

A Preliminary Study on Hakka Characteristic Soup Plant Resources in Eastern Guangdong

Qihe Yang, Lubing Li, Hesheng Yang, Lihui Mou and Wei Kuang

Jiaying University, Meizhou Guangdong 514015, China

Email: yangqh@jyu.edu.cn

Abstract. In this paper, we investigated and analyzed the Hakka characteristic soup plants in eastern Guangdong. The results showed that there were 79 soup plants, belonging to 74 genera of 44 families, 37 species are wild and have not yet been cultivated artificially, 11 species are cultivated and there is no wild distribution, 31 species are both wild and planted, accounting for 39.2% of the total species. The species used to cook soup with the whole plant were the most, 38 species, accounting for 48.1% of the total soup plants, and those cooked only with root ranked second, 24 species, accounting for 30.4%. 29 species can be harvested throughout the year. Based on the analysis of growth types, there were 37 herbs, 28 shrubs, 7 vines and 7 trees. 68 species are naturally distributed, indicating that the local Hakkas mainly use soup plant materials locally. There are about 20 plants which are widely distributed and seen easily in the field. These genera belong to 11 distribution types. Among them, there are 52 genera of tropical distribution types in total. Among these plants, 53 species were only distributed in the south of the Yangtze River, accounting for 67.1%, 46 species were shade-tolerant, accounting for 58.2%. 37 species have the effect of clearing heat, accounting for 46.8%, 25 species can promote blood circulation and remove blood stasis, accounting for 31.6%.

1. Introduction

As an important part of local residents in Guangdong, Fujian, Jiangxi and Taiwan Province, Hakka is a Han ethnic group with Hakka language as the native language. As an ancient Han immigrants group in South China, Hakka is one of the ethnic groups with wide distribution and far-reaching influence in the world. It is estimated that there are about 80 million Hakkas in the world, of whom about 50 million are distributed in more than 180 counties (including county-level cities) in 19 provinces, such as Guangdong, Jiangxi, Fujian, Guangxi, Sichuan, Hunan and Hainan, etc.

In old times, the Hakka area was surrounded by mountains on all sides, and the transportation was inconvenient. In terms of diet, only local materials were obtained, and the local resources in the mountains were fully excavated for domestic livestock and wild animals and plants in the mountains which grew in high mountains and deep valleys, and wild vegetables in the field often became the original materials of food[1-2]. The local, natural and convenient food has created the "wild, vegetarian, coarse, miscellaneous" style of Hakka dishes, and also endows them with the green effect of health care. Hakkas ardently love soup, and almost believe that "soup material is the soul of soup", "it is better to eat without meat than to eat without soup". No matter rich and poor, soup is essential for them in daily life, and they pay attention to it. Whether or not to cook delicious and nutritious soup is also a criterion for evaluating whether women at home are virtuous or not. Soup is not only an important supplement to daily diet, making good use of medicinal materials to make soup, but also can strengthen the body and prevent and cure all kinds of diseases [3-4]. Soup is not only an important supplement to daily diet, but making good use of medicinal materials to make soup also can strengthen the body and prevent and cure all kinds of diseases [3-4].



In the 1930s, there was already a saying about "homology of medicine and food" in China. With the rise of health-preserving and health-care, in the 1980's, some domestic nutritionists began to put forward some views on "the same origin of medicine and food". In fact, Hakka ancestors had been applied in the life practice for hundreds of years ago [5-6], and they added some herbs with certain health-care functions and cooked the medicinal and dietary soup. The adverse effects of climate on the health of the human body had been conditioned in their daily diet. With the improvement of living standard, the traditional health-keeping method is more and more important to the present day, and the meal soup based on folk herbs folk herbal medicine is more and more popular [7]. Hakkas attach great importance to disease prevention and believe the so-called "way to maintain health is not ahead of diet." So usually, they eat different medicinal soup according to the season.

In this paper, soup plants refer to plants whose roots, stems, leaves, flowers, fruits or whole plants are often used to cook soup with animal meat and bones. Therefore, tea, honeysuckle and others cooked only with water, without adding animal meat or bone, are beverage plants, not soup plants. The Hakka characteristic soup plant refers to the soup plant used in cooking by Hakkas, which are widely distributed or small-area cultivated in Hakka area, but do not include peanut, soybean, urad, sweet potato, corn, radish, Chinese cabbage, white gourd, towel gourd, pumpkin, balsam pear, tomatoes, Chinese yam, lotus, kelp, laver, lily, day lily, etc., which are widely used as main crops or soup materials in most parts of China, even the whole of China and the world. The *Cassia* and *Cinnamon* species and the like which are more frequently used by other nationalities and Han groups as the auxiliary materials, and rarely used for the soup are not included.

The Hakka area in eastern Guangdong mainly refers to Meizhou City, which is one of the most important places of origin and concentration of Hakkas, known as "the Capital of Hakkas". Meixian, Fengshun, Jiaoling and Dapu County under the jurisdiction of Meizhou City have been selected as "the Hometown of Longevity in the World", accounting for half of the selected counties and cities in Guangdong Province^[8]. Understanding the species and characteristics of soup plants in this area is not only conducive to their development and utilization, but also brings inspiration to people's health care in other areas.

2. General Situation of the Study Area and the Ethnobotanical Survey

Meizhou City is a prefecture-level city under the jurisdiction of Guangdong Province, located in Northeast Guangdong Province, and at the junction of Fujian, Guangdong and Jiangxi provinces. The geographical coordinates are between 115°18'-116°56' E and 23°23'-24°56' N. It belongs to the subtropical monsoon climate zone and is the transitional zone of the subtropical and tropical climatic zone. The sunshine is sufficient, the average annual temperature is 20.6°C ~21.4°C, the frost-free period has exceeded over 300d, and annual rainfall is 1483~1798mm.

From 2016 to 2018, this study was carried out using ethnobotanical methods, on the basis of literature review, combined with field and questionnaire survey, folk visits, specimen collection and identification and post-collation and analysis, and so on. The interviewees included vegetable farmers, medicinal herb farmers, folk grass doctors, drugstore owners, Chinese herbal medicine operators, restaurant chefs, TCM veteran practitioner, ordinary residents, and so on. In the course of the interview, the "5W+1H" method was used to ask questions, that is, what, when, where, who, why and how much^[9]. Such as "What's the name of the soup plant? How to collect it? When to harvest? Which parts to pick up? What are the medicinal or health effects?" The survey was recorded, and the plant specimens were taken digital photos and preserved as wax leaf specimens. By consulting the relevant data and the relevant plant classification experts, the family and species name, growth type, material position and medicinal or health care effect were sorted out.

3. Result

3.1. Specific Composition

The investigation showed that there were 79 Hakka characteristic soup plants in eastern Guangdong, belonging to 74 genera, 44 families. Among them, there were 8 Leguminosae species, 7 Compositae species, 4 species for every family of Labiataceae, Moraceae and Rubiaceae, 3 species for Cactaceae,

Euphorbiaceae and Rosaceae, 2 species for Liliaceae, Portulacaceae, Campanulaceae, Acanthaceae, Myrtaceae and Orchidaceae, only 1 species for Ericaceae, Lindeaceae, Annonaceae, Menispermaceae, Poaceae, Elaeagnaceae, Cucurbitaceae, Apocynaceae, Solanaceae, Thymelaeaceae, Saururaceae, Apiaceae, Symplocaceae, Pteridaceae, Rhamnaceae, Clusiaceae, Sapindaceae, Araliaceae, Amaranaceae, Scrophulariaceae, Convolvulaceae, Melastomataceae, Polygalaceae, Myrsinaceae, Magnoliaceae, Polygonaceae, Bombacaceae, Aquifoliaceae, Valerianaceae and Plantaginaceae (Table 1).

Among these 79 plants, 37 species are wild and have not yet been planted artificially, 11 species are cultivated and there is no natural or wild distribution in eastern Guangdong, 31 species are both naturally distributed and cultivated, accounting for 39.2% of the total soup plants (Table 1). Of these soup plants, 68 species are naturally distributed in eastern Guangdong, the proportion is as high as 86.1%, indicating that the local Hakkas mainly use soup plant materials locally, and 45.6% of these natural distribution species have been cultivated artificially.

In 11 cultivated species (only artificially cultivated, there is little natural distribution in the wild) are *Hylocereus undatus*, *Epiphyllum oxypetalum*, *Opuntia stricta*, *Psidium guajava*, *Bombax malabaricum*, *Eriobotrya japonica*, *Vigna umbellata*, *Uraria crinita*, *Dimocarpus longan*, *Ixora chinensis* and *Ocimum basilicum*.

6 soup plants, such as *Epiphyllum oxypetalum*, *Opuntia stricta*, *Psidium guajava*, *Cassia mimosoides*, *Talinum paniculatum*, *Hylocereus undatus*, accounting for 6.3% of the total soup plants counted in this paper, are alien species and native to South America and India, but after domestication and breeding, they have become naturalized plants in eastern Guangdong. Once, Hakkas were used to using *Alsophila spinulosa* and *Dendrobium sp.* as soup materials, but after these plants were listed as protective plants, they almost stopped eating them and preferred to use common and easy-to-grow soup plants.

3.2. Edible Parts and Harvesting Period

Of these 79 soup plants, the species cooked soup with whole grass (or whole plant) were the most, 38 species, accounting for 48.1% of the total number of soup plants, such as *Pholidota chinensis*, *Plantago depressa*, *Artemisia lactiflora*, *Andrographis paniculata*, *Portulaca oleracea*, *Houttuynia cordata*, *Centella asiatica*, *Lobelia chinensis*, *Artemisia capillaris*, *Gynura divaricata*, *Hypericum japonicum*, *Gnaphalium affine*, *Euphorbia thymifolia*, *Inula cappa*, *Elephantopus scaber*, *Rabdosia serra*, *Emilia sonchifolia*, *Leonurus artemisia*, *Mimosa cassia*, *Lycianthes biflora*, etc. Those cooked only with root ranked second, 24 species, accounting for 30.4%, such as *Fissistigma oldhamii*, *Ixora chinensis*, *Flueggea virosa*, *Ilex asprella*, *Ardisia gigantifolia*, *Millettia speciosa*, *Berchemia lineata*, *Imperata cylindrica*, etc. There were 4 species cooked only with flower, accounting for 5.1%, including *Bombax malabaricum*, *Hylocereus undatus*, *Epiphyllum oxypetalum* and *Eriobotrya japonica*, 2 species only with fruit, including *Rosa laevigata* and *Dimocarpus longan*, 2 species only with stem, including *Nephrolepis auriculata* and *Opuntia stricta*. *Vigna umbellata* is a soup plant cooked with only its seed. In addition, some plants have multiple parts that can be used as soup materials, such as root and fruit of *Gardenia jasminoides*, stem and leaf of *Tadehagi triquetrum* and *Agrimonia pilosa*, stem and leaf of *Schisandra lancifolia* and *Tinospora sinensis*, fruit and leaf of *Ficus pumila*, and leaf and fruit of *Psidium guajava* (Table 1).

From the harvest time, there were 29 species that can be harvested throughout the year, such as *Aralia chinensis*, *Ardisia gigantifolia*, *Fissistigma oldhamii*, *Flueggea virosa*, *Ilex asprella*, *Ixora chinensis*, gardenia, cactus, tuber fern, *Dicliptera chinensis*, *Abrus cantoniensis*, stone olive, *Gaultheria yunnanensis*, *Alyxia fascicularis*, etc. 7 species, *Artemisia argyi*, *Hedyotis diffusa*, *Artemisia lactiflora*, *Artemisia capillaris*, *Plantago depressa*, *Dichondra repens* and *Gnaphalium affine*, were harvested in spring and summer. 2 soup plants, *Andrographis paniculata* and *Flemingia philippinensis*, in autumn and winter. 4 soup plants, *Glochidion puberum*, *Gynostemma pentaphyllum*, *Corchorus acutangulus* and *Vigna umbellata*, were harvested only in autumn. 14 plants were harvested in summer and autumn, including *Hypericum japonicum*, *Ardisia gigantifolia*, *Ficus pumila*, *Hylocereus undatus*, *Agrimonia pilosa*, *Tadehagi triquetrum*, *Houttuynia cordata*, *Melastoma dodecandrum*, *Cassia mimosoides*, *Desmodium caudatum*, *Gynura divaricata*, *Lobelia chinensis*,

Lycianthes biflora and *Rabdosia serra*. 9 soup plants were harvested in spring, summer and autumn, they were *Patrinia villosa*, *Leonurus artemisia*, *Talinum paniculatum*, *Polygala fallax*, *Amaranthus spinosus*, *Emilia sonchifolia*, *Ocimum basilicum*, *Portulaca oleracea* and *Elephantopus scaber* (Table 1). However, the harvest period is not completely fixed, even in eastern Guangdong, if some soup plants are in a special habitat, their harvest period will be different. For example, in the humid gullies of Wuhua and Fengshun County in Meizhou, *Patrinia villosa* and *Elephantopus scaber* can be harvested almost all year round, but in higher and drier areas, they are often impossible to collect in winter.

3.3. Analysis on Utilization and Reserve

According to the utilization frequency, dosage and cultivation scale of residents, these soup plants are divided into four categories: A (most commonly used), B (more commonly used), C (generally used) and D (occasionally used). A refers to 90% of the Hakka residents who have used and have used at least three times a year, and men, women and children like to use them as raw materials to cook soup, and there are 21 species, such as *Patrinia villosa*, *Leonurus artemisia*, *Talinum paniculatum*, *Amaranthus spinosus*, *Emilia sonchifolia*, *Ocimum basilicum*, *Artemisia argyi*, *Eriobotrya japonica*, *Gynostemma pentaphyllum*, *Vigna umbellata*, *Wikstroemia indica*, *Rhodomyrtus tomentosa*, *Ficus simplicissima*, *Smilax china*, *Smilax glabra*, *Agrimonia pilosa*, *Cassia mimosoides*, *Desmodium caudatum*, *Lycianthes biflora*, *Rabdosia serra*, and *Paederia scandens*. B refers to 70% of the Hakka residents have used and at least once a year, there are 19 species, such as *Elephantopus scaber*, *Portulaca oleracea*, *Rosa laevigata*, *Hedyotis diffusa*, *Artemisia lactiflora*, *Plantago depressa*, *Dichondra repens*, *Psidium guajava*, *Andrographis paniculata*, *Flemingia philippinensis*, *Milletia speciosa*, *Ficus hispida*, *Ficus stenophylla*, *Berchemia lineata*, *Symplocos laurina*, *Imperata cylindrica*, *Uraria crinita*, *Tinospora sinensis*, *Abrus cantoniensis*, *Pholidota chinensis*, *Alyxia fascicularis*, *Gardenia jasminoides*, *Dimocarpus longan*, *Bombax malabaricum*, *Hylocereus undatus*, *Houttuynia cordata*, *Goodyera hachijoensis*, *Centella asiatica* (Table 1). C refers to 50% of the residents who have used, but on average less than once a year, there are 15 species, such as *Epiphyllum oxypetalum*, *Inula cappa*, *Artemisia capillaris*, *Gnaphalium affine*, *Glochidion puberum*, *Elaeagnus pungens*, *Fallopia multiflora*, *Nephrolepis auriculata*, *Campanumoea javanica*, *Hypericum japonicum*, *Tadehagi triquetrum*, *Melastoma dodecandrum*, *Gynura divaricata*, *Lobelia chinensis*, *Euphorbia thymifolia*. D refers to less than half of the residents have used it, most of them have only occasionally drank it, such as *Polygala fallax*, *Corchorus acutangulus*, *Fissistigma oldhami*, *Flueggea virosa*, *Ilex asprella*, *Aralia chinensis*, *Ixora chinensis*, *Opuntia stricta*, *Schisandra lancifolia*, *Dicliptera chinensis*, *Gaultheria yunnanensis*, *Ardisia gigantifolia*, *Ficus pumila* and *Scutellaria barbata* (Table 1).

According to the survey and visit, the reserves of these soup plants can be divided into at least four grades from more to less: A (a great many), B (many), C (few) and D (very few). The so-called Grade A refers to those are widely distributed and can be seen easily in the field, such as *Paederia scandens*, *Rhodomyrtus tomentosa*, *Ficus simplicissima*, *Portulaca oleracea*, *Artemisia argyi*, *Plantago depressa*, *Fallopia multiflora*, *Emilia sonchifolia*, *Nephrolepis auriculata*, *Glochidion puberum*, *Melastoma dodecandrum*, etc. There are about 20 species of this grade, accounting for 25%. Grade B refers to those are widely distributed, their quantity is also large, but they often has certain habitat limitations, such as *Houttuynia cordata* is often distributed in wetter paddy fields and ditches, and is mostly planted in the shade and wet places around the house, *Leonurus artemisia* is often planted in the wet and fertile areas around of the house or in the vegetable field, although the number of planting for each family is not small, but almost all Hakka families plant, so its quantity is also very large. *Artemisia lactiflora*, *Gynura divaricata*, *Patrinia villosa*, *Amaranthus spinosus*, *Ficus pumila*, *Milletia speciosa*, *Lycianthes biflora*, *Hypericum japonicum*, *Artemisia capillaris*, *Gardenia jasminoides*, *Smilax glabra*, *Ilex asprella*, *Fissistigma oldhami*, *Eriobotrya japonica*, *Opuntia stricta*, *Dichondra repens*, etc., also belong to this grade, and there are 26 species, accounting for 23.0%. Grade C refers to those are planted by some residents, although their application amount is not very large, the overall quantity is still not very small. *Lobelia chinensis*, *Scutellaria barbata*, *Abrus cantoniensis*, *Cassia mimosoides*, *Elaeagnus pungens*, *Berchemia lineata*, *Rabdosia serra*, *Agrimonia pilosa*, *Desmodium caudatum*, *Inula cappa*, *Gaultheria yunnanensis*, *Tadehagi triquetrum*, *Symplocos laurina*, *Flemingia*

philippinensis, *Tinospora sinensis*, *Vigna umbellata*, *Psidium guajava*, *Vigna umbellata*, etc, 31 species, all belong to this grade, accounting for 27.4%. Grade D refers to those are less abundant and less common, for many reasons, either because their natural population distribution is less and they has not yet been cultivated artificially, or the serious artificial extraction results in a shortage of resources, or because the local residents rarely cultivate, so their cultivation amount is less. The soup plants belonging to this category include are *Campanumoea javanica*, *Talinum paniculatum*, *Pholidota chinensis*, *Polygala fallax*, *Wikstroemia indica*, *Flueggea virosa*, *Ardisia gigantifolia*, *Striga asiatica*, *Ficus hispida*, *Dicliptera chinensis*, *Corchorus acutangulus*, *Alyxia fascicularis*, *Schisandra lancifolia*, *Aralia chinensis*, *Ficus stenophylla*, *Hylocereus undatus*, *Uraria crinita*, *Epiphyllum oxypetalum*, *Goodyera hachijoensis*(Table 1).

3.4. Ecological Habit

Based on the analysis of the growth types of 79 soup plants, there were 37 herbs (21 perennial herbs, 16 species of annual and biennial herbs), accounting for 46.8%, 28 shrubs, 7 vines and 7 trees (Table 1). There are about 53 species only distributed in the south of the Yangtze River, including Guangdong, Guangxi, Qiong, Fujian, Zhejiang, Jiangxi, Hunan, Yunnan, Anhui and other provinces, accounting for 67.1% of the total soup plants, such as *Wikstroemia indica*, *Flueggea virosa*, *Gaultheria yunnanensis*, *Ardisia gigantifolia*, *Symplocos laurina*, *Ixora chinensis*, *Desmodium caudatum*, *Fissistigma oldhami*, *Millettia speciosa*, *Berchemia lineata*, *Dimocarpus longan*, *Eriobotrya japonica*, *Elaeagnus pungens*, *Inula cappa*, *Gynura divaricata*, *Lobelia chinensis*, *Elephantopus scaber*, etc.

Among which 6 species, *Dimocarpus longan*, *Gynura divaricata*, *Dicliptera chinensis*, *Abrus cantoniensis*, *Hypericum japonicum*, *Euphorbia thymifolia* are only distributed in Lingnan area and Southern Yunnan Province. 21 species, accounting for 26.6% of the total species, were distributed in the north and south of China, such as *Artemisia lactiflora*, *Imperata cylindrica*, *Patrinia villosa*, *Scutellaria barbata*, *Amaranthus spinosus*, *Rabdosia serra*, *Agrimonia pilosa*, *Artemisia capillaris*, *Fallopia multiflora*, *Tinospora sinensis*, *Smilax china*, etc. There are 6 alien plants, 5 species from South America, which are *Opuntia stricta*, *Cassia mimosoides*, *Hylocereus undatus*, *Epiphyllum oxypetalum*, *Talinum paniculatum* and 1 species from tropical Asia, which is *Vigna umbellata*.

According to the adaptability to light intensity, these plants can be divided into 3 categories: positive plants, negative plants and shade-tolerant. Among them, 46 species were shade-tolerant, accounting for 58.2%, such as *Gynura divaricata*, *Dicliptera chinensis*, *Hypericum japonicum*, *Euphorbia thymifolia*, *Wikstroemia indica*, *Flueggea virosa*, *Gaultheria yunnanensis*, *Ixora chinensis*, *Desmodium caudatum*, *Fissistigma oldhami*, *Berchemia lineata*, *Elaeagnus pungens*, *Inula cappa*, *Lobelia chinensis*, *Centella asiatica*, *Nephrolepis auriculata*, *Houttuynia cordata*, *Paederia scandens*, *Dichondra repens*, *Glochidion puberum*, *Polygala fallax*, *Lycianthes biflora*, *Ilex asprella*, *Schisandra lancifolia*, etc.

Followed by positive plants, 27 species, accounting for 34.2%, such as *Corchorus acutangulus*, *Dimocarpus longan*, *Abrus cantoniensis*, *Rhodomyrtus tomentosa*, *Gardenia jasminoides*, *Bombax malabaricum*, *Smilax glabra*, *Psidium guajava*, *Artemisia argyi*, *Imperata cylindrica*, *Amaranthus spinosus*, *Rosa laevigata*, *Portulaca oleracea*, etc. However, there were only 6 negative plants, accounting for 7.6%, which were *Vigna umbellata*, *Ardisia gigantifolia*, *Goodyera hachijoensis*, *Pholidota chinensis*, *Campanumoea javanica*, *Artemisia lactiflora* and *Talinum paniculatum*.

Table 1. List of Hakka characteristic soup plants and their edible parts, source, usage status, health function, harvesting period in Eastern Guangdong

NO.	Latin name	Family	Edible parts	Growth type	Source	Usage status	Health function	Harvesting period
1	<i>Nephrolepis auriculata</i>	Nephrolepidaceae	Tuberous stem	Perennial herb	Both	C	Clearing heat, dampness-removing, moistening lung and relieving cough, softening hard masses and eliminating accumulation	All year round
2	<i>Schisandra laurifolia</i>	Magnoliaceae	Stem root	Deciduous woody vine	Wild	D	Astringent hemostasis, removing stasis and detumescence	All year round
3	<i>Fissistigma oldhami</i>	Annonaceae	Root	Evergreen woody vine	Wild	D	Dispelling wind and dampness, promoting menstruation, activating blood circulation and hemostasis	All year round
4	<i>Tinospora sinensis</i>	Menispermaceae	Stem root	Perennial trailing shrub	Wild	B	Relaxing muscles and activating collaterals, dispelling wind and relieving pain	All year round
5	<i>Houttuynia cordata</i>	Saururaceae	Whole grass	Perennial herb	Both	B	Clearing heat and detoxifying, diuresis and drenching and anti-inflammatory	Summer-autumn
6	<i>Polygala fallax</i>	Polygalaceae	Root, stem and leaf	Shrub or small arbor	Wild	D	Tonifying spleen, removing dampness, promoting blood circulation and regulating meridians, tonifying Qi and blood	Apr.-Oct.
7	<i>Talinum paniculatum</i>	Portulacaceae	Root	Annual herb	Both	A	Invigorating spleen and tonifying Qi, tonifying lung and relieving cough, promoting lactation and relieving asthma	Apr.-Oct.
8	<i>Portulaca oleracea</i>	Portulacaceae	Whole grass	Annual herb	Both	B	Clearing heat and detoxifying, diuresis and dysentery, moistening intestines and eliminating stagnation, cooling blood and hemostasis	Apr.-Sept.
9	<i>Fallopia multiflora</i>	Polygonaceae	Tuberous root	Perennially entangled vine	Wild	C	Tonifying kidney and essence, strengthening muscles and bones, resolving turbidity and reducing dampness	All year round
10	<i>Amaranthus spinosus</i>	Amaranthaceae	Whole grass	Perennial herb	Both	A	cooling blood and hemostasis; dampness-removing; removing toxicity and eliminating carbuncles	Apr.-Oct.
11	<i>Wikstroemia indica</i>	Thymelaeaceae	Root	Evergreen shrub	Wild	A	Anti-inflammatory and detoxifying, dispersing stasis and expelling water	All year round
12	<i>Gynostemma pentaphyllum</i>	Cucurbitaceae	Whole grass	Perennial climbing herb	Both	A	Relieving cough and dispelling phlegm, clearing heat and detoxifying, strengthening with tonics	Autumn
13	<i>Hylocereus undatus</i>	Cactaceae	Flower	Epiphytic fleshy shrub	Cultivated	B	Relaxing muscles and activating collaterals, detoxification and detumescence	Summer-autumn
14	<i>Epiphyllum oxypetalum</i>	Cactaceae	Flower	Epiphytic fleshy shrub	Cultivated	C	Clearing heat and moistening lung, relieving cough and eliminating phlegm, nourishing yin and tonifying deficiency	June-Oct.
15	<i>Opuntia stricta</i>	Cactaceae	Stem	Tufted fleshy shrub	Cultivated	D	Activating qi and activating blood circulation, cooling blood and hemostasis, detoxification and detumescence	All year round
16	<i>Psidium guajava</i>	Myrtaceae	Leaf, fruit	Arbor	Cultivated	B	astringent to stop diarrhea, anti-inflammatory and hemostasis	Spring-autumn
17	<i>Rhodomirtus tomentosa</i>	Myrtaceae	Root	Shrub	Wild	A	Expelling wind and activating collaterals, astringent and relieving diarrhea, tonifying deficiency and hemostasis	All year round
18	<i>Melastoma dodecandrum</i>	Melastomataceae	Whole grass	Creeping shrub	Both	C	Clearing heat and detoxifying, dispelling wind, dampness-removing, enriching blood and hemostasis	Summer-autumn
19	<i>Hypericum japonicum</i>	Clusiaceae	Whole grass	Annual herb	Both	C	Clearing heat and detoxifying, dampness-removing, removing jaundice, , detumescence and dispersing stasis	Summer-autumn

Continued Table 1. List of Hakka characteristic soup plants and their edible parts, source, usage status, health function, harvesting period in Eastern Guangdong

NO.	Latin name	Family	Edible parts	Growth type	Source	Usage status	Health function	Harvesting period
20	<i>Corehorus acutangulus</i>	Tiliaceae	Whole grass	Annual herb	Wild	D	Clearing heat and detoxifying	Summer-autumn
21	<i>Bombax malabaricum</i>	Bombacaceae	Flower	Deciduous arbor	Cultivated	B	Heat-clearing and detoxifying, diuresis, dispelling summer heat and hemostasis	Autumn
22	<i>Flueggea virosa</i>	Euphorbiaceae	Root	Evergreen shrub	Wild	D	Clearing heat and detoxifying, relieving swelling and pain, stop itching and hemostasis	Sept.-Nov.
23	<i>Euphorbia thymifolia</i>	Euphorbiaceae	Whole grass	Annual herb	Wild	C	Clearing heat and detoxifying, dampness-removing, detumescence and relieving itching	Winter-spring
24	<i>Glochidion puberum</i>	Euphorbiaceae	Root	Shrub	Wild	C	Clearing heat and dehumidification, detoxification, benefiting pharynx, activating Qi and activating blood	Summer-autumn
25	<i>Rosa laevigata</i>	Rosaceae	Fruit	Shrub	Both	B	Fixing essence and reducing urine, curing metrorrhagia and leukorrhea, relieving diarrhea by astringency	Autumn
26	<i>Eriobotrya japonica</i>	Rosaceae	Flower	Evergreen arbor	Cultivated	A	Moistening the lung and relieving cough, promoting body fluid to quench thirst, regulating stomach and promoting digestion	Sept.-Nov.
27	<i>Agrimonia pilosa</i>	Rosaceae	Stem and leaf	Perennial herb	Both	A	Astringent hemostasis, stopping malaria and dysentery, detoxification and tonic deficiency	Winter-spring
28	<i>Vigna umbellata</i>	Leguminosae	Seed	Annual herb	Cultivated	A	Eliminating edema, detoxifying and discharging pus, dredging intestines and moistening stools	Summer-autumn
29	<i>Abrus cantoniensis</i>	Leguminosae	Whole grass	Annual herb	Both	B	Removing dampness and jaundice, clearing heat and detoxifying, dispersing the depressed liver-Qi and alleviating pain	Autumn
30	<i>Cassia mimosoides</i>	Leguminosae	Whole grass	Perennial herb	Both	A	Clearing heat and detoxifying, dispelling inflammation and relieving heat, eliminating dampness and diuresis	All year round
31	<i>Milletia speciosa</i>	Leguminosae	Root	Evergreen woody vine	Wild	B	Tonifying deficiency, moistening lung, strengthening muscle and activating collaterals	Summer-autumn
32	<i>Flemingia philippinensis</i>	Leguminosae	Whole grass	Perennial trailing herb	Wild	B	Dispelling wind and removing dampness, eliminating blood stasis and detoxification	All year round
33	<i>Uraria crinita</i>	Leguminosae	Root	Perennial herb	Cultivated	B	Clearing heat and detoxifying, stopping bleeding and relieving pain	Summer-autumn
34	<i>Desmodium caudatum</i>	Leguminosae	Whole grass	Evergreen shrub	Both	A	Clearing heat and detoxifying, dispelling wind and removing dampness	Summer-autumn
35	<i>Tadehagi triquetrum</i>	Leguminosae	Stem and leaf	Deciduous shrub	Wild	C	Clearing heat and detoxifying, removing dampness and jaundice, dispersing accumulations and killing worms	Summer-autumn
36	<i>Ficus simplicissima</i>	Moraceae	Root	Arbor	Wild	A	Tonifying deficiency, eliminating phlegm, relieving asthma, relaxing muscles and activating collaterals	All year round
37	<i>Ficus hispida</i>	Moraceae	Root	Arbor	Wild	B	Heat-clearing, dispelling wind and dampness eliminating accumulation and dissipating phlegm	All year round

Continued Table 1. List of Hakka characteristic soup plants and their edible parts, source, usage status, health function, harvesting period in Eastern Guangdong

NO.	Latin name	Family	Edible parts	Growth type	Source	Usage status	Health function	Harvesting period
38	<i>Ficus pumila</i>	Moraceae	Fruit and leaf	Climbing or creeping shrub	Both	D	Removing dampness and diuresis, Tonifying kidney, strengthening essence, promoting blood circulation and dredging collaterals	Summer-autumn
39	<i>Ficus stenophylla</i>	Moraceae	Root	Arbor	Wild	B	Heat-clearing, dispelling wind and dampness, eliminating accumulation and reducing phlegm	All year round
40	<i>Ilex asprella</i>	Aquifoliaceae	Root	Deciduous shrub	Wild	D	Clearing heat and detoxifying, promoting body fluid, promoting pharynx, removing blood stasis and relieving pain	All year round
41	<i>Berchemia lineata</i>	Rhamnaceae	Root	Evergreen climbing shrub	Wild	B	Removing blood stasis and hemostasis, expelling wind and eliminating dampness, detumescence and detoxification	All year round
42	<i>Elaeagnus pungens</i>	Elaeagnaceae	Root	Evergreen shrub	Both	C	Dispelling wind and removing dampness, promoting blood stasis and hemostasis, strengthening spleen and eliminating food, relieving cough and asthma	All year round
43	<i>Dimocarpus longan</i>	Sapindaceae	Fruit	Evergreen arbor	Cultivated	B	Calm heart and tranquilizing mind, nourishing the blood and Qi, benefiting mind and brain	Summer
44	<i>Aralia chinensis</i>	Araliaceae	Root	Shrub	Wild	D	Dispelling wind and removing dampness, promoting diuresis and dampness, activating blood circulation and dispersing blood stasis, analgesia and anti-inflammation	All year round
45	<i>Centella asiatica</i>	Umbelliferae	Whole grass	Perennial herb	Wild	B	Heat-clearing dampness-removing, detoxification and detumescence	Summer-autumn
46	<i>Gaultheria yunnanensis</i>	Ericaceae	Whole plant	Evergreen shrub	Wild	D	Expelling wind and dampness, relaxing muscles and activating collaterals, promoting blood circulation and relieving pain	All year round
47	<i>Ardisia gigantifolia</i>	Myrsinaceae	Root	Evergreen shrub	Wild	D	Expelling wind and promoting blood circulation, removing blood stasis and swelling, strengthening muscles and bones	Summer-autumn
48	<i>Symplocos laurina</i>	Symplocaceae	Root	Evergreen shrub	Wild	B	Clearing heat, nourishing Yin and purging fire, invigorating spleen and appetizing stomach, dispelling dampness and removing stagnation, clearing liver and moistening lung	All year round
49	<i>Alyxia fascicularis</i>	Apocynaceae	Whole grass	Rattan shrub	Wild	B	Dispelling wind and removing dampness, activating blood circulation and relieving pain	All year round
50	<i>Hedyotis diffusa</i>	Rubiaceae	Whole grass	Annual herb	Both	B	Clearing heat and detoxifying, relieving pain and eliminating stagnation, promoting urination and removing dampness	Spring-summer
51	<i>Paederia scandens</i>	Rubiaceae	Whole grass	Perennial herbaceous vein	Wild	A	Dispelling wind and removing dampness, dispersing blood stasis and relieving pain, invigorating spleen and removing accumulation, detoxification and detumescence	Summer-autumn
52	<i>Ixora chinensis</i>	Rubiaceae	Root	Evergreen shrub	Cultivated	D	Clearing heat, cooling blood, removing blood stasis and relieving pain	All year round
53	<i>Gardenia jasminoides</i>	Rubiaceae	Root, fruit	Shrub	Wild	B	Clearing heat and removing dampness, detumescence and relieving pain	All year round

Continued Table 1. List of Hakka characteristic soup plants and their edible parts, source, usage status, health function, harvesting period in Eastern Guangdong

NO.	Latin name	Family	Edible parts	Growth type	Source	Usage status	Health function	Harvesting period
54	<i>Patrinia villosa</i>	Valerianaceae	Whole grass	Perennial herb	Wild	A	Clearing heat and detoxifying, removing blood stasis and apocrenosis	Mar.-Nov.
55	<i>Artemisia argyi</i>	Asteraceae	Root	Perennial herb	Both	A	Warming meridians to stop bleeding, dehumidifying and expelling cold, relieving asthma and cough, eliminating phlegm	Spring-summer
56	<i>Artemisia lactiflora</i>	Asteraceae	Whole grass	Perennial herb	Both	B	Promoting blood circulation, removing blood stasis, regulating Qi and removing dampness	Spring-summer
57	<i>Inula cappa</i>	Asteraceae	Whole grass	Perennial herb	Wild	C	Expelling wind, promoting Qi, detumescence, relieving pain and detoxification	Spring-autumn
58	<i>Elephantopus scaber</i>	Asteraceae	Whole grass	Perennial herb	Wild	B	Clearing heat and detoxifying, promoting diuresis and apocatastasis, dispelling wind, dispersing cold and relieving pain	Apr.-Nov.
59	<i>Artemisiacapillaris</i>	Asteraceae	Whole grass	Perennial herb	Both	C	Clearing heat, dispelling dampness, promoting diuresis and removing jaundice	Spring-summer
60	<i>Gynura divaricata</i>	Asteraceae	Whole grass	Perennial herb	Both	C	Clearing heat and detoxifying, relaxing tendons and setting bones, cooling blood and hemostasis	Summer-autumn
61	<i>Gnaphalium affine</i>	Asteraceae	Whole grass	Annual herb	Wild	C	Preventing cough, eliminating phlegm, expelling wind, dehumidification and detoxification	Spring-summer
62	<i>Plantago depressa</i>	Plantaginaceae	Whole grass	Annual or biennial herb	Both	B	Promoting diuresis, clearing heat, improving eyesight and eliminating phlegm	Spring-summer
63	<i>Lobelia chinensis</i>	Campanulaceae	Whole grass	Perennial herb	Both	C	Clearing heat and detoxifying, diuresis and apocatastasis	Summer-autumn
64	<i>Campanumoea javanica</i>	Campanulaceae	Root	Perennial herbaceous vine	Both	C	Invigorating spleen and replenishing Qi, tonifying lung and relieving cough, relieving asthma and stopping asthma	Summer
65	<i>Lycianthes biflora</i>	Solanaceae	Whole grass	Shrub	Both	A	Clearing heat and detoxifying, relieving cough and tonifying deficiency	Summer-autumn
66	<i>Dichondra repens</i>	Convolvulaceae	Whole grass	Perennial creeping herb	Both	B	Clearing heat and detoxifying, clearing damp and promoting diuresis, promoting blood circulation and detumescence	Spring-summer
67	<i>Striga asiatica</i>	Scrophulariaceae	Whole grass	Annual herb	Wild	D	Clearing heat and detoxifying, eliminating accumulation and stagnation	Summer-autumn
68	<i>Dicliptera chinensis</i>	Acanthaceae	Whole grass	Annual or biennial herb	Wild	D	Clearing heat and cooling blood, diuresis and detoxification	All year round
69	<i>Andrographis paniculata</i>	Acanthaceae	Whole grass	Annual herb	Both	B	Clearing heat, Anti-inflammatory and anti-bacterial, liver protection and cholagogue	Autumn-winter
70	<i>Scutellaria barbata</i>	Lamiaceae	Whole grass	Perennial herb	Wild	D	Clearing heat and detoxifying, activating blood circulation to dissipate blood stasis, diuresis and apocatastasis	Summer-autumn
71	<i>Ocimum basilicum</i>	Lamiaceae	Whole grass	Annual herb	Cultivated	A	Relieving exterior syndrome, clearing heat, activating blood circulation to dissipate blood stasis	Apr.-Oct.
72	<i>Rabdosia serra</i>	Lamiaceae	Whole grass	Perennial herb	Both	A	Heat-clearing dampness-removing, removing jaundice and dampness, cooling blood and removing blood stasis	Summer-autumn
73	<i>Emilia sonchifolia</i>	Lamiaceae	Whole grass	Annual herb	Both	A	Clearing heat and detoxifying, activating blood circulation to dissipate blood stasis	Apr.-Oct.

Continued Table 1. List of Hakka characteristic soup plants and their edible parts, source, usage status, health function, harvesting period in Eastern Guangdong

NO.	Latin name	Family	Edible parts	Growth type	Source	Usage status	Health function	Harvesting period
74	<i>Leonurus artemisia</i>	Lamiaceae	Whole grass	Annual or biennial herb	Both	A	Promoting blood flow to regulate menstruation, diuresis and apocatastasis, clearing heat and detoxifying	Mar.-Sept.
75	<i>Smilax china</i>	Liliaceae	Root	Perennial woody vine	Wild	A	dampness-removing, removing turbidity, wind and arthralgia	All year round
76	<i>Smilax glabra</i>	Liliaceae	Root	Woody vine	Wild	A	Detoxification, analgesia and diuresis	All year round
77	<i>Pholidota chinensis</i>	Orchidaceae	Whole grass	Perennially attached herb	Both	B	Heat-clearing and nourishing Yin, preventing phlegm from forming and stopping coughing, dampness-removing, detoxification and dispersing blood stasis	All year round
78	<i>Goodyera hachijoensis</i>	Orchidaceae	Whole grass	Perennial herb	Both	B	Clearing heat and detoxifying, promoting blood circulation and relieving pain	Summer-autumn
79	<i>Imperata cylindrica</i>	Poaceae	Root	Perennial herb	Wild	B	cooling blood and hemostasis, relieving pain	All year round

Note: For descriptions of the columns where use status is located, A (most commonly used), B (more commonly used), C (generally used) and D (collectively used), see the text for details. The efficacy of soup plants is based on the combination of interview materials and literature. Mainly refer to the Chinese Pharmacopoeia (National Pharmacopoeia Commission, 2010), the National Chinese Herbal Medicine Repertory (National Chinese Herbal Medicine compilation Group, 1996), the Traditional Chinese Medicine Enquiry Network (<http://www.zhongyoo.com/gx/>), Chinese Herbal Medicine Classified by Efficacy Category Inquiry Network (<http://www.yongyao.net/new/zycgxfl.aspx?fl=1>), Chinese herbal medicine query-traditional Chinese medicine center, etc.).

These 79 soup plants belong to 74 genus, and these genus belong to 11 distribution types. Among them, there are 52 genus of tropical distribution types (including pan-tropical, intermittent in tropical Asia and tropical America, tropical in the old world, tropical Asia to tropical Oceania, tropical Asia to tropical Africa, tropical Asia) in total, accounting for 70.3% of the total genus, and 22 genus of world distribution, north temperate, East Asia and North America intermittent, old world temperate distribution types, accounted for 29.7% (Table 2).

Table 2. The statistic of the areal-types of seed plants of this community

Distribution patterns	Number of genera	Percentage%
1. Cosmopolitan	8	10.8
2. Pantropic	26	35.1
3. Tropical Asia and Tropical America disjunct	5	6.8
4. Old World Tropic	6	8.1
5. Tropical Asia and Tropical Australasia	5	6.8
6. Tropical Asia to Tropical Africa	3	4.1
7. Trop. Asia (Indo-Malesia)	7	9.5
8. North Temperate	4	5.4
9. East Asia to North American disjunct	4	5.4
10. Old World Temperate	2	2.7
14. East Asia	4	5.4
Total	74	100

3.5. Analysis of Health Care and Medicinal Efficacy

Almost all of these soup plants have been recorded in the list of Chinese herbal medicines, which can be divided into: relieving exterior syndrom drug, clearing heat drug, purgating drug, antirheumatic drug, diuretic dampness excreting drug, regulating Qi flow drug, hemostatic drug, blood activating and stasis removing drug, antitussive and antiasthmatic drug, tonifying drug, warming interior drug, astringent drugs, digestant drug, anthelmintic drug, tranquilizer drug, liver pacifying and wind subduing drug, resuscitation drug, insecticidal and antipruritic drug, removing poison and promoting muscle drug (Liu and Zhang, 2014). Through logging into Chinese Herbal Medicine Enquiry-Traditional Chinese Medicine Center (<http://yc.xjz365.com/>), Traditional Chinese Medicine Inquiry Network (<http://www.zhongyoo.com/gx/>), Inquiry Network of Chinese Herbal Medicine Classified by Efficacy Category (<http://www.yongyao.net/new/zycgxf.asp?fl=1>), etc., combined with investigation and interview, it is found that Hakka ordinary people are familiar with the efficacy of these soup plants. Different soup cooked with different plants has different effects. Many of the valuable life experience of Hakka ancestors handed down from generation to generation has been constantly summarized and has developed into a very rich Hakka medicinal meal culture. The survey found that almost all of the elderly over the age of 50 know the efficacy of these soup plants. For example, *Ficus simplicissima* and *Ficus hispida* can be used for invigorating spleen and removing dampness, *Mimosa cassia* can reduce inflammation and diuresis, *Rabdosia serracan* protect and nourish the liver, *Artemisia argyi* be used for warming and tonifying, *Lycianthes biflora*, *Elephantopus scaber* and *Wikstroemia indica* can be used to reduce inflammation, *Gynostemma pentaphyllum* can moisturize the lungs, etc.

The efficacy of these 79 soup plants was analyzed. 37 species have the effect of Clearing heat, accounting for 46.8%, including *Symplocos laurina*, *Glochidion puberum*, *Corchorus acutangulus*, *Scutellaria barbata*, *Emilia sonchifolia*, *Goodyera hachijoensis*, *Houttuynia cordata*, *Lobelia chinensis*, *Portulaca oleracea*, *Tadehagi triquetrum*, *Hypericum japonicum*, *Euphorbia thymifolia*, *Dichondra repens*, *Elephantopus scaber*, *Desmodium caudatum*, *Melastoma dodecandrum*, *Patrinia villosa*, *Ilex asprella*, etc. At least 12 species have the effect of reinforcing deficiency, accounting for 15.2%, including *Talinum paniculatum*, *Millettia speciosa*, *Campanumoea javanica*, *Dimocarpus longan*, *Asparagus cochinchinensis*, *Polygonatum sibiricum*, *Ficus simplicissima*, *Fallopia multiflora*, *Ficus hispida*, *Gynostemma pentaphyllum*, *Lycianthes biflora*, *Epiphyllum oxypetalum* and *Agrimonia*

pilosa. 16 species have the effect of eliminating phlegm, relieving cough and relieving asthma, accounting for 20.3%, including *Elaeagnus pungens*, *Gnaphalium affine*, *Pholidota chinensis*, *Hylocereus undatus*, *Eriobotrya japonica*, *Ficus simplicissima*, *Gynostemma pentaphyllum*, *Lycianthes biflora*, *Epiphyllum oxypetalum*, *Artemisia argyi*, *Paederia scandens*, *Talinum paniculatum*, *Campanumoea javanica*, *Polygonatum sibiricum*, *Ficus hispida* and *Plantago depressa*. 25 species can promote blood circulation and remove blood stasis, accounting for 31.6%, such as *Ardisia gigantifolia*, *Ilex asprella*, *Fissistigma oldhami*, *Polygala fallax*, *Alyxia fascicularis*, *Ficus pumila*, *Wikstroemia indica*, *Ixora chinensis*, *Ocimum basilicum*, *Schisandra lancifolia*, *Pholidota chinensis*, *Hypericum japonicum* and *Berchemia lineata*, etc. 20 species have the effect of clearing damp and promoting diuresis, accounting for 25.3%, such as *Leonurus artemisia*, *Hypericum japonicum*, *Inula cappa*, *Plantago depressa*, *Smilax china*, *Nephrolepis auriculata*, *Abrus cantoniensis*, *Artemisia capillaris*, *Vigna umbellata*, *Leonurus artemisia*, *Rhodomyrtus tomentosa*, *Elephantopus scaber*, *Dicliptera chinensis* and *Portulaca oleracea*, etc. 16 species have the effect of dispelling wind and dampness, accounting for 20.3%, such as *Alyxia fascicularis*, *Ficus pumila*, *Fissistigma oldhami*, *Gaultheria yunnanensis*, *Ardisia gigantifolia*, *Flemingia philippinensis*, *Tinospora sinensis*, *Milletia speciosa*, *Elephantopus scaber*, *Inula cappa* and *Fallopia multiflora*, etc. 16 species have the effect of hemostasis, such as *Agrimonia pilosa*, *Amaranthus spinosus*, *Imperata cylindrica*, *Opuntia stricta*, *Blechnum orientale*, *Flueggea virosa*, *Uraria crinita*, *Elaeagnus pungens*, *Rabdosia serra*, *Fissistigma oldhami* and *Dicliptera chinensis*, etc. 5 species have the effect of suppressing hyperactive liver and calming endogenous wind, accounting for only 6.3%, including *Imperata cylindrica*, *Ixora chinensis*, *Abrus cantoniensis*, *Andrographis paniculata*, *Cassia mimosoides* and *Symplocos laurina*. 9 species can promote digestion, accounting for 11.4%, they are *Eriobotrya japonica*, *Paederia scandens*, *Tadehagi triquetrum*, *Striga asiatica*, *Eriobotrya japonica*, *Striga asiatica*, *Eriobotrya japonica*, *Ficus stenophylla* and *Elaeagnus pungens*. In addition, among these soup plants, *Schisandra lancifolia* and *Rosa laevigata* have astringent effect, *Ocimum basilicum* and *Berchemia lineata* have the effect of relieving exterior syndrome, *Fallopia multiflora* and *Wikstroemia indica* have diarrhea effect.

It can be seen from Table 1 that some soup plants have many effects, such as *Artemisia argyi*, which can warm and stop bleeding, remove dampness and eliminate cold, relieve asthma and relieve cough and expectoration, *Smilax china* can relieve dampness and turbid, remove wind and remove arthralgia, detoxify and disperse blood stasis. These soup plants have also attracted the attention of physicians and pharmacists. The study found that they tend to have high medical value. For example, *Rhodomyrtus tomentosa* contains phenols, tannin, and the like in its root, and can be used for treating chronic dysentery, rheumatism, hepatitis and blood fat reducing, etc. *Hedyotis diffusa* can activate blood circulation and detumescence, disperse knot to relieve pain, can treat all kinds of inflammation and prevent cancer. *Rabdosia serra* can be used for treating acute and chronic hepatitis, acute cholecystitis, dysentery, enteritis, and traumatic injury, etc. *Uraria crinita* can treat kidney-yang deficiency, waist and knee tenderness, wind-fire toothache, neurasthenia, dyspepsia, cancer prevention and detoxification, etc. *Paederia scandens* has effects in promoting blood circulation and relieving pain, and can be used for treating hepatitis, dyspepsia, acute conjunctivitis, and traumatic injury. *Elephantopus scaber* can relieve cough and diuresis, prevent influenza, etc., and has auxiliary therapeutic effect on colds and upper respiratory tract inflammation. *Rosa laevigata* contains acid substances, saponins and other medicinal ingredients in its fruit, which can be used for strengthening essence and astringent intestine, but also can treat diarrhea caused by spleen deficiency. *Abrus cantoniensis* can be used to treat jaundice, hepatitis, mastitis, stomachache, breast abscess, scrofula and traumatic injury.

In the Notice of Further Standardizing the Management of the Raw Materials for Health-care Food published by the Ministry of Health of China in 2002, specific provisions have been made on the articles of the same origin of medicine, the articles that can be used in health food and health food. In the regulations, *Talinum paniculatum*, *Portulaca oleracea*, *Dimocarpus longan*, *Vigna umbellata*, *Houttuynia cordata*, *Gardenia jasminoides*, *Imperata cylindrica* are included in the list of items that can be used as both food and medicine, *Talinum paniculatum*, *Smilax glabra*, *Plantago depressa*, *Rosa laevigata* and *Gynostemma pentaphyllum* are included in the list of items that can be used for health food.

4. Discussion and Conclusion

The investigation showed that there were 79 species of traditional Hakka characteristic soup plants in eastern Guangdong, belonging to 44 families and 74 genus. Of these 79 soup plants, 37 species are wild and have not yet been planted artificially, 11 species are cultivated and there is no natural or wild distribution in eastern Guangdong, 31 species are both wild and planted, accounting for 39.2% of the total number of soup plants.

68 species (more than 85%) are naturally distributed in Eastern Guangdong, indicating that their choice of soup plants tends to be locally available. The visit learned that the elderly prefer to go to the wild to collect, and rarely go to the market or drugstore to buy. They stress that each place has its streams in from all over the country, believe in authentic dining materials, health care and therapeutic value of local soup plants. Soup plants are also medicinal plants, like other medicinal plants, they are not only medicine, but also food, which has the function of health care, disease prevention and treatment, and prolonging life [10]. When Hakka ancestors took wild food, they found that some species could not only satisfy hunger, but also their condition would be alleviated or even recovered, which was the medicine and food homology. Soup cooked with these plants, as a kind of diet therapy, can be used with other treatments, give play to the effect of health care and strengthen the immunity of the immune body [11]. There are 119 county-level administrative regions and 8 longevity townships (counties) in Guangdong Province. Meixian, Dapu, Jiaoling and Fengshun County in Meizhou, eastern Guangdong, are all included, accounting for half of them, which suggests that there is an inevitable relationship between Hakka residents' living habits and health and longevity. The scientific and reasonable elements of their living habits will be revealed to give people inspiration and be conducive to improving people's quality of life.

Through the investigation and diagnosis of the body constitution of Lingnan population, it was found that among the healthy population, Qi-deficiency constitution was the most, followed by Yang-deficiency, and the third is damp-heat constitution. According to the theory of traditional Chinese medicine, the climate in eastern Guangdong is hot and humid, damp evil is the first of six pathogenic factors. Spleen likes dryness and dislikes dampness, Lingnan people are in the environment of heavy moisture for a long time, and the spleen Qi is easy to be damaged. Cold, fried, greasy diet should damage the spleen Qi. Thirdly, there are more mountains and less land in Eastern Guangdong, the pressure of survival is great. Long-term overwork leads to excessive Qi consumption, which mainly manifests in fatigue, shortness of breath, dizziness, palpitation and other symptoms. Qi-deficiency and weakness leads to poor metabolism of water and fluid, accumulation in body and forming endogenous dampness. If the endogenous dampness evil coincides with exogenous dampness, the depression turns into heat after a long time, the damp-heat constitution can be formed. Therefore, the constitution of Qi-deficiency, Yang-deficiency and damp-heat are more in the population in East Guangdong. There are many Hakka soup plants with the effect of invigorating spleen, tonifying deficiency, clearing heat and dispelling dampness [12-13].

Compared with Hakkas in Southern Fujian and Southern Zhangxi[6,13], those in Eastern Guangdong select more soup plants. For the same soup plant, such as *Houttuynia cordata*, *Portulaca oleracea*, in Hakka area of Southern Fujian and Southern Zhangxiare, they are usually be used as fried food. *Dicliptera chinensis*, *Hedyotis diffusa* and *Gardenia jasminoides* are usually used to soak in boiling water for drinks, but in Eastern Guangdong, they are usually used to cook soup, probably because the climate in eastern Guangdong is hotter, in addition to health care, especially in summer, the water and salt loss in body is too much, which needs to be supplemented with soup.

The proportion of herbs in these soup plants is nearly half. There are 11 species of genus and 55 genus of tropical distribution, accounting for more than 75% of the total genus, which coincides with the geographical location of eastern Guangdong. East Guangdong is located on the edge of subtropical zone, and its flora is very tropical, but the proportion of tropical distribution pattern of the genus is slightly lower than that of natural forests or plantations, which may be due to the fact that more of these forests are high bud plants (mainly trees and shrubs), and nearly half of these soup plants are herbaceous. Hakkas are relatively emancipated and not confined to the present situation. Many foreign medicinal or health plants have also entered their soup recipes one after another. Foreign returning plants such as *Ocimum basilicum*, *Epiphyllum oxypetalum*, *Talinum paniculatum*, *Hylocereus undatus*,

Opuntia stricta, *Psidium guajava* and *Cassia mimosoides* have been widely cultivated in Hakka in eastern Guangdong, which not only enriches the soup recipe, but also reduces the consumption pressure of local soup plant resources.

In this study, the variety, resources, habitat and folk utilization of soup plants used (mainly commonly used) in Hakka area of Guangdong Province have been relatively thoroughly investigated to determine the list of special soup plants in this area, so a Hakka soup plant resource bank can be established. A botanical garden was established to carry out the introduction, domestication and collection preservation of these plants, and the biological and ecological characteristics and cultivation and propagation techniques of these plants (especially those with few resources, such as *Pholidota chinensis* and *Talinum paniculatum*) were studied. In addition, some soup plants have a lot of local resources, but for Chinese medicinal materials, their related species, especially the related species of the same genus, often have similar or the same effect. If the pharmacological components of these related species are analyzed, whether they can be used as an alternative product remains to be further studied. Such as *Wikstroemia indica*, its related species have *Wikstroemia monnula* and *W. nutans*, do they have similar effects?

At present, there are still some risks in the identification of soup plants, and word of mouth is the main way of using and inheriting soup materials. There are some cases of poisoning caused by accidental collection of toxic plants to make soup, which indicates that there is a certain risk for ordinary residents to collect wild plant resources by themselves because of the lack of professional knowledge, so publicity and education should be strengthened to prevent the risk. Because people's experience and understanding are different, there is chaos between soup plant species, and herbal medicine market is often filled with second best, such as silver lotus pretending to be golden lotus, so it is necessary to standardize the management of the market.

Because people's experience and understanding are different, there is confusion among different kinds of soup plants. In the herbal medicine market, people often pass off the species of relatively poor quality as the good one, such as *Goodyera hachijoensis* as *Anoectochilus roxburghii*, so it is necessary to standardize the management of the market. The phenomenon of synonym and homonym is common, such as *Campanumoea javanica*, is also named as Native Ginseng and Native Dangsen in Eastern Guangdong, but for the plants named native Ginseng, there is also *Lilium paniculatum* in addition to *Goodyera hachijoensis*. For mixed and substitute medicinal materials, the folk often think its efficacy is the same as that of the genuine product, whether the mixed product and the genuine efficacy are consistent, whether or not the other species can be used as the genuine replacement product, and still need to be analyzed and verified from the effect component and the efficacy, and the verification[14].

At present, Hakka diet and soup products are famous and popular in southern China, and the demand is becoming more and more exuberant. Therefore, it is necessary to carry out industrial production research on these soup plants, establish wild medicinal plant cultivation bases in appropriate places, standardize cultivation and reasonable processing of commonly used species, or establish scientific and standardized chain stores to meet the needs of all kinds of markets^[15]. It is urgent to strengthen the propaganda of popular science, make use of a variety of propaganda means and hold some exhibitions of soup plants, let people understand more species uses, methods, cultivation methods and awareness of environmental protection, and correctly guide the rational use of the masses, such as the use of spare land or balcony in front or back of the house in order to meet the needs of daily conditioning and avoid exploiting without limitation regardless of the consequences. The Hakka area in eastern Guangdong is the underdeveloped region of Guangdong Province and the back garden of the Pearl River Delta. Strengthening the research on these soup plant resources and the marketing of these soup products can not only improve people's quality of life, but also contribute to the development of local economy.

5. Acknowledgements

This work was supported by the Project of Guangdong Natural Science Foundation (2016A030307011), the "Striving for First-class, Making up for Shortcomings and Enhancing Characteristics" Promotion Plan of Higher Education in Guangdong Province (Project of Subject Construction of Agricultural Resources and Environment); the Fourth National Survey of Traditional

Chinese Medicine Resources Project (2017/152/013); the Special Fund for Science and Technology of Guangdong Province (2019A103009).

6. References

- [1] Liu CX. The migration of Hakkas and the formation of their Cultural characteristics[J]. Guangxi Ethnic Studies, 1998(1):74-76.
- [2] Au DT, Wu J, Jiang Z, et al. Ethnobotanical study of medicinal plants used by Hakka in Guangdong, China[J]. Journal of Ethnopharmacology, 2008, 117(1):0-50.
- [3] Lin H. A survey of the research on the traditional medicinal diet materials in Guangdong Province[J]. Pharmacy Today, 2010, 20(11):8-9.
- [4] Yuan TH, Xian SX, Yang ZQ, et al. Lingnan traditional Chinese medicine culture and health care[J]. Journal of Traditional Chinese Medicine, 2013, 54(3):266-268.
- [5] Shan F, Huang LQ, Guo J, et al. History and development of “One Root of Medicine and Food”[J]. Chinese Bulletin of Life Sciences, 2015, 27(8): 1061-1069.
- [6] Huang XZ, Zou XH. The investigation on utilization of wild medicinal plants in dietary culture of Quanzhou, Southern Fujian[J]. Plant Diversity and Resources, 2015, 37(6):891-902.
- [7] You ML, Wen KL. The Hierarchy Analysis of Hakka Food via Grey Relational Analysis[J]. Journal of Grey System, 2013, 16(4):9.
- [8] Gong CZ, Qin Y. Count the things in the hometown of longevity[J]. China statistics, 2018, (10), 56-58.
- [9] Zheng XL, Sun W, Li RT. Ethnobotanical study on wild vegetable resources of Li Nationality [J]. Hubei Agricultural Science, 2013, 52(16):3856-3862.
- [10] Zou P. Traditional Chinese Medicine, Food Therapy, and Hypertension Control: A Narrative Review of Chinese Literature[J]. The American Journal of Chinese Medicine, 2016, 44(8):1-16.
- [11] Liu Y, Qi L, Ping L, et al. Plants traditionally used to make Cantonese slow-cooked soup in China[J]. Journal of Ethnobiology & Ethnomedicine, 2018, 14(1):4.
- [12] Lu L, Huang Q, Chen Z, et al. Knowledge, attitudes and practices of food-borne diseases and surveillance among physicians in Guangdong, China[J]. Food Control, 2012, 28(1):69-73.
- [13] Wand D, Wang XL, Chen BG. Brief discussion on the specific ways to classify herbal diet ingredients according to constitution [J]. Tianjin Traditional Chinese Medicine, 2011, 28(1):54-55.
- [14] Cao LM, Zhu XY, Liu ZQ, et al. A Preliminary Study on Plants Used as Tea in Hakkas Area—A Case Study from Gannan Hakkas Area, Jiangxi Province[J]. Journal of Gannan Normal University, 2015, 36(3):72-76.
- [15] Song SL. Four discussions on the development of Chinese medicinal diet and dietetic therapy--Development of medicinal diet therapy and protection of wildlife resources. [J]. Oriental Medicated Diet, 2008(1):4-7.