Journal of Ethnopharmacology 123 (2009) 335–342

Contents lists available at ScienceDirect

Journal of Ethnopharmacology

journal homepage: www.elsevier.com/locate/jethpharm

Medicinal plant knowledge and its erosion among the Mien (Yao) in northern Thailand

Kamonnate Srithi[a,*], Henrik Balslev[b], Prasit Wangpakapattanawong[a], Prachaya Srisanga[c], Chusie Trisonthi[a]

[a] Department of Biology, Faculty of Science, Chiang Mai University, Huaykaew Rd., Chiang Mai 50200, Thailand
[b] Department of Biological Sciences, Aarhus University, Building 1540, Ny Munkegade, DK-8000 Aarhus C, Denmark
[c] Herbarium, Queen Sirikit Botanic Garden, P.O. Box 7, Mae Rim, Chiang Mai 50180, Thailand

ARTICLE INFO

Article history:
Received 8 December 2008
Received in revised form 17 February 2009
Accepted 18 February 2009
Available online 4 March 2009

Keywords:
Ethnomedicine
Use value
Informant consensus factor
Fidelity level

ABSTRACT

Ethnopharmacological relevance: We studied local knowledge and actual uses of medicinal plants among the Mien in northern Thailand, documenting traditional medical practices and its transfer between generations.
Aim of the study: With the assumption that discrepancies between knowledge and actual use represent knowledge erosion, we studied whether actual use of medicinal plants corresponded to people's knowledge of such uses.
Materials and methods: We used local knowledge from four specialist informants as the domain for semi-structured interviews with 34 randomly selected non-specialist informants. We calculated informant consensus, use value, and fidelity level for each species and use category and performed statistical analyses with Kolmogorov–Smirnov tests, Pearson correlation coefficient, Spearman's rank correlation coefficient, and paired-sample *t*-tests.
Results: We found significant discrepancies between knowledge and actual use of medicinal plants. The number of known and actually used plants increased with increasing informant age and decreased with increasing years of formal education.
Conclusions: Medicinal plant knowledge and use in these Mien communities is undergoing intergenerational erosion because of acculturation and interrupted knowledge transmission. Preservation of Mien medicinal plant intellectual heritage requires continued documentation concerning use, conservation, and sustainable management of this resource, which should be publicized to younger Mien.

1. Introduction

For thousands of years worldwide, plants have been used in traditional medicine, resulting in the development of a large body of local knowledge. This knowledge base arises primarily from trial-and-error experiences and is rarely embedded in complete and systematic theories of medicine (Bo et al., 2003). In many cases, local knowledge of medicinal plants remains poorly documented in the scientific literature. For example, in a study of herbs used for medicinal baths among the Red-headed Yao in China, only 5% of 110 species registered had been previously identified as having medicinal properties, and 79% were newly recorded for their use in medicinal baths (Li et al., 2006). Local knowledge of how medicinal plants are used may be a rich basis for the phytochemical, pharmacological, and clinical studies necessary to secure sustainable and rational use of these plants as a resource.

In addition to the limited documentation, much traditional medical plant knowledge is being lost before its incorporation into modern science. Environmental degradation and large changes in modern social and economic systems have affected medicinal plant use over the past few decades (Anyinam, 1995). A study of medicinal plants of the Zay in Ethiopia reported the use of 33 species, but the informants all agreed that more species had been used in the past. It was suggested that deforestation, degradation, and acculturation over many years caused the reduction (Giday et al., 2003). Likewise, in northwestern Yunnan in China, over-exploitation and deforestation are depleting the medicinal plants used by the Lisu (Ji et al., 2005).

The most serious threat to local medicinal plant knowledge, however, appears to be cultural change, particularly the influence of modernization and the western worldview (Voeks and Leony, 2004). Knowledge loss has possibly also been aggravated by the expansion of modern education, which has contributed to under-

* Corresponding author. Tel.: +66 5394 3346x1234; fax: +66 5389 2259.
E-mail addresses: kamonnate_ka@hotmail.com, nookamon@gmail.com (K. Srithi).

0378-8741/$ – see front matter © 2009 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.jep.2009.02.035

mining traditional values among the young (Giday et al., 2003). For example, in the Velliangiri holy hills in India, young people lack interest in Malasar traditional knowledge, and many of them leave their home villages in search of emerging opportunities in more industrialized settings (Ragupathy et al., 2008). In Lençóis, Bahia, Brazil, young people sometimes understand how plants were used in the past, but they never actually employ them and are not likely ever to do so (Voeks and Leony, 2004).

In addition, the virtues of modern medicine lead to the abandonment of local medicinal practices in many villages. In the Velliangiri holy hills in India, modern health care facilities are thought to be a barrier to effective dissemination of traditional aboriginal knowledge (Ragupathy et al., 2008). Folk healers and their orally transmitted traditions may be more vulnerable to extinction than medicinal plants themselves (Anyinam, 1995) because many healers are aged and are dying with their knowledge left unrecorded (Cox, 2000). Among Red-headed Yao in southwest China, medicinal herb healers are old, and the younger generations have learned little from them (Long and Li, 2004). Among the Lisu in northwestern Yunnan, China, a treatment for birth control was lost because the only woman who held knowledge about this treatment kept it secret and passed away without revealing the information to anyone (Ji et al., 2005); a remedy against snakebite used by the Zay in Ethiopia met the same fate (Giday et al., 2003). As a result, traditional knowledge of medicinal plants, once embedded in tens of thousands of indigenous cultures, is rapidly disappearing. Bussmann and Sharon (2006), based on a study of medicinal plant knowledge in southern Ecuador, suggested that to avoid the loss of this intellectual heritage, which has evolved in traditional cultures over hundreds of years, and to keep it alive, it is necessary to document and describe traditional use of plants.

In the study of local knowledge of medicinal and other useful plants, many researchers have made the assumption that all plants mentioned as useful are also actually being used. But a few studies have teased apart what people say and what they do, and it turns out that the "local knowledge," represented by what the informants tell the researcher, is not always equal to "local use," which refers to which plants and which uses are actually practiced (Byg and Balslev, 2001). This gap between local knowledge and local use can be taken as the first sign of degradation of traditional ethnobotanical knowledge and can be used to measure loss of knowledge (Reyes-García et al., 2005).

Here we record local medicinal plant knowledge and how it is transferred among the Mien (sometimes called "Yao"), an ethnic group with a population of over seven million in China, Vietnam, Laos, Thailand, France, and the United States (Long and Li, 2004). The Mien originated in southern China and has migrated to other parts of Southeast Asia since the mid-19th century with the expansion of the opium trade. The Mien and other groups were relegated from the Manchu state (Perve, 2006); because of civil war and communist terrorists in their Chinese home territory in the beginning of 20th century, they moved into northern Thailand, where they settled in the high mountains of Nan, Phayao, Chiang Rai provinces, and elsewhere. In 2003, there were 45,571 Mien in Thailand, distributed between 178 villages (Perve, 2006). Residing in the mountains, the Mien have limited access to western healthcare; consequently, they have accumulated a rich experience related to preventing and treating diseases with herbal remedies, and they have developed a distinctive traditional medicine. The Mien healer is accomplished in both medical practice and drug making. Therefore, since ancestral times, Mien healers have undertaken the tasks of diagnosis and drug gathering, processing, and distribution. Their traditional knowledge has been transferred from one generation to the next, based on oral transmission and lifestyle. However, because cultural systems are dynamic (Cunningham, 2001), the skills are fragile and easily forgotten. Some elderly Miens with knowledge of medicinal plants complain that it is difficult to find younger people with an interest in learning skills concerning local healthcare. Mien knowledge of traditional medicinal plants may therefore be decreasing.

When documenting the local knowledge of medicinal plants among the Mien, we compared what informants told us that they knew with the actual use of medicinal plants in the communities. We based our work on the assumption that the gap between knowledge and actual uses of plants can be used to study erosion of ethnobotanical knowledge (Reyes-García et al., 2005). We also observed the relationship between the practice of plant uses and the age and educational level of the informant, and in particular we asked whether incongruities indicate erosion of knowledge and how such erosion occurs.

2. Methods

2.1. Study area and socio-economic setting

Between March 2007 and March 2008, we worked in two Mien villages, Huai Labaoya (18°54′30.68″N, 100°40′05.92″E) and Samoon Mai (18°54′41.44″N, 100°39′52.97″E), located in western Nan province, 200 m above sea level and 23–24 km away from Nan city. They are surrounded by mountains that are mostly deforested and turned into cultivated land. There are 95 households and 645 people in Huai Labaoya, and 96 households and 845 people in Samoon Mai. In these villages, most villagers practice highland agriculture, grow corn and upland rice, cultivate their orchards, and raise black pigs and poultry for household consumption. Their income is obtained from selling corn and orchard products, and their economic status is medium to poor even if some (mainly younger) people work in nearby towns to improve their economic situation; therefore, most people left in the village are children, the middle-aged, and the elderly. Most adult villagers are illiterate, but some of them have received primary education. The younger generations are mostly educated to primary and secondary levels in public schools in the community centers, but only a few continue studying in more advanced educational establishments. Nowadays, instead of living in the high mountains, they have moved to lower altitudes in closer contact with the world outside their community, facilitating their way of living. Furthermore, acquisition of nontraditional community services such as literacy and public health service is much easier and, unavoidably, they have engaged in commerce. Some traditional ways of living, including traditional remedies for various ailments, have been forgotten, and some villagers prefer to be treated using modern medicine rather than by their local healers.

2.2. Interviews and participative observation with specialist informants

Initial contacts were made to the village headmen, to whom we explained the purpose and techniques of the proposed research. Subsequently the headmen explained the purpose and methods of the study to the villagers who gave their informed consent. Qualitative ethnobotanical data were collected using four key informants, selected non-randomly for their reputations as specialists in the use of medicinal plants; information was gathered through interviews, guided tours, and participative observation (Lucena et al., 2007). During surveys in the forests and fields with these key informants, we noted vernacular names of each medicinal plant and which part, which mode of preparation, and which routes of administration were used. Each species was photographed, and herbarium specimens were collected and later deposited at the Ethnobotanical Research Unit, Department of Biology, Faculty of Science, Chiang Mai University and Queen Sirikit Botanic Garden Herbarium (QBG), Chiang Mai, Thailand. Plant identification was done by taxonomic expert, Dr. Prachaya Srisanga employed at Queen Sirikit Botanic