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Brief Communication

Medicinal Plant Resources of the Lahu: A Case Study From Yunnan Province, China

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INTRODUCTION

The study of medicinal plants is one method of examining the interactions and relationships between biological and cultural components of the environment (Bye, 1986). Many researchers have focused on effects of cultural and ecological factors on plant, notably medicinal plant selection by ethnic groups (Bennett, 1992; Bernstein *et al*., 1997; Joshi *et al*., 1990; Khasbagan *et al.*, 2000; Nolan, 1998; Wiley, 1997). The Lahu people, originally from the He-Huang area of northwest China (Xiao, 1997), now live primarily in Yunnan Province, China, Myanmar, Laos, north Vietnam, and north Thailand. The Lahu of Yunnan Province, one of the last groups to live in primary forests, began their transition from hunting and gathering to more sedentary village life in 1957. Traditional medicines still play an central role in Lahu life and Lahu healers demonstrate considerable knowledge of the medicinal properties of plants in the primary and secondary forests of the region (Huai, 2000; Huai *et al*., 2000a,b).

STUDY AREA

The field investigation was carried out in Zhemi Town in the Autonomous County Of Jinping Miao, Yao, and Dai, located in the mountainous region of southeast Yunnan Province, China (102°31′–103°38′E and

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22°26′–23°04′N). This region is a tropical zone and the larger of two megabiodiversity centers in Yunnan Province (Li, 1994). Besides the Lahu, who constitute 20% of the population in Zhemi, the Miao, the Yao, the Hani, the Dai, the Yi, and the Zhuang also live in this region and exploit different ecological zones. For example, the Dai and the Zhuang live in areas of low elevation and cultivate rice and vegetables. The Hani farm terraces on the mid-elevations of the mountainsides, while the Yao and the Lahu settle higher where they practice shifting agriculture and still engage in minimal hunting and gathering in the forests nearby.

METHODS AND MATERIALS

Key informant interviews and participatory observation were used to collect medicinal plant data. Three healers from Liangzhuzhai Village (informant A), Kucong Dazhai Village (informant B), and Dipu Village (informant C) respectively were selected as informants. Informant A, who is over 70 years old, frequently makes trips to the primary forests. Informant B (36 years old) inherited his medical knowledge from his grandfather. Informant C's (33 years old) father was a famous healer. All three healers are experts known to Lahu communities in Zhemi. Voucher specimens of medicinal plants were collected for scientific identification and further study. All field work was carried out from August 1998 to April 2000. One hundred and eighteen species of medicinal plants belonging to 57 families and 98 genera were identified and deposited in the Voucher Herbarium of Department of Ethnobotany, Kunming Institute of Botany, CAS. The uses of the medicinal plants are the subject of another paper (see Huai *et al.*, in press).

RESULTS

The Relationship Between Medicinal Plants and Environments

There are four main types of environments from which Lahu healers often collect their medicinal plants, i.e., mountain rain forests distributed in valleys (*lao da gu*), evergreen broad leaf forests (*ye kao*), shrub–high grass communities (*ga mu ta*) and areas around villages (*ka ji bao*) (Fig. 1). *lao da gu* is primary forest and the other three types are secondary. The three healers gathered medicinal plants from different environments, with the oldest (informant A) preferring primary forests, while the younger men preferred secondary forests (Fig. 1).

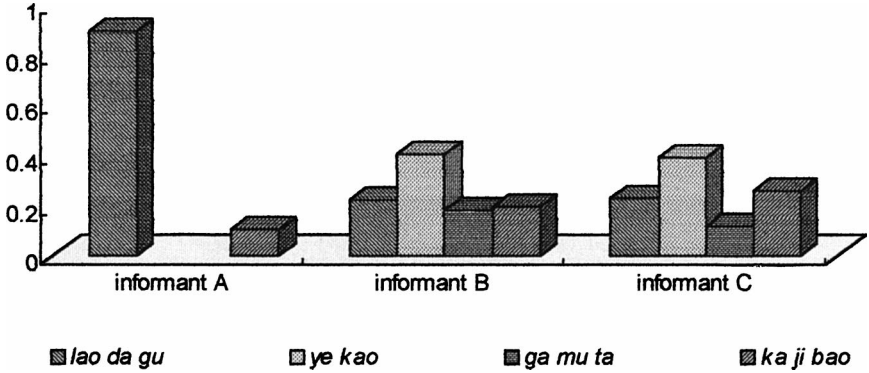

Fig. 1. Percentage of medicinal plants collected from different environments by different informants.

In order to establish the relationship between the number of medicinal plants and the number of all plant species in corresponding environments, we developed the following formula:

$$RUIs = \frac{SNmp}{SNp} \times 100\%$$

where *RUI*s is the percentage of medicinal plants relative to the number of all plants in a minimum sample in certain environment. *SN*mp is the number of medicinal plants in the minimum sample in a certain environment. *SN*p is the number of all plants in the minimum sample. The results are showed in Table I.

From Table I, we see that although the diversity of plant species in *ka ji bao* is the smallest and in *lao da gu* the largest, the opposite is true for *RUI*s.

Comparison of Informant Collection Patterns

There are differences not only in the environments from which Lahu healers collect their medicinal plants, but also in the species they gather. The

Table I. *RUI*s in Different Environments

Environment type	*RUI*s (%)
lao da gu	35.96
ye kao	42
ga mu ta	48.28
ka ji bao	63.64

differences between healers of different ages are greater than that of similar ages. The results of an index of Sørensen similarity calculated for species choices of the three healers are shown in Table II.

Although they don't live in the same village, the three informants inhabit similar environments and have the same cultural backgrounds. Informant A was born in the 1920s while informants B and C were both born in 1960s. A large proportion of medicinal plants used by informants A are not used by informants B and C, but, there is a high proportion used by both informants B and C.

DISCUSSION

Medicinal knowledge was historically much more widely showed in Lahu communities than it is today. In order to avoid someone learning his knowledge, informant A (the oldest one of the three key informants) often gets up very early and goes to places far away from his village to collect medicinal plants. Informants B and C sometimes communicate their experiences with medicines with one another.

We discuss the characteristics of the 118 species of identified medicinal plants used by Lahu healers from their taxonomic composition and *aeral types* of genera in another paper (see Huai *et al*., in press). The range of medicinal plants used by Lahu healers contains a great number of families and genera, i.e., there are very few families and genera with a predominant number of species used medically by Lahu healers, and a lot of families and genera contain only one species used medicinally. The main *aeral types* of genera are typical tropic types, including three genera endemic to China, of which two—*Sargentodoxa* and *Craspedolobium*—are distributed only in southeast Yunnan Province and west Guangxi in China, and north Vietnam (Li, 1994; Wu, 1987). The medicinal plants used by Lahu healers show a high diversity not only at the species level, but also at the genera and family levels. A high percentage of medicinal plants used by Lahu healers come from local flora.

Before they began to settle in villages in 1957, the Lahu in Jinping County moved frequently, hunting and gathering in the primary forests. The

Table II. Index of Sørensen Similarity Between Three Informants

Informant	A	B	C
A	100	49.25	9.71
B		100	6.74
C			100

diversity of medicinal plants used by Lahu healers and the diverse species of plants in the environments where they moved made it easy for them to find the plants they needed. Lahu healers often used many different medicinal plants to treat one disease, especially common diseases (Table III).

On the one hand, the fact that many medicinal plants can be used to treat one illness insures a high probability that Lahu healers could find suitable plants at any time. On the other, the fact that they migrated frequently increased the probability that they could find appropriate medicinal plants in a variety of environments.

With settlement and the gradual disappearance of pristine forests around their villages, Lahu traditional lifestyle and environments have obviously changed, and these changes have impacted the practice of traditional medicine? According to the comparison of medicinal plants used by healers of different ages, there are great differences between old healers and young healers. The old healer (informant A) was accustomed to a lifestyle of migration in primary forests, where he still liked to collect his medicinal plants. Meanwhile, in addition to medicinal plants found in primary forests, which they learned about from their elders, young healers started to use medicinal plants from secondary forests. In the four main types of habitats from which Lahu healers collect their medicinal plants, the intensity of human activity is positively correllated to the percentage of plants used medically (RUIs): *ka ji bao* > *ga mu ta* > *ye kao* > *lao da gu*. Although they have only about 40 years of sedentary village life Lahu healers increasingly are collecting medicinal plants from secondary environments. On the basis of research in the Atlantic coastal rain forests of Bahia, Brazil, Voeks (1996) concluded that increasing disturbance of the occurrence of the vegetation is positively associated with the occurrence of medicinal plants. Similarly for the Lahu, new environments and lifestyles accompany the occurrence of new medicinal plants. However, with the disappearance of forest environments, the knowledge of medicinal plants will be lost quickly. What we can do urgently is to record local knowledge about medicinal plants before it is

Table III. Some Common Diseases and the Number of Medicinal Plants Used for Treatment Used by Lahu Healers

Disease	No. of medicinal plants (%)
Bone broken and trauma	27 (22.88%)
Skin disease	27 (22.88%)
Upset stomach	14 (11.86%)
Dysuria and nephrolith	13 (11.02%)
Cold	8 (6.78%)
Arthralgia	7 (5.93%)
Phthisis and pneumonia	7 (5.93%)
Hepatitis	7 (5.93%)

lost completely. Further study of medicinal plants used by Lahu and other ethnic healers demands more attention.

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