

Секція 2. ІННОВАЦІЙНІ ТЕХНОЛОГІЇ ФУНКЦІОНАЛЬНИХ ОЗДОРОВЧИХ ПРОДУКТІВ ДЛЯ ПІДПРИЄМСТВ ХАРЧОВОЇ, ПЕРЕРОБНОЇ ПРОМИСЛОВОСТІ ТА ТОРГІВЛІ

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EFFECT OF HIGH PRESSURE TREATMENT AND PHYSICAL PROPERTIES OF ULTRAFINE GRINDING ON PHYSICOCHEMICAL PROPERTIES OF SOYBEAN RESIDUE

The use of high pressure technology and ultrafine grinding it can be increase the nutritional value, physico-chemical properties and product structure.

In this paper, the physicochemical properties of high pressure and ultrafine grinding on soybean residue were studied. The water holding capacity, oil holding capacity and expansibility of soybean residue were studied. The microstructure of soybean residue was analyzed by scanning electron microscopy. The results showed that the water holding capacity, oil holding capacity and expansibility of the bean residue after the high pressure treatment are the highest. Followed by the untreated soybean residue, the water holding capacity, oil holding capacity and expansibility are slightly higher than the ultrafine grinding samples. The results of scanning electron microscopy showed, that the soybean residue were in the form of flakes by high pressure treated, the structure was more loose, porous, and there were large gaps, but the particle size of the soybean residue treated by the ultrafine grinding is remarkably small, the specific surface area is obviously increased, and the structure is loose.

1. The effect of high pressure and ultrafine grinding on water holding capacity, oil holding capacity and expansibility of soybean residue.

The sample has the highest water holding capacity, oil holding capacity and expansibility when it by high pressure treatment, which may be due to a certain change in the spatial structure of dietary fiber after high pressure treatment, and the mesh structure has better supporting role to increase the expansibility. After the ultrafine grinding treatment, the particle size of the sample is became smaller, The spatial structure of the particle space is destroyed and the adsorption capacity for water is weakened, so that the water holding capacity and the adsorption capacity are lowered. oil holding capacity usually prevents the loss of fat during processing and the

increase of cholesterol levels. The oil holding capacity of the soybean residue treated by high pressure is improved, which may be caused by the change of the dietary fiber spatial structure during the high pressure treatment.

2. *Effect of high pressure treatment and ultrafine grinding on the microstructure of soybean residue.*

The sample was magnified 600 times and three different treatments were used for comparison by scanning electron microscopy. It was found that soybean residue sample became large piece after high pressure treated, its structure became more porous, the water was more easily infiltrated and absorbed, the structure became more loose, it makes more hydrophilic groups be exposed, thereby increasing the water holding capacity of the soybean residue. The particle size of the soybean residue treated by the ultrafine grinding is significantly smaller, the specific surface area is obviously increased, the porous network structure inside the soybean residue were damaged to various degrees due to the strong mechanical shearing action.

In general, the sample of soybean residue has improved water holding capacity, oil holding capacity and expansibility property processed by the high pressure technology compared to the ultrafine grinding treatment. The soybean residue particles became smaller and uniform, and the spatial structure disappears after the ultrafine grinding treatment, while the fibrous structure is looser after the high pressure treatment, and the spatial structure is partially retained.

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THE RHEOLOGICAL PROPERTIES OF PORK MEAT BATTERS, PRODUCED USING SOY PROTEIN ISOLATE AND PROCESSED BY HIGH PRESSURE

High pressure processing, a non-thermal technology, has been successfully applied on meat products for modifying meat proteins functionality. Soy protein isolate is a commonly useful vegetable protein in the meat industry, which has a good water and fat holding capacity, excellent gelling and structural behaviour. The objective of the present study was to evaluate the textural properties of pork meat batters produced