

Post-print of Dong Medicinal Plants from the Kaili Medicine Market in Guizhou

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Abstract

The Kaili medicinal market was initially organized spontaneously by local ethnic minority communities. The market not only contains a large number of traditional medicinal plants of the Miao ethnicity, but also features a rich diversity of traditional medicinal plants of the Dong ethnicity. However, there have been few reports on the Dong medicinal plants traded at this market, and its rich traditional knowledge remains unknown to the outside world to this day. To investigate the current status of Dong medicinal plants at this market, this study employed methods from ethnobotany and plant taxonomy to conduct six detailed investigations of the Dong medicinal plants traded at the Kaili medicinal market from 2014 to 2017. The results indicate that the market sells a relatively large variety of Dong medicinal plants, totaling 111 species in 100 genera and 65 families, dominated by plants from the broad Liliaceae family (6 species, 5.4%), followed by Umbelliferae, Compositae, and Araceae plants (5 species each, 4.5% each), and Gesneriaceae (4 species, 3.6%). In terms of plant life forms, herbs held an absolute advantage, with 88 species accounting for 79.3%. The medicinal parts used showed diversification, but whole-herb medicines accounted for half of the total. This study conducted a comparative analysis of the medicinal plants traded by the Dong and Miao ethnic groups at the market, concluding that the Dong medicinal materials traded at the Kaili market possess unique regional and ethnic characteristics, particularly focusing on the treatment of common ailments such as rheumatism, joint problems, and traumatic injuries. Furthermore, recommendations were also proposed for the sustainable development of the Kaili medicinal market.

Full Text

Preamble

Traditional Dong Medicinal Plants on Kaili Market, Guizhou, China

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Abstract

Traditional medicinal markets are common and important institutions in China's countryside. In Kaili, a city in Guizhou Province, southwestern China, various medicinal plants are traded every weekend. While numerous Miao medicinal plants are available, the market also features diverse ethnomedicinal plants used by the Dong ethnic people, which play an important role in the application, conservation, and communication of traditional Dong medicinal knowledge. However, few records of Dong medicinal plants from this market have been reported.

Based on ethnobotanical and taxonomic approaches, investigations were carried out during 2014–2017. Information on medicinal plants and plant samples was collected with assistance from local people in the medicinal market and surrounding areas during field investigations. The results showed that a total of 111 medicinal plant species used by Dong people were identified, belonging to 65 families and 100 genera, with most obtained from wild harvest. Families containing more than four species include Liliaceae (6 species), Umbelliferae (5 spp.), Compositae (5 spp.), Araceae (5 spp.), and Gesneriaceae (4 spp.). Their names, parts used, values, frequency, and usage were documented. Corresponding with the unique environment and living habits, most recipes are used for heat-clearing and detoxifying, rheumatoid arthritis, and traumatic injury. A total of 88 species (79.3%) were herbaceous. The Dong people prefer to use whole plants for treating ailments. By comparing with Miao medicine, Dong people have unique methods and experience to treat diseases, and their medicinal uses are closely related to the local natural environment. Some species were used much more frequently than others, including *Aconitum carmichaeli*, *Potentilla discolor*, *Oxalis corniculata*, and *Campsis grandiflora*. Finally, suggestions for sustainable development of the traditional medicinal market in Kaili are proposed. Multi-disciplinary approaches should be adopted to study medicinal plants with potential value.

Keywords: Guizhou, Kaili, Dong ethnic group, medicinal plants, ethnobotany

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Introduction

The Qiongzhusi Miao and Dong Autonomous Prefecture in Guizhou Province is rich in medicinal plant resources. Local people have long depended on wild plants for disease prevention and treatment, reflecting distinct ethnic characteristics. The ethnic groups that have lived here for generations include Miao, Dong, Han, Buyi, Shui, Yao, Zhuang, Tujia, and others, with Miao and Dong being the two predominant groups. In recent years, Guizhou's ethnic medicine industry, particularly Miao medicine, has developed rapidly. As the second largest ethnic minority in the region, the Dong people also possess rich experience and unique methods in utilizing medicinal plants, with a relatively complete medical theoretical system, long history, and rich connotations. Compared with other ethnic medicines, Dong medicine places greater emphasis on the concept of "correspondence between heaven and humanity, unity of human qi," stressing adaptation to natural laws of change.

The Kaili medicinal market was originally organized spontaneously by local ethnic minority compatriots. The market features not only numerous traditional Miao medicinal plants but also abundant medicinal plant resources traditionally used by the Dong people. Every weekend, ethnic minority compatriots from surrounding areas bring collected herbs to sell at stalls, using the market as a venue to share experiences and knowledge. Over time, the market has gradually expanded. In 2016, according to the needs of market regulation and herbalist resettlement, the medicinal market relocated to the "Miao-Dong Medicine Culture Street" in the Miao-Dong Customs Garden. From having no fixed stalls to now having permanent ones, business has gradually improved, attracting large numbers of consumers.

However, with the rapid development of tourism and other industries in southeastern Guizhou in recent years, the commercial atmosphere of the city has become increasingly strong. Like most ethnic minority regions, many young people are no longer willing to learn traditional knowledge from elders, resulting in the rapid disappearance of substantial traditional knowledge at an alarming rate.

Currently, research on folk medicinal markets in China has focused primarily on

medicinal plants traded during the Dragon Boat Festival, with studies on the Jingxi Dragon Boat Festival medicinal market in Guangxi being particularly prominent. In Guizhou, only the Bijie Dragon Boat Festival medicinal market has been investigated and studied, with no relevant reports on Dong medicinal plants traded at the Kaili market.

Although systematic collection and organization of Dong medicine have been conducted in China over the past 30 years, completing the transition from “oral tradition” to “written tradition” and gradually forming the theoretical system of Dong medicine, changes in people’s health and economic needs, as well as ecological and cultural environments, have led to changes in plant species and medicinal habits in medicinal markets. Urgent investigation and documentation of medicinal plant resources in these markets are needed. This study employed ethnobotanical and taxonomic methods to conduct six detailed investigations of Dong medicinal plants traded at the Kaili market from 2014 to 2017. Through recording and organizing, we aim to enrich the content of ethnic medicinal resources at the Kaili market, explore Dong medicinal plant resources and their medical culture, facilitate research, protection, and inheritance of traditional knowledge, and provide references for sustainable development of medicinal plant resources in Kaili market and similar regions.

1.1 Survey Area Introduction

Kaili, the capital of the Qiandongnan Miao and Dong Autonomous Prefecture, means “the place of the Mulao people’s fields.” Kaili has a long history. In 1951, the Kaili District Miao Autonomous People’s Government was established as the first Miao autonomous region in Guizhou Province. The Qiandongnan Miao and Dong Autonomous Prefecture was established in 1956, and Kaili City was established in 1984. Kaili has a total population of 543,000, with 361,000 ethnic minorities comprising 75.4% of the total population. Among them, the Miao population is 284,000 (63.3% of the total population), while the Dong population is slightly smaller than the Miao population. Kaili has a mild climate with abundant rainfall and significant elevation differences (137–2,178.8 m). With forest coverage reaching 62.2%, the superior geographical and climatic conditions have nurtured rich and diverse plant resources.

1.2.1 Literature Research

We compiled information on Dong medicinal plants in southeastern Guizhou through *Flora of China*, *Flora of China* (English edition), *Flora of Guizhou*, and *Dong Medicine*, and applied literature research to examine local ethnic minority culture, history, and climate data.

1.2.2 Ethnobotanical Survey

We employed the fundamental ethnobotanical survey method known as the “5W+1H” approach (who, what, where, when, why, and how) to record the ethnicity of informants, medicinal material types, uses, and plant parts used. Additionally, through key informant interviews and semi-structured interviews, we gathered 12 Dong compatriots with larger herb stalls and richer traditional knowledge for further information collection, ensuring accuracy and completeness of records.

1.2.3 Medicinal Plant Identification

We used taxonomic methods supplemented by voucher specimen collection and photography for plant identification and organization.

2.1 Inventory of Dong Medicinal Plants

The Kaili medicinal market has approximately 130–150 stalls, of which 40–60 are Dong stalls, mainly selling wild fresh plant medicines with a small number of cultivated plants. With seasonal changes, the medicinal plant parts sold also vary: flowers, leaves, and fruits are more common in spring and summer, primarily as fresh materials, while roots and rhizomes dominate in autumn and winter. Additionally, each stall differs in the types and quantities of plants traded, and collection is seasonal and random.

During market surveys, we recorded 111 Dong medicinal plant species belonging to 65 families and 100 genera (see Table 1). The market is dominated by plants from the broad Liliaceae family (6 species, 5.4%), followed by Umbelliferae, Compositae, and Araceae (5 species each, 4.5% each), and Gesneriaceae (4 species, 3.6%). This demonstrates that traded medicinal plants are widely distributed across families and not limited to a few groups, reflecting the diversity of Dong medicinal plant composition in the region, which is basically consistent with the dominant families of medicinal plants in China, while also indicating the rich connotation of Kaili Dong medicine.

In terms of plant life form, herbs hold absolute dominance with 88 species (79.3%), followed by shrubs with 17 species (15.3%), and trees with 6 species (5.4%). This shows that while different life forms are represented, herbaceous plants far outnumber woody plants, which is consistent with related research findings both domestically and internationally. Herbaceous plants are widely utilized primarily because the Dong people prefer to use fresh medicines obtained nearby and have the traditional habit of collecting and using immediately. Additionally, herbaceous plants are easier to collect than trees and shrubs, and they have faster growth cycles. Furthermore, severe forest destruction in areas

surrounding Kaili has led to reduced woody plants, which is also a factor that cannot be ignored.

Based on medicinal materials sold in the market and combined with local usage methods, plant parts used can be divided into seven categories (Table 2), reflecting the diversity of species and plant parts traded in the market. Whole plants and roots/rhizomes constitute the vast majority, accounting for 58.6% and 22.5% of the total, respectively, with whole plant materials comprising half of all materials. This is because Dong people mostly use whole plant materials and rarely use trees or shrubs. Whole plant materials can be found everywhere in Dong villages, even in front of and behind houses, making them very convenient for Dong doctors to obtain locally.

Table 1. Inventory of medicinal plants traded by Dong people on Kaili market

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Achillea wilsoniana</i>	-	Compositae	Whole plant	Removing toxicity for detumescence, relieving pain	-	Decoction
<i>Achyranthes longifolia</i>	-	Amaranthaceae	Whole plant	Nourish	-	Decoction
<i>Aconitum carmichaeli</i>	-	Ranunculaceae	Root	Dispelling dampness	-	Decoction
<i>Ainsliaea rubrifolia</i>	红背兔儿风	Compositae	Whole plant	Antitussive	-	Decoction
<i>Alpinia japonica</i>	-	Zingiberaceae	Whole plant	Reinforcing stomach	-	Decoction
<i>Amorphophallus konjac</i>	磨芋	Araceae	Tuber	Removing toxicity for detumescence	-	Decoction
<i>Ampelopsis bodinieri</i>	蓝果蛇葡萄	Vitaceae	Whole plant	Hemorrhoids	-	Decoction
<i>Angelica sinensis</i>	-	Umbelliferae	Whole plant	Benefiting qi and nourishing blood	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Aralia chinensis</i>	-	Araliaceae	Whole plant	Heat-clearing and detoxifying, promoting blood circulation to remove blood stasis	-	Decoction
<i>Ardisia crenata</i>	-	Myrsinaceae	Whole plant	-	-	Decoction
<i>Arisaema decipiens</i>	-	Araceae	Tuber	Traumatic injury	-	Decoction
<i>Arisaema erubescens</i>	一把伞南星	Araceae	Tuber	Dispelling dampness	-	Decoction
<i>Artemisia capillaris</i>	-	Compositae	Whole plant	Jaundice hepatitis	-	Decoction
<i>Asarum sieboldii</i>	细辛	Aristolochiaceae	Whole plant	Wind-cold headache, analgesia	-	Decoction
<i>Asarum splendens</i>	花脸细辛	Aristolochiaceae	Whole plant	Wind chill	-	Decoction
<i>Asparagus cochinchinensis</i>	-	Liliaceae	Root tuber	Antitussive	-	Decoction
<i>Begonia circumlobata</i>	周裂叶秋海棠	Begoniaceae	Whole plant	Replenishing blood	-	Decoction
<i>Boea hygrometrica</i>	-	Gesneriaceae	Whole plant	Antitussive	-	Decoction
<i>Campsis grandiflora</i>	凌霄	Bignoniaceae	Flower	Gynecologic-diseases	-	Decoction
<i>Campylandra chinensis</i>	-	Liliaceae	Whole plant	Replenishing blood	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Centella asiatica</i>	-	Umbelliferae	Whole plant	Removing toxicity for detumescence, heat-clearing detoxifying	-	Decoction
<i>Chloranthus japonicus</i>	四块瓦	Chloranthaceae	Whole plant	Traumatic injury	-	Decoction, external
<i>Cissus pteroclada</i>	翼茎白粉藤	Vitaceae	Whole plant	Dispelling dampness	-	Decoction
<i>Coix lacryma-jobi</i>	-	Gramineae	Fruit	Antitussive	-	Decoction
<i>Coptis chinensis</i>	-	Ranunculaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Cupressus duclouxiana</i>	-	Cupressaceae	Branch, leaf	Pruritus	-	Decoction
<i>Curculigo orchoides</i>	-	Amaryllidaceae	Rhizome, tuber	Impotence, spermatorrhea	-	Decoction
<i>Cuscuta chinensis</i>	-	Convolvulaceae	Whole plant	Tonifying kidney	-	Decoction
<i>Cynanchum wilfordii</i>	-	Asclepiadaceae	Whole plant	Invigorating the spleen and reinforcing stomach	-	Decoction
<i>Davallia mariesii</i>	骨碎补	Davalliaceae	Rhizome	Tonifying kidney	-	Decoction
<i>Desmodium styracifolium</i>	广东金钱草	Leguminosae	Whole plant	Stone	-	Decoction
<i>Didymocarpus stenanthos</i>	疏毛长蒴苣苔	Gesneriaceae	Whole plant	Antitussive	-	Decoction
<i>Dioscorea bulbifera</i>	-	Dioscoreaceae	Bulbel	Hemorrhoids	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Disporopsis pernyi</i>	深裂竹根七	Liliaceae	Root, stem	Moistening lung for arresting cough	-	Decoction
<i>Dysosma versipellis</i>	八角莲	Berberidaceae	Root, tuber	Dispelling dampness	-	Decoction
<i>Epimedium sagittatum</i>	三枝九叶草	Berberidaceae	Whole plant	Reinforcing kidney, strengthen yang	-	Decoction
<i>Euphorbia lathyris</i>	-	Euphorbiaceae	Whole plant	Hemorrhoids	-	Decoction
<i>Gaultheria fragrantissima</i>	-	Ericaceae	Whole plant	Dispelling dampness	-	Decoction
<i>Gleditsia sinensis</i>	-	Leguminosae	Seed, gleditsiae	Removing toxicity for detumescence	-	Decoction
<i>Gerbera piloselloides</i>	-	Compositae	Whole plant	Buccal inflammation	-	External decoction
<i>Glochidion puberum</i>	-	Euphorbiaceae	Whole plant	-	-	Decoction
<i>Gymnotheca chinensis</i>	-	Saururaceae	Whole plant	Constipation, regulating menstruation	-	Decoction
<i>Habenaria ciliolaris</i>	毛萼玉凤花	Orchidaceae	Whole plant	Antitussive	-	Decoction
<i>Hedera nepalensis</i>	常春藤	Araliaceae	Whole plant	Hepatitis	-	Decoction
<i>Hedyotis diffusa</i>	白花蛇舌草	Rubiaceae	Whole plant	Cancer	-	Decoction
<i>Hemerocallis fulva</i>	-	Liliaceae	Root, tuber	Nourishing	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Holboellia latifolia</i>	-	Lardizabaleaceae	Whole plant	Dispelling dampness, traumatic injury	-	Decoction
<i>Huperzia serrata</i>	蛇足石杉	Huperziaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Hydrocharis dubia</i>	-	Hydrocharitaceae	Whole plant	Clearing heat and promoting diuresis	-	Decoction
<i>Hydrocotyle sibthorpioides</i>	-	Umbelliferae	Whole plant	Heat-clearing and detoxifying, diuresis, detumescence	-	Decoction
<i>Hypericum japonicum</i>	-	Guttiferaceae	Whole plant	Heat-clearing and detoxifying, hepatitis	-	Decoction
<i>Ilex pubescens</i>	-	Aquifoliaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Imperata cylindrica</i>	大白茅 (丝茅)	Gramineae	Root, flower	Diuretic, hemostasis	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Juncus effusus</i>	灯心草	Juncaceae	Whole plant	Heat-clearing and detoxifying, diuretic	-	Decoction
<i>Kalimeris indica</i>	-	Compositae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Ligusticum chuanxiong</i>	-	Umbelliferae	Whole plant	Reinforcing qi	-	Decoction
<i>Lobelia sequinii</i>	西南山梗菜	Campanulaceae	Whole plant	Traumatic injury	-	Decoction
<i>Lophatherum gracile</i>	凤尾竹	Gramineae	Root tuber	Nourishing	-	Decoction
<i>Lycoris aurea</i>	-	Amaryllidaceae	Whole plant	Decreasing swelling, relieving pain, diuretic	-	Decoction
<i>Lygodium japonicum</i>	-	Lygodiaceae	Whole plant	Diuretic	-	Decoction
<i>Lysimachia circaeoides</i>	珍珠露珠菜	Primulaceae	Whole plant	Promoting blood circulation to remove blood stasis	-	Decoction
<i>Lysimachia fortunei</i>	-	Primulaceae	Whole plant	Gynecologic-diseases	-	Decoction
<i>Lysimachia paridiformis</i>	狭叶落地梅	Primulaceae	Whole plant	Dispelling dampness	-	Decoction
<i>Lysionotus pauciflorus</i>	-	Gesneriaceae	Whole plant	Antitussive	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Melastoma candidum</i>	-	Melastomaceae	Whole plant	Dispelling dampness, traumatic injury	-	Decoction
<i>Melastoma dodecandrum</i>	-	Melastomaceae	Whole plant	Abdominal pain	-	Decoction
<i>Mollugo stricta</i>	-	Aizoaceae	Whole plant	Cancer	-	Decoction
<i>Momordica cochinchinensis</i>	-	Cucurbitaceae	Whole plant	Innominate inflammatory of unknown origin	-	Decoction
<i>Munronia pinnata</i>	-	Meliaceae	Whole plant	Traumatic injury	-	Decoction, external
<i>Nephrolepis cordifolia</i>	天鹅抱蛋	Nephrolepidaceae	Root tuber	Stone	-	Decoction
<i>Ophioglossum vulgatum</i>	-	Ophioglossaceae	Whole plant	Detoxifying and dispersing blood stasis	-	Decoction
<i>Oxalis corniculata</i>	酢浆草	Oxalidaceae	Whole plant	Decreasing swelling, relieving pain	-	Decoction
<i>Parnassia wightiana</i>	鸡眼梅花草	Saxifragaceae	Whole plant	Pneumonia	-	Decoction
<i>Periploca forrestii</i>	-	Asclepiadaceae	Whole plant	Traumatic injury	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Peucedanum praeruptorum</i>	前胡 (白花前胡)	Umbelliferae	Whole plant	Dispelling dampness, relaxing tendon and activating collaterals	-	Decoction
<i>Physalis alkekengi</i>	-	Solanaceae	Fruit	Heat-clearing and detoxifying	-	Decoction
<i>Pinellia pedatisecta</i>	虎掌半夏	Araceae	Root, stem	Skin disease, innominate inflammatory of unknown origin	-	Decoction
<i>Piper wallichii</i>	金藤香	Piperaceae	Whole plant	Dispelling dampness	-	Decoction
<i>Polygala japonica</i>	-	Polygalaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Polygonum aviculare</i>	-	Polygonaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Polygonum capitatum</i>	-	Polygonaceae	Whole plant	Edema	-	Decoction
<i>Polygonum perfoliatum</i>	-	Polygonaceae	Whole plant	Snakebite, skin disease	-	External decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Portulaca oleracea</i>	-	Portulacaceae	Whole plant	Heat-clearing and detoxifying, diuretic, swelling	-	Decoction
<i>Potentilla discolor</i>	翻白草	Rosaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Pratia nummularia</i>	铜锤玉带草	Campanulaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Prunella vulgaris</i>	-	Labiatae	Whole plant	Heat-clearing and detoxifying, dispelling dampness	-	Decoction
<i>Pyrrosia lingua</i>	-	Polypodiaceae	Whole plant	Traumatic injury	-	Decoction
<i>Reineckia carnea</i>	-	Liliaceae	Whole plant	Hyperostosis	-	Decoction
<i>Rhaphidophora hongkongensis</i>	-	Araceae	Whole plant	Dispelling dampness	-	Decoction
<i>Rosa laevigata</i>	-	Rosaceae	Fruit	Tonifying kidney, strengthen yang, replenish blood	-	Decoction
<i>Rubia cordifolia</i>	-	Rubiaceae	Whole plant	Set a fracture	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Sambucus chinensis</i>	-	Caprifoliaceae	Branch, leaf	Removing liver-fire, improving eyesight	-	Decoction, external
<i>Sarcopyramis nepalensis</i>	-	Melastomataceae	Whole plant	Relieving cough and asthma	-	Decoction
<i>Saurauia thyrsiflora</i>	聚锥水东哥	Actinidiaceae	Branch, leaf	-	-	Decoction
<i>Sedum emarginatum</i>	-	Crassulaceae	Whole plant	Heat-clearing and detoxifying, eliminating stasis, subdue swelling	-	Decoction
<i>Smilax glabra</i>	-	Liliaceae	Root tuber	Invigorating the spleen and reinforcing stomach	-	Decoction
<i>Solanum lyratum</i>	-	Solanaceae	Whole plant	Swelling and aching of gum	-	Decoction
<i>Solanum verbascifolium</i>	-	Solanaceae	Branch, leaf	Dispelling dampness	-	Decoction
<i>Sophora flavescens</i>	-	Leguminosae	Whole plant	Blood cooling and arresting	-	Decoction
<i>Spatholirion longifolium</i>	竹叶吉祥草	Commelinaceae	Whole plant	Abnormal menstruation	-	Decoction

Chinese name and Latin name	Local name	Family	Medicinal parts	Use and value	Frequency	Usage
<i>Tengia scopulorum</i>	-	Gesneriaceae	Whole plant	Moistening lung for arresting cough	-	Decoction
<i>Tinospora sagittata</i>	-	Menispermaceae	Root tuber	Heat-clearing and detoxifying	-	Decoction
<i>Toricellia angulata</i>	角叶鞘柄木	Cornaceae	Velamen	Set a fracture	-	Decoction
<i>Trachycarpus fortunei</i>	棕榈果	Palmae	Fruit	Cancer treatment	-	Decoction
<i>Tylophora ovata</i>	-	Asclepiadaceae	Whole plant	Dispelling dampness, traumatic injury	-	Decoction
<i>Typha orientalis</i>	-	Typhaceae	Inflorescence	Hemostasis	-	Decoction
<i>Uncaria sinensis</i>	-	Rubiaceae	Whole plant	Dispelling dampness	-	Decoction
<i>Urtica fissa</i>	-	Urticaceae	Whole plant	Edema	-	Decoction
<i>Valeriana jatamansi</i>	-	Valerianaceae	Velamen	Dyspepsia	-	Decoction
<i>Viola diffusa</i>	-	Violaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction
<i>Viola philippica</i>	-	Violaceae	Whole plant	Heat-clearing and detoxifying	-	Decoction

Table 2. Statistical analysis of medicinal parts of Dong medicinal plants traded on Kaili market

Medicinal parts	Numbers	Percentage (%)	Parts (Numbers)
Whole plant	65	58.6	Whole plant without root (58), Whole plant with root (7)
Root & stem	25	22.5	Root (14), Root tuber (5), Rhizome (3), Bulb (1), Tuber (3)
Leaf	7	6.3	Leaf (3), Branch & leaf (4)
Flower	5	4.5	Flower (3), Inflorescence (2)
Fruit & seed	5	4.5	Fruit (4), Seed (1)
Others	4	3.6	Thorn (1), Stem (1), Bulbel (1), Bark (1), Root bark (2)

2.2 Ethnic Characteristics of Dong Medicinal Plants Traded on Kaili Market

The core of Dong medical philosophy is the integration of five elements. Rich natural resources are their main source of medicinal plants, and they emphasize the dialectical relationship of interaction and integration between nature (composed of heaven, earth, qi, and water) and humans. Dong doctors employ four diagnostic methods—observation, palpation, calculation, and marking—and adopt principles such as treating cold diseases with heat, treating heat diseases with cold, and treating qi deficiency with tonification to prescribe appropriate medicines.

Common Dong medicinal materials for treating heat diseases at Kaili market include: (1) *Amorphophallus konjac* and *Juncus effusus* for heat diseases caused by fever, fire toxin, redness and swelling, mania, insects, snakes, and plants; (2) *Sambucus chinensis* and *Davallia mariesii* for heat diseases caused by various traumas; and (3) *Pinellia pedatisecta* for heat diseases caused by “contagious” diseases (infectious diseases). Medicinal plants for treating cold diseases include: (1) *Polygonum capitatum* and *Urtica fissa* for edema of body parts; (2) *Potentilla discolor* and *Begonia circumlobata* for weakness; and (3) *Prunella vulgaris* and *Sedum emarginatum* for diseases caused by contact with toxic substances.

Through investigation and combined with folk medicinal experience in the market, Dong plant medicines sold at Kaili market can be divided into ten categories according to function and main indications: heat-clearing and detoxifying medicines, wind-dampness-dispelling medicines, trauma and bone-

setting medicines, swelling-reducing and pain-relieving medicines, antitussive medicines, tonifying and blood-nourishing medicines, gynecological medicines, hemorrhoid medicines, diuretic medicines, and spleen-stomach-strengthening medicines. Among them, heat-clearing and detoxifying medicines and wind-dampness-dispelling medicines account for the highest proportion, which is closely related to the local geographical environment, temperature changes, and cultural background. Frequently appearing plants such as *Aconitum carmichaeli*, *Potentilla discolor*, *Oxalis corniculata*, and *Campsis grandiflora* have abundant wild resources locally and are easy to obtain.

2.3 Usage Methods of Dong Medicinal Plants Traded on Kaili Market

Most plants sold at the market are fresh, with some processed by drying. The Dong people believe that active ingredients in fresh medicines are not destroyed and that fresh herbs are more effective than dried materials, while also saving processing costs and time. Common methods include decoction, alcohol maceration, external application, and medicinal baths. They often stew plant medicines together with meat and bones, supplementing protein while adding plant medicine efficacy, which yields more obvious therapeutic effects. This practice is inseparable from the historical poverty and malnutrition of many Dong people. Additionally, many Dong women boil *Piper wallichii*, *Uncaria sinensis*, *Lysimachia paridiformis*, and *Solanum verbascifolium* in water for bathing to dispel wind and dampness, or soak them in alcohol for external application.

Alcohol plays a crucial role in Dong medicine, serving as medicine or auxiliary medicine. Besides using alcohol for disinfection and macerating medicines, alcohol acts as a solvent to fully extract effective substances from plant, animal, and mineral medicines. Symptomatic compatibility according to medicinal properties is a characteristic of Dong medicine. We observed that several plants are often bundled together for sale at the market to enhance efficacy and effectively treat specific diseases. For example, *Serissa japonica*, *Gentiana scabra*, and *Acorus tatarinowii* combined can treat hepatitis; *Chloranthus japonicus* and *Piper wallichii* together can treat hypertension; *Hedera nepalensis* and *Uncaria rhynchophylla* macerated in alcohol can treat rheumatic joint pain; and the fruit of *Trachycarpus fortunei* combined with *Solanum lyratum* and *Solanum nigrum* has obvious effects on treating benign tumors.

2.4 Comparison Between Dong and Miao Medicine at Kaili Market

In fact, Dong medicine and neighboring Miao medicine share many similarities, reflecting the accumulated wisdom and life experiences of different ethnic groups learning from each other during long historical development processes. Most stalls at Kaili market sell Miao medicines, predominantly plants for bone-setting, detoxification, and wind-dispelling, showing high consistency and over-

lap with plants traded at Dong stalls. This is unsurprising given the overlapping geographical environments and natural resources of Miao and Dong communities, leading to similar common diseases and frequently used plants.

However, different ethnic groups have different cultural backgrounds and carriers, and each has its own unique medicinal experience and strengths. For example, Dong people use *Arisaema erubescens* to treat rheumatism, while Miao people use it for cough; Dong people use *Oxalis corniculata* to reduce swelling and relieve pain, while Miao people use it to reduce fever; Dong people use the stem bark of *Uncaria sinensis* soaked in yellow rice wine to treat rheumatic arthritis, while Miao people use its hooked stem to treat headache and dizziness; Miao people prefer to use *Tinospora sagittata* for digestion, while Dong people believe it has heat-clearing and detoxifying effects.

For a long time, Miao medicine has received significant attention from various sectors. Research and development have promoted the protection and development of Miao medicine, which has become one of China's six major ethnic medicines and contributed greatly to Guizhou's economic growth. In contrast, the situation for Dong medicine is completely different. Its inheritance still relies on Dong oral language (ancient songs, witchcraft words, proverbs, legends) as the carrier, passed down orally from generation to generation, which limits the spatial and frequency dissemination of Dong medical knowledge, affects people's understanding of Dong medicine, and keeps Dong medical theory in a primitive and simple state.

3. Discussion and Recommendations

Dong medicinal plants traded at Kaili market are rich in species with distinct local and ethnic characteristics. However, due to lack of effective management and proper guidance, several problems exist in the trade of Dong plant medicines.

3.1 Confusion of Medicinal Varieties

Oral transmission is the main method of Dong medicine inheritance. As individual experiences and knowledge vary, confusion exists in Dong medicinal varieties, with phenomena of the same material having different names or different materials sharing the same name being relatively common at the market. For example, the original plant of *Asarum sieboldii* includes *A. sieboldii* and *A. splendens*; both *Didymocarpus stenanthos* and *Boea hygrometrica* are locally called "yan baicai" (rock cabbage). For mixed and substitute medicinal materials, folk belief holds that their efficacy is the same as the authentic product. Whether substitutes have consistent efficacy with authentic products and whether other similar species can serve as substitutes still require analysis and verification from the perspectives of active components and efficacy. Therefore, government regulatory departments and relevant researchers should promptly investigate, organize, and analyze plants sold at the market to avoid confusion

in plant medicine names and species. They should also understand the status of local medicinal plant resources and consumer medicinal needs across different seasons to enable effective management and planning for sustainable market development and provide safety guarantees for consumers' rational use of ethnic medicines.

3.2 Scarcity of Wild Medicinal Plant Resources

Kaili medicinal market has now formed a fixed business model, unlike other markets that only appear during major festivals such as the Dragon Boat Festival and Double Ninth Festival. Consequently, demand and trade volume increase yearly, leading to over-exploitation of medicinal materials with high demand, high trading frequency, and good therapeutic efficacy. Due to lack of relevant protection and development measures, many wild medicinal materials have suffered predatory destruction. For example, *Dysosma versipellis* has high trading frequency at the Dong market and is a commonly used medicinal plant by the Dong people for treating rheumatic joint pain. Local Dong compatriots believe its root has good effects on rheumatic arthritis, leading to extensive root excavation and increasingly scarce wild resources of this species locally, with prices becoming more expensive. Therefore, based on understanding Dong medicinal resources at Kaili market, local governments should first conduct further scientific research on medicinal plants with high application value, including chemical component extraction, active ingredient analysis, and pharmacological studies. Through multi-disciplinary research, ethnobotanical knowledge of Dong medicine at Kaili market can be scientifically verified and recognized. Then, they should actively collaborate with Chinese medicinal material cultivation enterprises and processing companies to establish cultivation bases to meet medicinal material demand, alleviate ecological pressure, and promote local economic development.

3.3 Adulteration in Trade

Additionally, some vendors lack knowledge of medicinal plants and relevant experience but, seeking profit at the market, sell counterfeit products or plants not used by locals. For example, many seedlings of *Dendrobium aphyllum* are sold at the market disguised as *Dendrobium officinale*. Government regulatory departments should intervene and stop such behaviors and take measures to protect consumer rights. For instance, they could gather reputable Dong folk doctors to establish consultation booths at the market center to provide beneficial advice to buyers, helping them select correct medicinal materials and understand their efficacy and uses. This would promote the effectiveness of "word-of-mouth" transmission to some extent and protect Dong traditional medicine.

Kaili medicinal market is an important venue for exchanging and disseminating traditional knowledge, providing basic health needs for local people while allowing ethnic medicine to flourish. By strengthening protection and inheritance of Dong and other ethnic traditional medicines and fully leveraging their

advantages, ethnic medical culture can become more splendid and colorful.

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