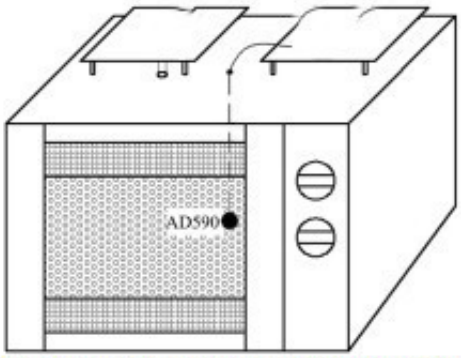
Study on Processing Conditions of Grass Carp Pine by Microwave Drying

Using grass carp meat as raw material, grass carp pine was processed by microwave drying. The effects of cooking time, microwave drying equipment, microwave drying time, stir-frying time and crushing times on the quality of grass carp pine were investigated. The processing parameters of grass carp pine were optimized by orthogonal test.

The results showed that the processing conditions of grass carp pine were as follows: cooking time 20 min, microwave drying power 500 W, microwave drying time 6 min, stir-frying time 12 min and grinding times 5 times (5 s/time). Under the optimum conditions, the moisture content, protein content, fat content and ash content of grass carp pine were 15%, 51.8%, 8.7% and 1.1% respectively.

Key words: grass carp microwave drying; meat floss; process optimization;



Schematic diagram of microwave drying temperature control system

Grass carp (Ctenopharyngodon idellus) is an important freshwater economic fish in China. In 2014, the output of Ctenopharyngodon idellus was 5.377 million tons, which is the largest variety of aquatic products in China. Grass carp meat is tender but not greasy, with less muscle spines and rich nutrition, which is popular with consumers. However, at present, grass carp is still mainly sold fresh, with fewer processed products and low added value. With the increasing scale and output of freshwater aquaculture in China, the processing of grass carp needs to be solved urgently.

Meat floss refers to meat products made from lean meat of livestock and poultry through trimming, cutting, cooking, skimming, seasoning, soup harvesting, frying and rubbing. Its moisture content is low and its water activity is generally between 0.7 and 0.75, which can effectively inhibit the growth of bacteria, fungi and yeast. Pork floss is a famous specialty in China. It is nutritious, delicious and easy to carry. Pork floss, beef floss, chicken floss, fish floss and egg floss are good food for accompanying meals, gifts and tourism.

In the traditional production process of meat floss, the process of juice collection after boiling is time-consuming, and the process conditions are not easy to control. If the re-boiling soup is insufficient, it will lead to incompetent boiling and difficult to rub. If the re-boiling soup is too much, the over-boiling after juice collection will make the finished fibers short and broken. In addition, after boiling and juice harvesting, dehydration is completely completed by stir-frying, which is time-consuming and labor-consuming, and the production efficiency is low, so it can not meet the requirements of industrial production. After cooking, juice harvesting and stir-frying are the key steps in the production of meat floss, which have a great influence on the quality and production efficiency of the final product.

In the study of improving the processing technology of meat floss, the process can be greatly simplified by direct drying without juice collection after boiling, and the flavor of the product can be well maintained. In the drying process of stir-frying pine, using oven or other dehydration equipment to dehydrate "segmented-balanced" is conducive to improving the quality of meat pine and shortening the production cycle.

At present, pork and beef floss are the main meat floss on the market, while fish floss is relatively small. The experiment used grass carp as the main raw material to develop grass carp floss. Microwave drying method was used to replace traditional meat floss drying method, and the process flow and process parameters of producing grass carp floss by microwave drying method were determined, so as to provide reference for further processing of grass carp.