Study on Processing Technology and Quality Improvement of Rice Cake

Aicao rice cake is a kind of traditional food made from Aicao and rice. It has high nutritional value and unique flavor, and is loved by the vast number of consumers in China.

Rice Cake Making Machinery

At present, there are few systematic studies on the processing technology and quality characteristics of argyi paste. Its production and processing methods are not mature,

Microwave Heating Machinery and Equipment

the production process is primitive, the process formula is vague, the product quality is unstable due to starch aging and other factors, and the seasonal growth of argyi paste is very strong, which seriously inhibits its industrial development.

In this study, dried mugwort was used as raw material, and the formula and production technology of mugwort were studied based on the traditional technology of mugwort rice cake.

Meanwhile, the flavor characteristics and anti-aging methods of mugwort rice cake were explored.

The research results of this paper solve the problems encountered in the actual production process of traditional rice paste, which is of great significance to guide and promote the industrial production of rice paste.

The main research contents and results of this paper are as follows: 1. To determine the drying method of argyi grass and its composition analysis, the drying effect of five drying methods, including microwave drying, freeze drying, hot air drying, sun drying and shade drying, was studied.

The results showed that the microwave drying rate was fast (only 20 minutes), which could maintain the color and aroma components of Artemisia argyi.

The loss of Vc and total flavonoids was less (24.23 mg/100g and 4.74% respectively); the drying time of hot air, sun and shade was longer (8 h, 30 h and 96 h respectively), the sensory quality was significantly decreased, and the loss of Vc and total flavonoids was also large (14.45, 9.21, 13.54 mg/100g, 3.02, 2.04, 3.74%, respectively).

The sensory quality of freeze-dried argyi grass was the best, and the loss of Vc and total flavonoids was the smallest (30.15mg/100g and 5.09% respectively). However, the freeze-drying equipment is expensive and the drying time is long (28h).

Considering the drying effect and economic situation, this study determined a practical and convenient microwave drying method for drying argyi grass. The content of crude fiber, protein content, fat content, ash content and water content in microwave dried mugwort were 16.68%, 12.79%, 3.52%, 7.21% and 10.06%, respectively. Flavonoids, polysaccharides and vitamin C were 4.74%, 8.34% and 24.23 mg/100g, respectively. 64 volatile components were identified, accounting for 86.77% of the total volatile content, among which eucalyptus oil was the most abundant. Alpha-caryophyllene, terpene, chitosan 2,4-dimethylbenzene-2-ene, pinene, o-polydispersin, caryophyllene oxide, gamma-terpinene, etc.

2. Study on the formula and production technology of argyi rice cake.

This part is based on the traditional technology of argyi rice cake.

The sensory evaluation and hardness of argyi rice cake are taken as the main indicators.

The effects of the proportion of glutinous rice powder to japonica rice powder, the amount of argyi grass added, the amount of water added and the cooking time on the quality of argyi rice cake are studied.

The ideal basic formula and production technology of argyi rice cake are determined as follows:the proportion of glutinous rice powder to japonica rice powder. 4:1.

The amount of mugwort added was 10%, the amount of water added was 75%, and the cooking time was 25 minutes. Under these conditions, the mugwort cake was green, uniform in color, delicate in taste, moderate in softness and hardness, good in completeness and aroma of mugwort. The moisture content, crude protein content, crude fat content, crude fibre content

and flavonoid content of Aicao rice cake were 44.39%, 8.44%, 0.91%, 1.59% and 201.7 mg/100g respectively.

In addition to aldehydes, 41 specific volatile flavor compounds were detected in Aicao rice cake. Many of these unique volatile flavor compounds and volatile components of Aicao were found. The same compound. 3. Study on the screening of anti-aging agent and the change of quality during storage. Based on the determination of the ideal basic formula and production process of the rice cake, the effects of sodium stearoyl calcium lactate (CSL-SSL), guar gum and hydroxypropyl modified starch on the anti-aging effect of the rice cake were investigated respectively by taking the hardness of the product stored for 7 days at 4 C as the evaluation index.

Response interview test was carried out with Box-Behnken test design principle. The optimum scheme of compound anti-aging agent was determined as follows: 0.35% sodium stearyl calcium lactate (CSL-SS L), 0.39% guar gum and 4.29% hydroxypropyl modified starch. On the basis of screening the compound anti-aging agent, the storage experiments of argyrophyll rice cake at different storage temperatures (-18, 4, 25 C) for 7 days were studied, and the changes of water content, water activity and texture characteristics of argyrophyll rice cake within 7 days were investigated.

The results showed that the moisture content and water activity of Aicao rice cake decreased and the hardness, stickiness and chewiness increased with the prolongation of storage time at any storage temperature. The moisture content of amylose cake was the highest at - 18 C, and the increasing trend of hardness, stickiness and chewiness was gentle.

This indicated that the storage temperature at - 18 C was beneficial to inhibit the aging of amylose cake. At the same time, no matter what storage temperature, the addition of compound anti-aging agent has a certain inhibitory effect on the aging of aromatic rice cake.