

Optimization of microwave drying and extrusion process for Germinated Brown Rice

Abstract: The effects of selenium-enriched germinated brown rice, [microwave drying equipment](#) and extrusion on the nutritional quality of selenium-enriched germinated brown rice were studied.

The results showed that when the concentration of selenium was 10 mg/L, high quality selenium-rich germinated brown rice could be obtained. Under these conditions, the germination rate of brown rice was 97.9%, and the content of organic selenium was 977.6 ug/kg (mass fraction 98.5%).

The content of gamma-aminobutyric acid was 445.9 mg/kg. Microwave drying at 40 ~C was conducive to maintaining the content of selenium and gamma-aminobutyric acid in germinated brown rice. The content of organic selenium and gamma-aminobutyric acid in extruded products increased 29 and 5 times than that in brown rice, respectively.

The results showed that sodium selenite could be used as selenium-enriched reagent to germinate brown rice effectively, and selenium-enriched germinated brown rice could be used to develop related nutritional food.

Key words: [germinated brown rice microwave drying](#); selenium-rich gamma-aminobutyric acid extrusion



Selenium is an essential trace element for human body. It has the biological functions of antioxidant, protecting visual organs, detoxifying and detoxifying, and preventing and treating liver diseases. Selenium deficiency can lead to liver cancer, cancer, cardiovascular and cerebrovascular diseases and Keshan disease.

In addition, because there are no organs or tissues that store selenium for a long time in the human body, it is necessary to continuously obtain selenium from the diet to meet the human needs for selenium. At the same time, due to the lack of selenium in soil in most areas of China, enrichment of selenium by nutrient enrichment can ensure selenium intake in selenium-deficient areas.

Brown rice germinates under certain technological conditions, activates related enzymes,

converts inorganic selenium into organic selenium, and increases the content of gamma-aminobutyric acid (GABA). At present, the research on germinated brown rice is mainly to achieve the effective enrichment of selenium or GABA through process optimization.

On the basis of previous studies, the drying and expanding process of brown rice products was fully considered. The effects of drying and expanding process on the nutritional quality of selenium-enriched germinated brown rice were emphatically studied, which provided a theoretical basis for the development of nutritional brown rice products. CTS.

