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Current Situations and Development Ideas of Buckwheat Tea Industry in Liangshan Prefecture

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Abstract This paper firstly introduces current situations of buckwheat tea industry in Liangshan Prefecture, current situations of intellectual property right of buckwheat tea in whole China, and total flavonoid content in buckwheat tea. On the basis of these current situations, it analyzes drawbacks of buckwheat tea sold in the market. Finally, it presents development ideas of buckwheat tea industry in Liangshan Prefecture.

Key words Liangshan, Buckwheat tea, Current situations, Development ideas

Buckwheat is a plant cultivated for its grain-like seeds, and also used as a cover crop. It is also called *Fagopyrum esculentum* or Tartary buckwheat. It belongs to polygonum, similar to *polygoni multiflori*, rhubarb, and *Rhizoma Polygoni Cuspidati*. It is rare grain and medical resource. In China, it is only planted in middle and western high altitude cold regions. Buckwheat contains much bioflavonoid which has blood sugar reduction, fat lowering anti-cancer, anti-oxidant, senile-resistant, and cardio-cerebrovascular diseases. It is raw material for developing functional food and medical and health-care products. In recent years, buckwheat tea industry in Liangshan Prefecture develops from small to big and from weak to strong. At present, more than 20 buckwheat processing enterprises have formally registered in Liangshan Prefecture. Its products are various, such as buckwheat rice, buckwheat powder, buckwheat soap, buckwheat tea, buckwheat wine, buckwheat vinegar, buckwheat noodle, buckwheat candied fritter, and Rutoside, etc. Among these, buckwheat tea is simple in production process and high in added value, so buckwheat processing enterprises fall over each other to produce it, leading to low quality and price competition of buckwheat tea production enterprises. This not only harms industrial goodwill and disrupts market order, but also damages enterprises. Thus, it is an irresponsible action.

To regular market behavior and promote benign cycle of buckwheat tea industry, Liangshan Technical Committee for Standardization of Agriculture and Liangshan Quality and Technical Supervision Bureau organized experts from Xichang College, Xichang Institute of Agricultural Sciences, Liangshan Prefecture Agricultural Office, Liangshan Prefecture Agricultural Bureau, Liangshan Prefecture Science and Technology Bureau and Liangshan Prefecture Quality Supervision and Inspection Institute to review the local standard *Liangshan Prefecture Buckwheat Tea*. This local

standard was drafted by Xichang College, Sichuan Huantai Industrial Company, Xichang HangFei Tataricum Technology Development Company, Xichang Sanjiang Tartary Buckwheat Development Company, Xichang Zhengzhong Food Company, and Liangshan Huiqiao Biological Technology Company on the basis of extensive investigation, researches, tests and analyses and listening to suggestions from various circles of society. The formulation of this standard plays a great role in promoting healthy development of buckwheat tea industry in Liangshan Prefecture, improving Liangshan's buckwheat tea quality, setting up quality buckwheat tea brand, and declaration of geographical indication (GI) product.

1 Current situations of intellectual property right of buckwheat tea in China

At present, there are a total of 24 patents for invention related to buckwheat tea, 8 of which have been approved, as listed in Table 1.

According to raw material characteristics, buckwheat tea can be divided into whole-wheat buckwheat tea (or seed buckwheat tea), granulated buckwheat tea and buckwheat bud leaf tea. The whole wheat buckwheat tea is made through screening and baking of buckwheat rice. Whole wheat has two meanings: firstly, the production raw material is the intact shelled buckwheat granules; secondly, the whole production raw material is buckwheat without any other composition; granulated buckwheat tea takes buckwheat bran or powder as raw material, is formed through extrusion, drying, and baking added with other additives; buckwheat bud leaf tea takes the buckwheat leaf or bud leaf as raw material with or without additives.

Among the 8 patents, 2 are granulated buckwheat tea, 5 are whole wheat buckwheat tea (or seed buckwheat tea), and 1 is the buckwheat bud leaf tea. From the perspective of application time, the sequence of these three types of buckwheat tea is granulated buckwheat tea, whole wheat buckwheat tea and buckwheat bud leaf tea.

2 Comparison and analysis of total flavonoid content in Liangshan buckwheat tea

In November 2011, we collected 25 types of products from 10 buckwheat tea production companies, and compared and analyzed

their total flavonoid content. Among these, 8 types belong to whole wheat buckwheat tea and the total flavonoid content is listed in Table 2.

Table 1 Statistics of patents for invention related to buckwheat tea

No.	Application Number	Patent name	Status of approval
1	02113212.7	Production process of buckwheat tea	Approved
2	03111344.3	Buckwheat tea and its production methods	Approved
3	03130369.2	Methods for preparing buckwheat tea	Approved
4	03133663.9	Buckwheat tea and its production methods	
5	03130370.6	Methods for preparing tartary buckwheat tea	
6	03143290.5	Tartary buckwheat tea	
7	200310109635.7	Production methods of buckwheat tea	Approved
8	200310109892.0	A processing technology of buckwheat tea	
9	200410041261.4	Methods for making tartary buckwheat tea	Approved
10	200410060014.9	Methods for preparing tartary buckwheat tea	Approved
11	200510021064.0	A type of buckwheat tea and its preparation method	Approved
12	200510029933.4	Methods for preparing tartary buckwheat tea	
13	200510020654.1	A method of preparing pill-shaped buckwheat tea	
14	200510126570.6	A type of buckwheat tea and its preparation process	
15	200520036503.0	Tartary buckwheat tea siftings	
16	200610020990.0	A type of tartary buckwheat tea and its preparation method	Approved
17	200610048844.9	A type of tartary buckwheat tea and its preparation method	
18	200610134935.4	Buckwheat tea drink and its production methods	
19	200610163823.1	A type of tartary buckwheat tea and its preparation method	
20	200710197049.0	Tartary Buckwheat tea and its production methods	
21	200810177324.7	A type of tartary Buckwheat tea and its production methods	
22	200910076306.4	A type of tartary buckwheat tea and its preparation methods	
23	200910211776.7	A type of buckwheat tea	
24	201010136285.3	Super-micro tartary Buckwheat tea and its production methods	

Table 2 Total flavonoid content in whole wheat buckwheat tea

Name	Average content	Name	Average content
Yuanhui tartary buckwheat plumule tea	1.07	Yunji pearl tartary buckwheat tea	0.97
Huantai tartary buckwheat whole plumule tea	1.01	Ziyuan tartary buckwheat whole plumule tea	1.81
Sanjiang tartary buckwheat whole plumule tea	0.99	Hangfei tartary buckwheat plumule tea	1.23
Huiqiao tartary buckwheat whole plumule tea	0.88	Hangfei buckwheat whole wheat tea	1.94

From Table 2, it can be known that the highest content of total flavonoid in whole wheat buckwheat tea is 1.94%, and the lowest content is 0.88%, indicating that there is distinctive difference in total flavonoid content in whole wheat buckwheat tea produced by different companies. Among these 8 products, 3 have to-

tal flavonoid content lower than 1.00% and 5 have total flavonoid content higher than 1.00%.

Among the 25 types of buckwheat tea products, 15 types belong to granulated buckwheat tea and the total flavonoid content is listed in Table 3.

Table 3 Total flavonoid content in granulated buckwheat tea

Name	Average content	Name	Average content
Yuanhui tartary buckwheat tea	3.04	Hangfei buckwheat tea for skin care	2.43
Yuanhui buckwheat tea	3.01	Hangfei buckwheat tea for skin care (new)	5.02
Huantai tartary buckwheat tea	2.29	Hangfei Jiejie buckwheat tea	2.95
Huiqiao tartary buckwheat tea	2.50	Hangfei Jiejie buckwheat tea (new)	2.45
Qinghe tartary buckwheat tea	3.22	Hangfei tartary buckwheat tea	2.82
Anxi buckwheat tea	1.28	Hangfei tartary buckwheat tea (new)	3.91
Hangfei buckwheat herbal tea	2.56	Hangfei tartary buckwheat Vitamin P tea	5.29
Hangfei buckwheat herbal tea (new)	3.87		

From Table 3, it can be known that the highest content of total flavonoid in granulated buckwheat tea is 5.29%, and the lowest content is 1.28%, indicating that there is distinctive difference in total flavonoid content in granulated buckwheat tea produced by different companies.

the total flavonoid content is listed in Table 4.

From Table 4, it can be known that the total flavonoid content in the measured 2 types of buckwheat bud leaf tea is 6.29% and 2.54% respectively, with the ratio up to 2.48, showing a sharp difference.

Among these, 2 types belong to buckwheat bud leaf tea and From comparison of the total flavonoid content in three types

