# Optimization of microwave puffing instant fish skin processing conditions

Microwave drying machine is not only used to process blueberry, strawberry, pumpkin and other fruit and vegetable raw materials, but also used to process pigskin, surimi, duck breast and other animal raw materials. However, there are few reports on the technology of fish skin drying equipment both at home and abroad. For this reason, the fish skin was processed by drying equipment technology, and the extrusion process was studied with extrusion degree as index. The microwave extrusion process of fish skin was optimized by response surface methodology. On this basis, the optimum technological parameters of fish skin brittleness were determined by orthogonal test, and the changes of product internal structure before and after fish skin brittleness were analyzed by SEM, which provided a theoretical basis for the development of fish skin brittleness. Skin products.

Artificially remove the meat attached to the fish skin, wash it with deionized water, cut it into 3 cm wide impurities, drain it, and dry the fish skin in a 45C air-drying box until the moisture content reaches 10%-50%. Remove the reserve. Dried tuna skin is wrapped in gauze in a fresh keeping bag. At low temperatures of 4-12H, the water in the skin is evenly distributed, and the skin is spread flat on ceramic utensils and expanded in a microwave oven. The expansion power is 700 W and the expansion time is 2~6 minutes.

The basic conditions of microwave puffing are: initial moisture content 30%, water balance time 6 h, microwave power 700W, microwave puffing time 4 min. By changing the level of one factor and keeping other factors unchanged. Initial moisture content was 10%, 20%, 30%, 40%, 50%, water balance time was 0, 3, 6, 9, 12 h, microwave time was 2, 3, 4, 5, 6 min.

On the basis of single factor experiment, the response surface methodology (RSM) was used to analyze the experimental results. The optimum conditions of microwave puffing were determined. The puffing degree was response value, initial water content, water balance time and microwave puffing time. As a response factor.

Taking fracture force as the measuring index, single factor test is carried out on the brittle strengthening process. Single factor tests were carried out on hot water blanching time, hot water blanching temperature, ice water quenching time and mass concentration of potassium chloride solution.

The effect of hot water blanching time (0, 2, 4, 6, 8 min) on the breaking force of fish skin was studied.

The effects of different blanching temperatures (70, 75, 80, 85, 90 C) on the skin damage were studied.

The effects of different quenching time (0, 1, 3, 5, 7 min) on breaking force of fish skin were studied.

The effects of different concentrations of potassium chloride solution (3.0, 4.0, 5.0, 6.0, 7.0 g/L) on the damage force of fish skin were studied.

On the basis of single factor experiment, three factors and three levels orthogonal experiment and L9 (34) orthogonal design were used to study the brittleness of microwave puffed fish skin.

The thermal test method is as follows: adding millet to the measuring tube, covering the bottom of the measuring barrel, putting three pieces of fish skin into the measuring barrel, adding millet to fill the gap between the tuna skin, until completely buried, and then shaking to the scale. E does not change, the volume is the volume of millet plus fish skin (V1), and then remove the scales in the fish scale. Fish skin volume (V) can be obtained by weighing the grain volume (V2) respectively. The formula for calculating skin volume V = v1-v2: V is skin volume, mL; V1 is millet plus skin volume, mL; V2 millet volume, mL, three fish skin samples were puffed by microwave to determine skin volume (V3) and microwave FFIN (V4). The formula (P) P = v4-v3: P is the degree of expansion; V3 is the volume of microwave puffed and ml skin; V4 is the amount of tuna skin after microwave puffed. Milliliter.