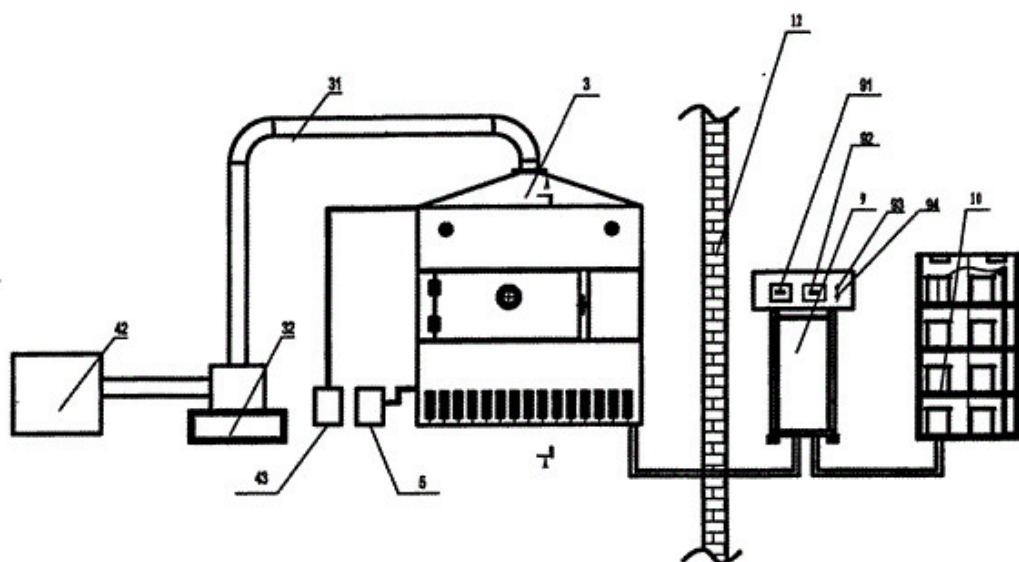


## Research progress on processing technology of germinated brown rice

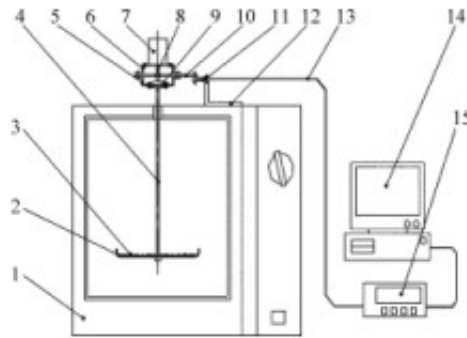


Abstract: Brown rice contains cortex and germ, which is germinated into germinated brown rice. Compared with rice, germinated brown rice has more bioactive ingredients and more nutrients, such as  $\gamma$ -aminobutyric acid. Starting from the [microwave drying equipment](#) of germinated brown rice, combined with recent research progress, the germination, soaking, germination, drying and enrichment of  $\gamma$ -aminobutyric acid in germinated brown rice were reviewed, and the future development of germinated brown rice was proposed.

Key words: [germinated brown rice microwave drying](#); processing technology; nutrition;  $\gamma$ -aminobutyric acid

Rice is the main food crop on the planet. Although it is grown in North America, Africa and Europe, the main producing area is located in Asia, and the main edible population is in Southeast Asian countries. China is a major rice producer and consumer. In 2015, China's rice production has reached 208 million tons. Adequate production provides feasible conditions for rice processing.

Brown rice does not remove cortex and germ. Although it is rich in nutrients, it contains ferulic acid, oryzanol, glutathione, rice bran protein, rice bran polysaccharide, vitamins, linoleic acid,



etc., but brown rice has poor cooking and taste.

The germinated brown rice can improve the above deficiency. After the brown rice is germinated, some nutrient content is increased, such as  $\gamma$ -aminobutyric acid (GABA) content is increased 10 times; starch and protein hydrolysis can help the body to digest and absorb, and its palatability has been greatly improved.

Germinated brown rice also has a certain anti-obesity effect, can inhibit type 2 diabetes and cardiovascular disease, and has neuroprotective effects on Parkinson's disease. Therefore, brown rice is processed and germinated, which is of great significance for making full use of rice resources and improving nutritional value, and is the development direction of rice processing in the future.

Japan is also one of the world's major rice producers and consumers. The germinated brown rice products entered the Japanese market in 1995 and are gradually recognized by consumers. With the expansion of the market, the physiological functions of germinated brown rice are constantly being recognized and discovered, and the product variety is increasingly rich. The products include germinated brown rice wine, brown rice bud sauce, germinated brown rice drink, germinated brown rice medicinal food, germinated brown rice convenience food, cakes, etc. Still expanding.

China's research on germinated brown rice started late, but after more than ten years of development, the market has also begun to sell germinated brown rice products, such as the "Taoyuanxiang" germinated brown rice series developed by Nanjing Nongken Biotechnology Co., Ltd., and the germinated brown rice nutrition powder series. Germinated brown rice tea series products.

Other research institutes have studied germinated brown rice products and obtained many products, such as miso, germinated brown rice, germinated brown rice, germinated brown rice bread, and germinated brown rice flour. Due to the late start of research on germinated brown rice in China, the processing technology is backward, resulting in high production cost, and it takes a certain time for the product to be recognized by the market. Therefore, it is necessary to conduct in-depth research on the processing technology to reduce costs.