

Bioconversion of soy germ isoflavone-glycoside into aglycone by lactic acid bacteria

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[Introduction]

Isoflavones have been extensively studied due to their estrogenic effect being related to most of their beneficial health effects, like the relieve of symptoms associated to the menopause, prevention of bone mass loss due to ovarian hormone deficiency, reduction of the levels of postprandial glucose, triacylglycerides, cholesterol and weight in patients with type 2 diabetes. The isoflavones adsorption only occurs in the aglycone form, therefore, the conversion of the isoflavone-glycoside into their aglycone form reveals to be an interesting.

[Materials and Methods]

Soy germ was purchased from Chung's Food Co. Ltd. Lactic acid bacterias, *Lactobacillus acidophilus*(LA), *Lactobacillus bulgaricus*(LB), *Streptococcus thermophilus* (ST), *Lactobacillus plantarum*(LP) were used and cultured in MRS broth. Fermentation condition was 5% inoculation, incubate at 37°C for 24 hr. Isoflavone analysis was performed by Thermo UHPLC.

[Results and Discussions]

The effects of fermentation on soy germ have been investigated using lactic acid bacteria, *Lactobacillus acidophilus* (LA), *Lactobacillus bulgaricus* (LB), *Streptococcus thermophilus* (ST), *Lactobacillus plantarum* (LP). As a result of the fermentation test of the isoflavone conversion by strain type, inoculation content and fermentation time, the optimum conditions were LP bacteria, inoculum amount of 5%, and fermentation time of 24 hours. The composition of isoflavone glycosides of the control was the highest in the order of glycitin> daidzin> genistin. When fermented with lactic acid bacteria, glycosides decreased, and aglycone increased. The order of composition was daidzein> glycitein> genistein, aglycon conversion ratio was 45% or more higher. Especially, when fermented with lactic acid bacteria, daidzin content decreased the most and daidzein content.increased the most. Increasing the aglycone content by the LP bacterium fermentation reaction can increase the physiological activity and functionalization of soy germ, which is a byproduct of processing.

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