) in Rasuwa viz: Syaphru and Langtang. Specifically, this study was conducted to achieve the following objectives: (a) assess the diversity of medicinal plants in Syaphru and Langtang VDCs of Rasuwa district (b) estimate the use variability of medicinal plants and compare with existing ethnopharmacological literatures (c) identify the mode of administration of traditional herbal medicines and (d) identify the most preferred plant species in local therapeutics.

2. Materials and methods

2.1. Study area

The Rasuwa district covers an area of 1544 km^2 and is located in the Central Development region of north-central Nepal between 27°2′ and 27°10′ N latitude and 84°45′ and 85°88′ E longitude. It is bounded to the south by Nuwakot, to the east by Sindhupalchowk, to the west by Dhading and to the north by Tibetan autonomous region of the People's Republic of China (Fig. 1). It is the smallest district by area, among 16 districts in the Himalayan region of Nepal. Elevational gradients ranging from 845 m to 7245 m in a short distance has created diverse climatic condition (subtropical to arctic climate) and rich biodiversity with many endemic species (Shrestha and Joshi, 1996). The district is characterized by five broad vegetation types ranging from montane tropical (*Shorea robusta*) forests in the south followed by subtropical (*Schima wallichii* and *Castanopsis indica*) forests, temperate (*Quercus semicarpifolia*) forest, sub-alpine (*Abies spectabilis, Tsuga dumosa and Larix himalaica*) forests and alpine vegetation composed of *Juniperus indica* and *Rhododendron anthopogon* (Chaudhary, 1998; Shrestha and Shrestha, 2012). Our study was carried out in two major village development committees viz: Syaphru and Langtang in the Rasuwa district.

2.2. Specimen collection and identification

Plants were collected from Thulo Syaphru, Brabal, Singompa, Cholangpati, Laurivinayak, Gosainkunda, Saraswatikunda, Thulo Bharkhu, Lamahotel, Ghodatabela, Langtang village and Kyanjin gomba of Syaphru and Langtang VDCs in Rasuwa district between 2006 and 2007. The plants were selected based on their utilization by local inhabitants of Rasuwa. The common species which were

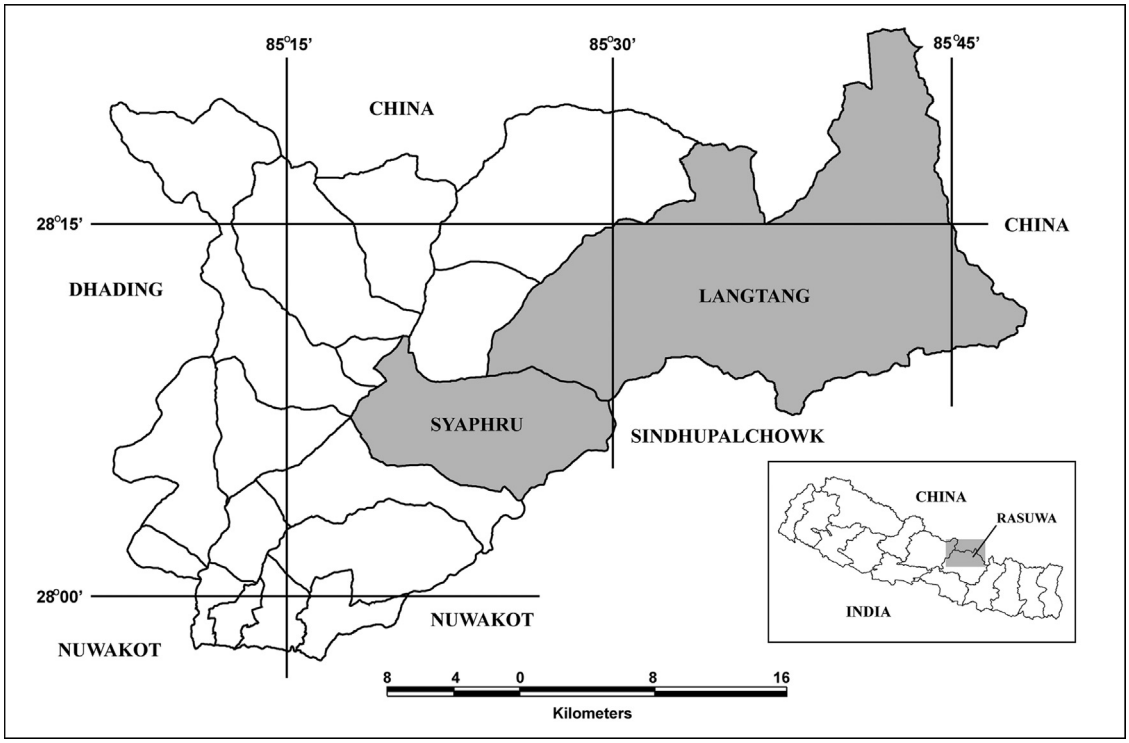

Fig. 1. Map of Rasuwa district in central Nepal showing study area.