



Regular article

Analysis of plant resources and diversity in the southeast area of Taihang Mountains

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Abstract

Taihang Mountains are situated between Shanxi Province and the North China Plain, spanning Beijing, Hebei, Shanxi, and Henan provinces and cities. The mountains extend from northeast to southwest for over 400 km, naturally deviding the second step from the third one in China. The southeastern area of Taihang Mountains specifically refers to Changzhi City and Jincheng Administrative Region of Shanxi Province. Given Shanxi Province's robust development plans for the southeast area of Taihang Mountains, the medicinal plant resources in this area will be affected. Therefore, it is imperative and urgent to conduct a comprehensive investigation and study on the medicinal plant resources in the southeast area of Taihang Mountains. By means of field investigation, literature review, and specimen identification, the plant resources and diversity of two counties in the southeast of Taihang Mountains were evaluated. The findings revealed 234 plants species across 172 genera in 70 families, primarily comprising angiosperms. The families with more species included Compositae, Leguminosae, Rosaceae, Labiatae, Ranunculaceae. Among the genera, those with more species were *Cynanchum*, *Selaginella*, *Clematis*, *Thalictrum*, and *Rhamnus*. A total of 114 medicinal plants were identified, constituting 48.72% of the total. Regarding medicinal parts, the concentration is in roots and rhizomes, followed by whole plants and fruits. On the basis of investigation and study, some suggestions on the development, utilization, and protection of medicinal plant resources in southeast Taihang Mountains were made. These suggestions provide valuable insights for the study on medicinal plant resources and vegetation in the southeast of Taihang Mountains, serving as a scientific basis for the protection and sustainable utilization of wild medicinal plant resources.

Keywords: plant resources; diversity; medicinal use; protection and utilization; Taihang Mountains

1 Introduction

Plant resources have always been the material

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Received: 2023-11-01 Accepted: 2024-01-16

basis for human survival and a significant part of biodiversity, serving as the primary source of medicinal resources [1]. Taihang Mountain, located at the junction of Shanxi, Hebei, Beijing, and Henan, has played a crucial role as the gateway and battlefield for the Central Plains throughout the past dynasties, boasting an early history of human development. However, current research in this area predominantly revolves around tourism, with



limited reports on local plant resources and their medicinal value [2]. Therefore, the 16th Scientific Expedition Team of Chinese Medicine Resources of Shenyang Pharmaceutical University conducted a preliminary investigation on the plant resources and diversity of two counties in the southeast of Taihang Mountains (Pingshun County of Changzhi City and Lingchuan County of Jincheng City) through field investigation, specimen collection, literature retrieval, and specimen verification. This effort aimed to comprehend the species, distribution, and utilization of plant resources in this area, providing a scientific basis for the rational development and effective protection of plant resources in the southeast of Taihang Mountains.

Taihang Mountains are located between Shanxi Province and the North China Plain, spanning four provinces and cities, including Beijing, Hebei, Shanxi, and Henan. The mountains range from the West Mountain of Beijing in the north to the Wangwu Mountain in the junction of Henan and Shanxi in the south, connect with Shanxi Plateau in the west, and border the North China Plain in the east. Extending from northeast to southwest for over more than 400 km, Taihang Mountains mark the eastern edge of the second step of China's topography and the eastern boundary of

the Loess Plateau [3]. The altitude in the northern part of Taihang Mountains is relatively high, and it gradually decreased in the southern part. Most of the altitudes exceed 1200 m above sea level. Taihang Mountains are characterized by warm temperate semi humid continental monsoon climate. The region experiences mild winter and moderate summer throughout the year. In each respective season, there are more than 300 varieties of rare plants, including woody flowers and medicinal materials [4]. The southeastern area of Taihang Mountains, located in Changzhi City and Jincheng Administrative Region of Shanxi Province, and influenced by warm temperate semi humid continental monsoon climate, is characterized by distinct four seasons. The average annual rainfall exceeds 510 mm. The predominant soil is gray brown soil, alpine meadow soil, or brown soil. The region boasts high vegetation coverage, harboring numerous varieties of wild medicinal materials with abundant reserves [5]. These materials include *Codonopsis pilosula*, *Forsythia suspensa*, *Bupleurum chinense*, *Sophora flavescens*, *Astragalus membranaceus*, *Semen Ziziphi spinosae*, *Platycodon grandiflorum*, *Atractylodes macrocephala*, *Anemarrhena asphodeloides*, and *Rehmannia glutinosa*, et al. The geographical location of the study area is shown in Fig. 1.

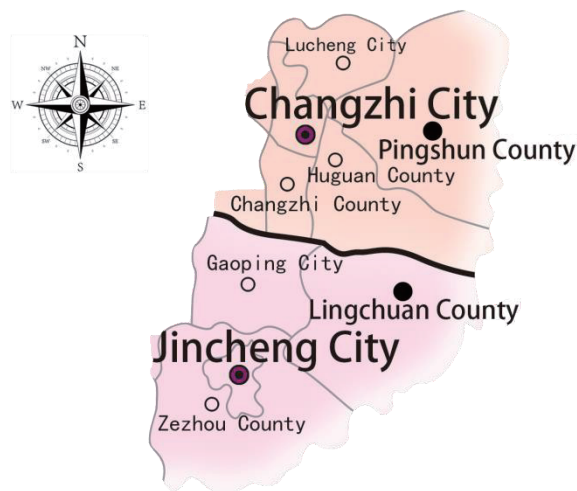


Fig. 1 Geographic location of the study area and the survey location



2 Research method

In July 2022, the 16th Scientific Expedition Team of Chinese Medicine Resources of Shenyang Pharmaceutical University, together with relevant personnel from Shanxi Medical University, Zhendong Pharmaceutical, Lingchuan County Traditional Chinese Medicine Industry Development Center, and Jincheng Functional Agriculture Association, conducted a scientific investigation in two counties in the southeast of Taihang Mountains, Pingshun County of Changzhi City and Lingchuan County of Jincheng City. The survey utilized a route-based approach for representative areas. Specimens were systematically collected along the route, documented with photos. Detailed information including collection location, time and the main morphological characteristics of plants was recorded. The longitude and latitude were precisely recorded using the mobile GPS recorder system. Species and genera of plants in the southeast of Taihang Mountains were identified according to “Flora of China” [6], “Primary Color Atlas of Genuine and Local Standard Medicines”, “Primary Color Atlas of Precious Chinese Herbal Medicines”, “Identification Atlas of Chinese Herbal Medicines”, and “Microscopic Identification of Chinese Herbal Powder”. This comprehensive process resulted in the determination of a list of plant resources, totaling 234 species. Out of this list, medicinal plants were selected in accordance with “the Chinese Pharmacopoeia 2020”, “the Chinese Materia Medica” [7], “the National Compilation of

Chinese Herbal Medicine” [8], and other documents. The medicinal parts are meticulously recorded with reference to the aforementioned documents, resulting in a total of 114 species. Finally, the diversity of plant resources in the southeast of Taihang Mountains was analyzed and evaluated. Corresponding suggestions for development, utilization and protection were then made.

3 Results and analysis

3.1 Analysis of plant species composition in the southeast of Taihang Mountains

According to the survey results, the southeast of Taihang Mountains harbors 234 plant species, distributed across 172 genera and 70 families. This includes 7 species of ferns categorized under 4 genera and 3 families, 1 species of gymnosperms within 1 genus and 1 family, and 226 species of angiosperms spanning 167 genera and 66 families. Further classification reveals 207 species of dicotyledonous plants distributed among 57 families and 153 genera, along with 19 species of monocotyledonous plants found in 9 families and 14 genera (Table 1). Angiosperms are dominant at the family, genus, and species levels, constituting 94.28% of the total number of families, 97.09% of the total number of genera, and 96.58% of the total number of species. Dicotyledonous plants predominate within this category. The number of ferns and gymnosperms species is relatively low.

Table 1 Plant species in the southeast of Taihang Mountains

Plant type	No.families	Ratio/%	No.genera	Ratio/%	No.species	Ratio/%
Pteridophytes	3	4.29	4	2.33	7	2.99
Gymnosperms	1	1.43	1	0.58	1	0.43
Angiosperms	66	94.28	167	97.09	226	96.58
Dicotyledons	57	81.42	153	88.95	207	88.46
Monocotyledons	9	12.86	14	8.14	19	8.12
Total	70	100.00	172	100.00	234	100.00



3.2 Analysis of plant families and genera composition in the southeast of Taihang Mountains

Fig. 2 shows that 62 families have 1-5 species, accounting for 88.57% of the total families. Additionally, 3 families contain 6-10 species, representing 4.29% of the total families. Notably, five families, namely Compositae, Leguminosae,

Rosaceae, Labiatae, and Ranunculaceae, boast more than 10 species each. Although comprising only 7.14% of the total number of families, the species within these families account for 39.32% of the total number of species. Their potential to become dominant species may be attributed to their superior reproductive structures and strong environmental adaptability.

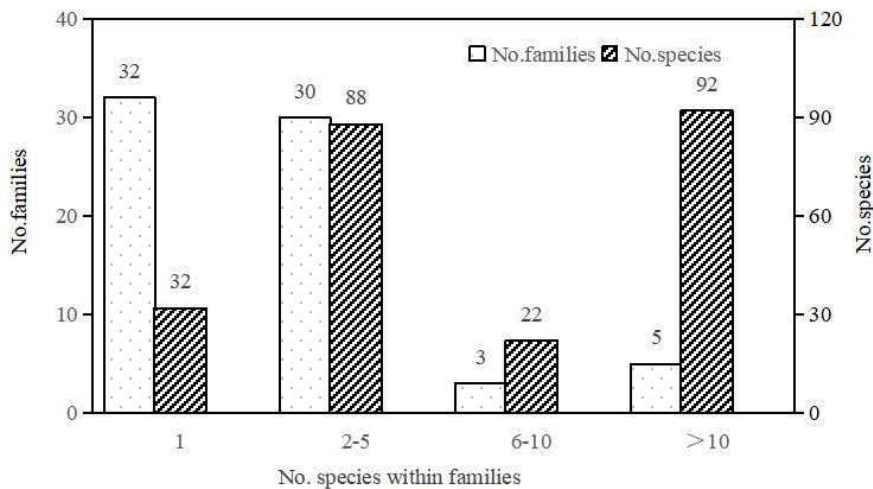


Fig. 2 Species in different families of plants in the southeast Taihang Mountains

It can be seen from Fig. 3 that the genera with only one species have obvious advantages. Among 172 genera of plants, 128 genera contain only 1 species, accounting for 74.42% and 54.70% of the total genera and species. There are 28 genera with 2 species, accounting for 16.28% of the total

genera, but the proportion of species is the second, accounting for 23.93% of the total species. There are 14 genera including 3 species, accounting for 8.14% of the total genera, namely Clematis, Thalictrum and Rhamnus; Only 2 genera, namely Cynanchum and Selaginella, contain more than 3 species.

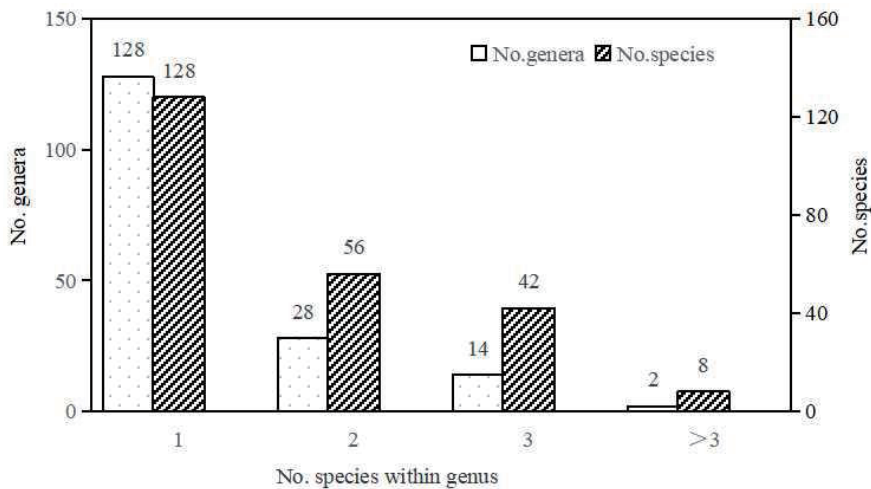


Fig. 3 Species in different genus of plants in the southeast Taihang Mountains



3.3 Diversity analysis of medicinal plants in the southeast of Taihang Mountains

According to Table 2 and Table 3, there are 114 species of medicinal plants belonging to 97 genera of 48 families in the southeast of Taihang Mountains, accounting for 68.57% of the total families, 56.40% of the total genera, and 48.72% of the total species. The main families of medicinal plants include

Asteraceae (11), Rosaceae (10), Ranunculaceae (7), Apiaceae (6), and Asparagaceae (6), constituting 9.65%, 8.77%, 6.14%, 5.26%, and 5.26% of the total number of medicinal plants, respectively. The principal genus is *Cynanchum* (3), contributing to 2.63% of the total number of medicinal plants. It is followed by *Lilium* (2), *Patrinia* (2), *Bupleurum* (2), and *Broussonetia* (2), each accounting for 1.75%.

Table 2 Diversity of medicinal plants in the southeast Taihang Mountains

Species composition (ratio)	48 families (68.57%)	97 genera (56.40%)	114 species (48.72%)
Main families and genera (No. species)	Asteraceae (11)		<i>Cynanchum</i> (3)
	Rosaceae (10)		<i>Lilium</i> (2)
	Ranunculaceae (7)		<i>Patrinia</i> (2)
	Apiaceae (6)		<i>Bupleurum</i> (2)
	Asparagaceae (6)		<i>Broussonetia</i> (2)

Table 3 Statistics of medicine resources in the southeast Taihang Mountains

No.	Families	Genera	Species
1	Smilacaceae	<i>Smilax</i>	<i>Smilax china</i>
2	Liliaceae	<i>Lilium</i>	<i>Lilium pumilum</i>
3	Liliaceae	<i>Lilium</i>	<i>Lilium concolor</i>
4	Cupressaceae	<i>Platycladus</i>	<i>Platycladus orientalis</i>
5	Primulaceae	<i>Lysimachia</i>	<i>Lysimachia barystachys</i>
6	Plantaginaceae	<i>Rabbitus</i>	<i>Veronica linariifolia</i> subsp. <i>dilatata</i>
7	Labiatae	<i>Scutellaria</i>	<i>Scutellaria baicalensis</i>
8	Labiatae	<i>Schizonepeta</i>	<i>Nepeta cataria</i>
9	Labiatae	<i>Vitex</i>	<i>Vitex negundo</i> var. <i>cannabifolia</i>
10	Labiatae	<i>dracocephalum</i>	<i>Dracocephalum rupestre</i>
11	Labiatae	<i>Leonurus</i>	<i>Leonurus artemisia</i>
12	Euphorbiaceae	<i>Euphorbia</i>	<i>Euphorbia pekinensis</i>
13	Cannabinaceae	<i>Cannabis</i>	<i>Cannabis sativa</i>
14	Leguminosae	<i>Sophora</i>	<i>Sophora flavescens</i>
15	Leguminosae	<i>Indigofera</i>	<i>Indigofera tinctoria</i>
16	Leguminosae	<i>Thermopsis</i>	<i>Thermopsis lanceolata</i>
17	Leguminosae	<i>Vicia</i>	<i>Vicia amoena</i>

(to be continued)



Continued table 3

No.	Families	Genera	Species
18	Leguminosae	<i>Vicia</i>	<i>Vicia unijuga</i>
19	Menispermaceae	<i>Menispermum</i>	<i>Menispermum dauricum</i>
20	Elaeagnaceae	<i>Elaeagnus</i>	<i>Elaeagnus multiflora</i>
21	Elaeagnaceae	<i>Hippophae</i>	<i>Hippophae rhamnoides</i>
22	Saxifragaceae	<i>Saxifraga</i>	<i>Saxifraga stolonifera</i>
23	Apocynaceae	<i>Cynanchum</i>	<i>Metaplexis hemsleyana</i>
24	Apocynaceae	<i>Cynanchum</i>	<i>Metaplexis japonica</i>
25	Apocynaceae	<i>Cynanchum</i>	<i>Cynanchum auriculatum</i>
26	Violaceae	<i>Viola</i>	<i>Viola betonicifolia</i>
27	Campanulaceae	<i>Codonopsis</i>	<i>Codonopsis pilosula</i>
28	Campanulaceae	<i>Platycodon</i>	<i>Platycodon grandiflorus</i>
29	Campanulaceae	<i>Adenophora</i>	<i>Adenophora wawreana</i>
30	Campanulaceae	<i>Adenophora</i>	<i>Adenophora stricta</i>
31	the composite family	<i>Atractylodes</i>	<i>Atractylodes Lancea</i>
32	the composite family	<i>Leontopodium</i>	<i>Leontopodium sinense</i>
33	the composite family	<i>Leontopodium</i>	<i>Leontopodium leontopodioides</i>
34	the composite family	<i>Ageratum</i>	<i>Ageratum conyzoides</i>
35	the composite family	<i>Cirsium</i>	<i>Cirsium vlassovianum</i>
36	the composite family	<i>Crepidiastrum</i>	<i>Crepidiastrum sonchifolium</i>
37	the composite family	<i>Rhaponticum</i>	<i>Stemmacantha uniflora</i>
38	the composite family	<i>Serratula</i>	<i>Serratula centauroides</i>
39	the composite family	<i>Arctium</i>	<i>Arctium lappa</i>
40	the composite family	<i>Taraxacum</i>	<i>Taraxacum mongolicum</i>
41	the composite family	<i>Carpesium</i>	<i>Carpesium abrotanoides</i>
42	Selagioellaceae	<i>Selaginella</i>	<i>Selaginella tamariscina</i>
43	Fagaceae	<i>Quercus</i>	<i>Quercus mongolica</i>
44	Fagaceae	<i>Quercus</i>	<i>Quercus variabilis</i>
45	Simarubaceae	<i>Ailanthus</i>	<i>Ailanthus altissima</i>
46	Melanthiaceae	<i>Veratrum</i>	<i>Veratrum nigrum</i>
47	Polygonaceae	<i>Polygonum</i>	<i>Polygonum aviculare</i>
48	Polygonaceae	<i>Rheum</i>	<i>Rheum undulatum</i>
49	Polygonaceae	<i>Fallopia</i>	<i>Fallopia multiflora</i>
50	Polygonaceae	<i>Polygonum</i>	<i>Persicaria hydropiper</i>

(to be continued)



Continued table 3

No.	Families	Genera	Species
51	Orobanchaceae	<i>Rehmannia</i>	<i>Rehmannia glutinosa</i>
52	Orobanchaceae	<i>Orobanche</i>	<i>Orobanche coerulescens</i>
53	Onagraceae	<i>Circaea</i>	<i>Circaea cordata</i>
54	Aristolochiaceae	<i>Aristolochia</i>	<i>Aristolochia debilis</i>
55	Geraniaceae	<i>Geranium</i>	<i>Geranium wilfordii</i>
56	Geraniaceae	<i>Geranium</i>	<i>Geranium sibiricum</i>
57	Ranunculaceae	<i>Aquilegia</i>	<i>Aquilegia viridiflora</i>
58	Ranunculaceae	<i>Ranunculus</i>	<i>Ranunculus japonicus</i>
59	Ranunculaceae	<i>Thalictrum</i>	<i>Thalictrum aquilegifolium</i> var. <i>sibiricum</i>
60	Ranunculaceae	<i>Clematis</i>	<i>Clematis intricata</i>
61	Ranunculaceae	<i>Aconitum</i>	<i>Aconitum barbatum</i> var. <i>puberulum</i>
62	Ranunculaceae	<i>Anemone</i>	<i>Anemone tomentosa</i>
63	Ranunculaceae	<i>Anemone</i>	<i>Anemone vitifolia</i>
64	Oleaceae	<i>Forsythia</i>	<i>Forsythia suspensa</i>
65	Grapevidae	<i>Ampelopsis</i>	<i>Ampelopsis japonica</i>
66	Rubiaceae	<i>Galium</i>	<i>Galium verum</i>
67	Rubiaceae	<i>Rubia</i>	<i>Rubia cordifolia</i>
68	Rosaceae	<i>Sanguisorba</i>	<i>Sanguisorba officinalis</i>
69	Rosaceae	<i>Pteridium</i>	<i>Argentina anserina</i>
70	Rosaceae	<i>Agrimonia</i>	<i>Agrimonia pilosa</i>
71	Rosaceae	<i>Crataegus</i>	<i>Crataegus maximowiczii</i>
72	Rosaceae	<i>Crataegus</i>	<i>Crataegus pinnatifida</i>
73	Rosaceae	<i>Duchesnea</i>	<i>Duchesnea indica</i>
74	Rosaceae	<i>Potentilla</i>	<i>Potentilla tenuifolia</i>
75	Rosaceae	<i>Potentilla</i>	<i>Potentilla chinensis</i>
76	Rosaceae	<i>Spiraea</i>	<i>Spiraea blumei</i>
77	Rosaceae	<i>Rubus</i>	<i>Rubus crataegifolius</i>
78	Solanaceae	<i>Solanum</i>	<i>Solanum septemlobum</i>
79	Caprifoliaceae	<i>Patrinia</i>	<i>Patrinia scabiosifolia</i>
80	Caprifoliaceae	<i>Patrinia</i>	<i>Patrinia monandra</i>
81	Caprifoliaceae	<i>Dipsacus</i>	<i>Dipsacus japonicus</i>
82	Umbelliferae	<i>Bupleurum</i>	<i>Bupleurum scorzonrifolium</i>
83	Umbelliferae	<i>Bupleurum</i>	<i>Bupleurum yinchowense</i>

(to be continued)



Continued table 3

No.	Families	Genera	Species
84	Umbelliferae	<i>Pimpinella</i>	<i>Pimpinella thellungiana</i>
85	Umbelliferae	<i>Peucedanum</i>	<i>Peucedanum harry-smithii</i>
86	Umbelliferae	<i>Peucedanum</i>	<i>Peucedanum praeruptorum</i>
87	Umbelliferae	<i>Torilis</i>	<i>Torilis scabra</i>
88	Moraceae	<i>Broussonetia</i>	<i>Broussonetia papyrifera</i>
89	Moraceae	<i>Broussonetia</i>	<i>Amygdaluspersica</i>
90	Moraceae	<i>Morus</i>	<i>Morus alba</i>
91	Phytolacaceae	<i>Phytolacca</i>	<i>Phytolacca acinosa</i>
92	Cruciferae	<i>Rorippa</i>	<i>Rorippa indica</i>
93	Amaryllidaceae	<i>Allium</i>	<i>Allium macrostemon</i>
94	Caryophyllaceae	<i>Gypsophila</i>	<i>Gypsophila oldhamian</i>
95	Caryophyllaceae	<i>Dianthus</i>	<i>Dianthus chinensis</i>
96	Caryophyllaceae	<i>Silene</i>	<i>Cucubalus baccifer</i>
97	Rhamnaceae	<i>Berchemia</i>	<i>Berchemia lineata</i>
98	Rhamnaceae	<i>Rhamnella</i>	<i>Rhamnella franguloides</i>
99	Rhamnaceae	<i>Ziziphus</i>	<i>Ziziphus jujuba</i> var. <i>spinosa</i>
100	Asparagaceae	<i>Polygonatum</i>	<i>Polygonatum sibiricum</i>
101	Asparagaceae	<i>Polygonatum</i>	<i>Polygonatum verticillatum</i>
102	Asparagaceae	<i>Liriope</i>	<i>Liriope spicata</i>
103	Asparagaceae	<i>Asparagus</i>	<i>Asparagus cochinchinensis</i>
104	Asparagaceae	<i>Ophiopogon</i>	<i>Ophiopogon stenophyllus</i>
105	Asparagaceae	<i>Anemarrhena</i>	<i>Anemarrhena asphodeloides</i>
106	Araceae	<i>Arisaema</i>	<i>Arisaema erubescens</i>
107	Celastraceae	<i>Euonymus</i>	<i>Euonymus alatus</i>
108	Adoxaceae	<i>Sambucus</i>	<i>Sambucus williamsii</i>
109	Amarantaceae	<i>Chenopodium</i>	<i>Chenopodium album</i>
110	Iridaceae	<i>Iris</i>	<i>Iris lactea</i>
111	Polygalaceae	<i>Polygala</i>	<i>Polygala tenuifolia</i>
112	Rutaceae	<i>Zanthoxylum</i>	<i>Zanthoxylum bungeanum</i>
113	Rutaceae	<i>Zanthoxylum</i>	<i>Zanthoxylum armatum</i>
114	Bignoniaceae	<i>Incarvillea</i>	<i>Incarvillea sinensis</i>

The medicinal plants in the southeast of Taihang Mountains are categorized into root and rhizome, whole plants, fruit, branches and

leaves, overground parts, seeds, and flowers. Table 4 shows that root and rhizome are the most prevalent medicinal plants, comprising 58 species



and accounting for 50.88% of the total number of medicinal plants. Whole plants come next with 49 species, accounting for 32.46%. Fruits, branches

and leaves, overground parts, seeds, and flowers contribute 17.54%, 8.77%, 3.51%, 2.63%, and 0.88%, respectively, with relatively fewer species.

Table 4 Different medicinal parts of medicinal plants in the southeast of Taihang Mountains

Medicinal parts	No. species	Ratio/%
Roots and rhizomes	58	50.88
Whole plants	37	32.46
Fruit	20	17.54
Branchs and leaves	10	8.77
Overground part	4	3.51
Seeds	3	2.63
Flowers	1	0.88

Note: There are many kinds of medicinal parts of some species, which are included in the statistics. The proportion is the ratio of the number of species to the total number of medicinal plants.

4 Discussion

Situated at the confluence of the Yellow River basin and the Haihe River basin, the southeast of Taihang Mountains preserves numerous valuable plants with its distinctive geographical environment. Several studies indicate that the stability of the ecosystem undergoes significant changes with variations in altitude and vegetation type. Compared with high-altitude and low-altitude areas, medium-high altitude areas exhibit higher ecosystem stability, with grassland and shrub identified as the most stable vegetation types [9].

Although plant resources in the southeast of Taihang Mountains are abundant, their development and utilization remain inadequate. On one hand, the remote location poses significant challenges to field resource survey, impeding the protection of plant resources. On the other hand, the basic research of plants in this area is weak, which substantially constrains their development and utilization. Moreover, the region has experienced indiscriminate mining, leading to acceleration of vegetation degradation. Unreasonable land use further aggravated the fragility of the ecosystem, resulting in

severe damage to the diversity of plant resources [10]. This study also found that Heihu Village and other locations, engaged in mountainous land development and soil expansion greatly promoted the cultivation of *Codonopsis pilosula*. However, this activity has led to the gradual desolation of some villages and towns. Moreover, in certain areas, the economic growth achieved through tourism development has resulted in the destruction of the ecological environment. Therefore, it is necessary to strengthen the development and utilization of plant resources in order to protect resources and preserve environment. On this basis, the following suggestions are made. Firstly, protection of vegetation in the southeast of Taihang Mountains should be enhanced. Given the limited annual rainfall and generally small biomass of medicinal plants in this area, prioritizing protection is essential. Development should be cautiously undertaken, adhering to the conditions permitted by laws and regulations. Given the steep slope, low soil organic matter content, and low annual accumulated temperature, cultivating medicinal plants is unsuitable. Therefore, cultivation of medicinal plants on the hillside should cease. The income of farmers in mountainous areas can



be increased through development of ecotourism and alternative means. Furthermore, rare medicinal vegetation resources should be protected, whether in situ or ex situ [11]. Secondly, scientific research on plant resources in the southeast of Taihang Mountains can be carried out by increasing support for scientific research workers, increasing scientific research funds, strengthening local cooperation, and effectively addressing challenges related to remote investigation. The plant resources in the region should be comprehensively explored, the diversity of species and medicinal properties should be deeply studied, and the “family background” should be clarified. In addition, basic research in fields such as chemistry and biology should be conducted to comprehensively assess the development and utilization value of plant resources. Finally, the penalties for illegal mining and logging should be strengthened, while economic and technical support for pharmaceutical enterprises and local residents should be augmented [12]. This entails strict adherence to various laws and regulations to prohibit activities such as illegal logging that harm the ecological environment. Local residents can get assistance in cultivating medicinal materials, transforming them into new medicinal crop cultivators. The produced medicinal materials can be efficiently recovered by pharmaceutical enterprises at a premium price, with the government providing appropriate subsidies.

5 Conclusion

Taihang Mountains are located at the junction of the second and third steps in China, and the transitional zone between the Loess Plateau and the North China Plain. As the natural barrier and crucial water source for the Beijing-Tianjin-Hebei Economic Circle and the North China Plain, Taihang Mountains boast complex terrain and strategic geographical location. In the southeast of Taihang

Mountains, this environment has fostered a diverse array of plant species and rich flora. Our study collected 234 species, belonging to 172 genera across 70 families. Among the species, angiosperms dominate the region due to their strong adaptability, and ferns and gymnosperms also exist. With regard to plant families and genera, the primary families include Asteraceae, Rosaceae, Ranunculaceae, Fabaceae, and Lamiaceae, while key genera encompass *Thalictrum*, *Anemone*, *Cynanchum*, *Lysimachia*, and *Clematis*. The region hosts 114 medicinal plants, constituting 48.72% of the total. In terms of medicinal parts, the concentration is in roots and rhizomes, followed by whole plants and fruits. The abundant vegetation in the southeast of Taihang Mountains creates optimal conditions for the growth of root medicinal herbs and whole herbs. Because these herbs are easily available, they are widely used in traditional Chinese medicine to treat various lung, stomach, and liver diseases.

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