

海南乐东野生食用植物的民族植物学初步调查

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摘要: 本文对海南省乐东黎族自治县的野生食用植物做了初步的调查并分析现状。通过半结构式访谈、田野考察和市场调查等民族植物学的研究方法, 对扎灶村、扎灶老村和佳西村的当地村民进行走访, 搜集相应的数据和信息。本文调查的野生食用植物共有 26 种, 分属于 26 属 21 科, 其用途可做蔬菜 (38.5%)、水果 (34.6%)、药材 (30.8%) 和凉茶 (11.5%)。本次调查研究不仅有助于海南黎族传统知识的保存, 而且为野生食用植物的开发利用提供参考。

关键词: 民族植物学; 传统知识; 黎族; 野生食用植物; 开发利用

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Preliminary Ethnobotanical Study of Wild Edible Plants in Ledong, Hainan Island, China

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Abstract: The study discussed ethnobotany of and threats to wild edible plants in Ledong, southwest of Hainan Province. Semi-structured interview, field observation and market survey were employed to gather ethnobotanical data. Information was collected from about ten informants of three villages namely, Zha-zao Village, Zha-zao-lao Village and Jia-xi Village. The study documented 26 edible plant species belonging to 26 genera and 21 families. Of the reported edibles, there were four major usage categories: vegetables (38.5%), fruits (34.6%), medicines (30.8%) and herbal tea (11.5%). Leaves (35%) and fruits (32%) were the parts widely used. Herbs and shrubs made up the highest proportion of the wild edible species. Therefore, this study can not only preserve the traditional knowledge of Li ethnic group, but also provide references for the exploitation of wild edible plants.

Key words: ethnobotany; traditional knowledge; Li ethnic group; wild edible plants; exploitation

Introduction

Wild edible plants (WEPs) are edible plants growing everywhere but have not been cultivated in a large scale. They are nutritionally rich and can supply nutritional requirements, especially vitamins and micro-nutrients^[1]. Utilization of wild edible plants as a food source is an integral part of the culture of indigenous people who gather and consume wild edible plants as supplements of daily diet. Many dishes made of wild foods are often identified as functional foods (foods with medicinal properties) and wild foods can contrib-

ute to overcoming periods of food shortage^[2]. In addition, nutritional profile of many wild edible plants was sometimes found to be better than many cultivated varieties^[3-6]. However, the majority of ethnobotanical studies have dealt with medicinal species and little emphasis has been paid to wild edible plants, which makes the indigenous knowledge of wild edible plants facing risks of disappearing.

The purpose of the study is to document indigenous knowledge related to uses of wild edible plant species as the Li nationality does not have its own words and its indigenous knowledge of wild edibles has to be transmitted orally, so it will not disappear along with the rapid social development. Furthermore, the case study means to deepen our understanding and cognition of ethnobotany. The current situation might be grounded

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in the scanty willingness and preparation for truly interdisciplinary studies and lack of innovation in the field^[7]. Therefore, we attempts to search some approaches or methods that could make ethnobotany serve the local communities indeed. Then it can realize its true value to human but not gather the relevant information to do what we want for personal benefits and ignore the respect to the owners of intellectual property right. Also, it will provide a certain fundamental basis for us to consider how to document the important, critical roles wild plants play in maintaining the nutritional quality of traditional diets^[8].

Materials and Methods

Study area and people

Hainan, located in the southern province of China, harbors a great diversity of tropic plants due to its distinct geography and ecological conditions. The three main study villages: Zha-zao, Zha-zao-lao and Jia-xi were located in Ledong Li Autonomous County, southwest of Hainan Province (N 18° 24'-18° 58', E 108° 39'-109° 24') (figure 1). The total square of Ledong county is 2743 m² occupying 8.3% of Hainan's total territory. Its terrain is quite complex, surrounded by numerous high mountains and there are 23 mountains whose altitudes are above 1 kilometers. The climate at Ledong is considered as tropical and monsoon climate. The study site is rainfall sufficient (1500-2000 mm per year) and has 24 °C mean annual temperature. The area is also rich in plant diversity, such as *Areca catechu*, *Litchi chinensis*, *Dimocarpus longan*, *Mangifera indica*, *Manihot esculenta* and so on. Therefore, it has many beautiful names such as natural greenhouse, tropical fields of fortune and green treasure house^[9]. And both Jian-feng-ling and Jia-xi have rain forests. Ledong County has a population of about 500,000 inhabitants and Li nationality accounts for nearly 37% of the total population, but the three studied villages have populations estimated at less than 3000 inhabitants.

Methods

Data on wild edible plants were collected by ethnobotanical methods, such as semi-structured interview, field research and market survey. Over ten informants with a

sound traditional knowledge of useful wild plants, mostly were native born or had been living in the region for several years were interviewed. A clear expression of consent was also obtained before each interview. Questions addressed to the informants about wild plants were mainly focused on common local name, knowledge about their use, parts of the plants used, place of collection, habitats and so on^[10,11]. After voucher specimens of plants were collected in the field with assistance from local residents, they were later identified by using *Flora of China*, *Scientific Database of China Plant Species* and with the help of my mentor. Voucher specimens were deposited at the Laboratory of Ethnobotany, Minzu University of China.

Although these methods helped us get the information, occasionally it would be difficult to distinguish local practices from external influences. Therefore, the information correctness may not just be related to the ethnobotanical methods we use, but to the process of knowledge transmission in the study sites which we can hardly control. Thus, we should try to keep a critical attitude and analytical scientific approach otherwise we will run the risk of getting entangled in myths^[12]. In addition, quantitative studies in ethnobotany reporting data on informants can be very useful for macro scale comparisons. These macro scale studies are particularly important when we observe that both biological and cultural biodiversity are seriously threatened in many parts of the world^[13].

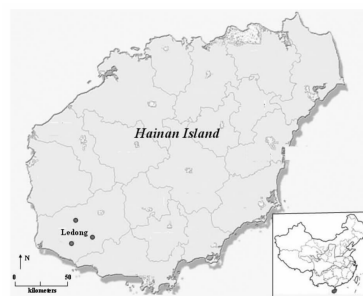


Fig. 1 Study area-Ledong, Hainan Island

Results and Discussion

Taxonomic diversity

The resources of wild edible plants are rich and diverse in the study area. The study recorded 26 species be-

longing to 26 genera and 21 families. List of all the recorded plant species and parts used were presented (table 1). The results of the study revealed that the majority (34.6%) of the species had multiple uses and serve for more than one use categories. Four major use categories namely, were vegetables, fruits, medicines and herbal tea. The growth forms of the species included shrubs, trees, herbs and climbers. Herbs and shrubs made up the highest proportion (73%) of the

edible species. Leaves and fruits were the parts used widely by the three communities in the study area. In addition, we found that nearly half of the species we collected did not have their local names. It meant that the traditional knowledge of these species, once handed down from one generation to the next, now faced the risk of degeneration in modern times. Therefore, it is important to preserve as much of this folk knowledge as possible in written form [14].

Table 1 List of wild edible plants reported by local people

Family	Species	Local Name	Parts Used	Habit	Usage
Acanthaceae	<i>Hypoestes purpurea</i>		Leaves	Herb	Herbal tea
Agavaceae	<i>Dracaena angustifolia</i>	Pong hi	Young stem	Shrub	Vegetable
Amaranthaceae	<i>Amaranthus spinosus</i>		Aboveground	Herb	Vegetable
Commelinaceae	<i>Streptolirion volubile</i>		Aboveground	Herb	Vegetable
Compositae	<i>Bidens pilosa</i>	Gan di ba	Leaves	Herb	Vegetable; Medicine
Compositae	<i>Crassocephalum crepidioides</i>	Kang cai	Aboveground	Herb	Vegetable
Compositae	<i>Elephantopus tomentosus</i>	Dong dui	Leaves	Herb	Vegetable
Cucurbitaceae	<i>Thladiantha dubia</i>		Leaves	Shrub	Vegetable
Euphorbiaceae	<i>Phyllanthus emblica</i>	Zai duo lao yi	Fruits	Tree	Fruit; Medicine
Euphorbiaceae	<i>Ricinus communis</i>	Wei xi	Seed	Herb	Medicine; Oil
Gesneriaceae	<i>Conandron ramondioides</i>		Young leaves	Small tree	Vegetable
Gramineae	<i>Thysanolaena maxima</i>		Flowers	Herb	Vegetable
Guttiferae	<i>Garcinia yunnanensis</i>	Bu gao	Young leaves; Fruits	Tree	Vegetable Fruit
Lauraceae	<i>Litsea pungens</i>	Ken ken	Fruits	Herb	Fruit
Leguminosae	<i>Tamarindus indica</i>		Fruits	Tree	Fruit
Lygodiaceae	<i>Lygodium digitatum</i>		Young leaves	Climber	Vegetable
Melastomataceae	<i>Oxyspora paniculata</i>	Cai mu	Leaves	Shrub	Herbal tea
Moraceae	<i>Ficus hirta</i>	Zei bo	Fruits	Undershrub	Fruit
Myrsinaceae	<i>Ardisia crassinervosa</i>		Fruits	Shrub	Fruit
Myrsinaceae	<i>Ardisia crenata</i>	Me bian	Fruits	Shrub	Fruit; Medicine
Myrtaceae	<i>Syzygium hainanense</i>		Fruits	Tree	Fruit, Medicine
Oxalidaceae	<i>Oxalis pes-caprae</i>	Ka mu	Whole	Herb	Fruit
Rubiaceae	<i>Mussaenda pubescens</i>		Leaves; Flowers	Shrub	Herbal tea
Solanaceae	<i>Solanum torvum</i>	Zi taogan	Fruits	Shrub	Fruit
Umbelliferae	<i>Centella asiatica</i>	Chi xian	Leaves	Herb	Vegetable
Umbelliferae	<i>Eryngium foetidum</i>	Gan hai kao	Aboveground	Herb	Vegetable

Plant parts used and growth forms

From the table 1 above, leaves (35%), fruits (32%) and aboveground (21%) are the plant parts most widely used (figure 2). Among these plants, only *Gar-*

cinia yunnanensis has two edible parts: leaves and fruits according to the survey. The edible plant parts can be gathered from the wild at many times of a year for their special living habitat in the rain forest, which are differ-

ent from many plants collected only once or twice in some temperate zone of China. Among the reported plants, 13 (48%) are herbs, 6 (22%) shrubs and 5 (19%) trees. Different kinds of plant growth forms are so widely distributed that they are not just limited to what we have investigated.

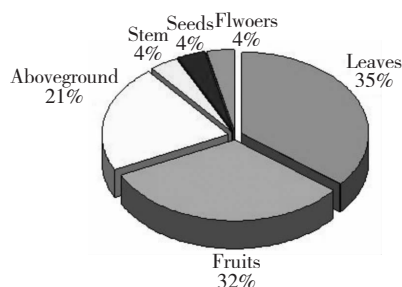


Fig. 2 Plant parts used

Edible plants used as vegetables

According to the table 1, fourteen (41%) wild edible plants were used as vegetables, *Cleome gynandra*, *Crassocephalum crepidioides*, *Centella asiatica*, *Oxalis pes-capra*, *Elephantopus tomentosus*, *Bidens pilosa*, *Amaranthus spinosus*, *Dracaena angustifolia*, *Lygodium digitatum*, *Garcinia yunnanensis*, *Conandron ramondioides*, *Thysanolaena maxima*, *Eryngium foetidum*, *Thladiantha dubia*. Of these, twelve were harvested for their leaves and one was harvested for young stems and the other for flowers. All plant parts used as vegetables were gathered from the roadside of Zha-zao village and the rain forest in Jiayi. The leaves of both *Oxalis pes-caprae* and *Garcinia yunnanensis* were tasted sour sweet after cooked. *Eryngium foetidum* can be consumed as a substitute of cultivated vegetable *Coriandrum sativum*, as they both have the same smell. Among these wild vegetables, *Crassocephalum crepidioides* is the most common edible vegetable in many local restaurants.

Wild edible fruit plants

From the table 1, 33.3% of wild edible plants were used as fruits, including *Phyllanthus emblica*, *tamarindus indica*, *Syzygium hainanense*, *Ardisia crenata*, *Litsea pungens*, *Ardisia crassinervosa*, *Garcinia yunnanensis*, and *Solanum torvum*.

Phyllanthus emblica, one of the natural sources richest in vitamin C which was the effective agent in protecting against the clastogenicity of the metal salt, is edible and

is used in pickle, hair-oil and traditional medicine^[15]. Based on the development of natural biopharmaceuticals and nutraceuticals and the development of a new cosmetic product, the investigation of extraction of bioactive phenolic constituents from the fruit of *Phyllanthus emblica* and the use of the extraction as skin lightening agents were also discussed^[16]. The fruit of *tamarindus indica* was tasted very sour said by the informant I surveyed. According to this, it can be used as a condiment and additive to food or beverage.

Edible seed plants

Ricinus communis is one of the world's top ten oil-bearing crops^[17]. With the oil prices soared year by year in the international market, various problems had been produced which made more and more people concern about this green energy of *Ricinus communis*.

Medicinal and other uses of wild edible plants

29.6% of the reported wild edible plants (table 1) were also used as medicines (table 2). Some of the plant parts used as a food source was also ingested as a remedy: *Piper betle*, *Ricinus communis*, *Bidens pilosa*, *Dracaena angustifolia*, *Syzygium hainanense*, *Ardisia crenata*, *Eryngium foetidum*, *Streptolirion volubile*, *Oxalis pes-caprae*.

Piper betle chewed with *areca* is commonly used by local people for tooth-strengthening, digestion promoting and cold resistance^[18]. Most of the medicinal plants are herbs and shrubs, and their roots are predominantly used as a remedy. The use of root as medicine may have a serious consequence from both an ecological point of view and from the survival of the wild edible plants since there are no home gardens that could play a role in easing harvest from the forest and conservation of medicinal plants^[19,20]. No clear dividing line between food and medicinal plants usually exists, especially in indigenous and local traditions^[21]. Still certain wild edible plants are used because of their assumed health benefits and thus can be called medicinal foods.

Four of the reported wild edible plants were used for other functions. Both *Oxyspora paniculata* and *Hypoestes purpurea* were used for making herbal tea. The leaves of *Phyllanthus emblica* can be served as pillow while the

leaves of *Thysanolaena maxima* can be used to make Zongzi according to the collected information.

Table 2 List of wild edible plants used as medicine

Family	Species	Plant part used	Mode of preparation	Medicinal uses
Agavaceae	<i>Dracaena angustifolia</i>	young stems	Decoction	Stomachic
Commelinaceae	<i>Streptolirion volubile</i>	aboveground	Fresh	Abscess
Compositae	<i>Bidens pilosa</i>	roots	Decoction	Diarrhea
Euphorbiaceae	<i>Ricinus communis</i>	roots	Decoction	Clearing heat; Detoxification
Myrsinaceae	<i>Ardisia crenata</i>	roots	Decoction	Official
Myrtaceae	<i>Syzygium hainanense</i>	bark	Fresh	Clearing heat; Analgesic
Oxalidaceae	<i>Oxalis pes-caprae</i>	whole	Fresh	Relieve mouth parched
Piperaceae	<i>Piper betle</i>	leaves	Fresh	Tooth problems
Umbelliferae	<i>Eryngium foetidum</i>	leaves	Decoction	Heat detoxification

Associated problems about WEPS

From the case study, we find that most of local people's foods are coming from the local produce store or market, which makes wild edible plants easily get lost to the natural hills or passed along the roadside. In other words, many wild edible plants are not paid enough attention and only a few wild edibles such as *Crassocephalum crepidioides* and *Amaranthus spinosus* are eaten commonly from our survey; as a result, some other plant resources with potential nutritional values and medicinal values cannot get reasonable exploitation and use. The traditional knowledge of wild edible plants only stay in people's mind but cannot realize itself value to make contributions to local economy and people's livelihoods. Even worse, it will lead to bio-cultural diversity loss.

From another perspective, it should be related to the local perception that wild greens may have a low cultural significance than cultivated plants because the latter people often consume can basically meet their daily nutritional need. Consequently, wild edible plants are there neglected and not fully taken advantage of their potential value by local inhabitants.

Several reasons may explain these problems above: (I) Local people don't know how much value these wild edibles have; (II) If they dare to invest their money into cultivate these plants in a large scale, how many profits they will get; (III) Wild edible plants are living well in the natural environment, but whether they could be adapt to the new cultivated conditions; (IV) The lo-

cal government officials is lacking consciousness in encouraging their people to explore and develop local special wild foods as well as conserve and manage in an active way.

Management and conservation

Knowledge about wild food plants becomes lost when plants are no longer gathered, which dues to several factors including socio-economic conditions (life style, improvement in national road network); agricultural practices (i. e., spread of intensive agriculture). As to the conservation status, most of the wild species in the areas have no protection and they are facing threats in their natural habitats from various human activities. Therefore, the results of this study also help us to identify some useful plant species that should be considered as priorities for management and conservation^[22]. In addition, public awareness and community based management need to be encouraged at all levels alongside of urgent collection of germplasm. Moreover, series of ethnobotanical study need to be done afterwards in order to establish a database for wild edible plants. Because it can help people search for the information what they need and better understand the indigenous culture of Li ethnic group.

Conclusion

The result of the study revealed that local knowledge about the edibility, parts of edibles used, habitat distribution and uses of most wild edible plant species is still maintained among the study areas. The relatively well

documented information on the wild edible plants may serve as baseline data for future studies on nutritional values and medicinal values or other possible side effects. And the identified plants that may improve nutrition and increase dietary diversity in the study areas as current studies on the knowledge of wild edible plants in Ledong are limited. In addition, it is suggested that for the local inhabitants, valuable plant resources should be paid enough attention and even can be largely grown in the home gardens as alternative vegetable sources in tackling food insecurity. Finally, as for defending intellectual property rights of local people, it's our researchers' responsibility to give some certain compensation to the owners who should be respected when we use their valuable traditional knowledge transmitted by generations.

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