

HIGH PRESSURE AND ULTRA FINE GRINDING IN SOY WASTE PROCESSING TECHNOLOGIES

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High pressure has been widely used in food, it can kill almost all of the bacteria, mold, yeast, and at the same time make the nutrients and flavor will not be destroyed, after high pressure treatment of soybean residue, dietary fiber content increased. The quality of bean dregs can be improved by superfine grinding. Therefore, these two physical techniques have a significant impact on the grain product okara.

Therefore, these two physical techniques have a significant impact on the grain product okara. High pressure is a new technology integrating multi-unit operation such as mixing, superfine pulverization, heating, pressurization and puffing. It plays an important role in the modification of dietary fiber, increasing the content of soluble dietary fiber, sterilization and prolong shelf life. The high pressure treated bean dregs were used as raw materials, and the ultra-pressure treatment conditions were 100 MPa, 10 min, the ratio of material to liquid was 1:9, and the soluble dietary fiber content was 22.8%. With 400 MPa high-pressure combined with heat treatment (60 °C), bean dregs soluble dietary fiber content increased 8 times, and the swelling and hold water (oil) also improved.

Ultra-fine pulverization refers to the operation technique of using the mechanical force or hydrodynamic method to overcome the internal cohesive force of the solid to break it, thereby pulverizing the material particles of 3 mm or more to 10-25 μm. In the ultrafine pulverization process, friction is used. Extrusion, collision and other forces modify the bean dregs. The optimal ultra-fine grinding process parameters of bean dregs: feed amount 95 g, classification wheel frequency 32 Hz, grinding pressure 0.8 MPa, soluble dietary fiber content under the parameters of 4.68%, the bean flavor is rich and the quality is best when making biscuits. The addition of bean dregs superfine powder increased the water absorption of the dough. The water solubility, expansibility, viscosity and cationic exchange capacity of bean dregs were obviously improved by different grades of superfine grinding.

At present, research on high pressure and ultra-fine pulverization of soybean residues for finished products is relatively rare. How to make the interaction between bean dregs and high pressure technology and increase the dietary fiber content in the research of finished products is a problem worthy of attention in the future.