

NUTRITION & HEALTH

April 12-14, 2018 | Amsterdam, Netherlands

The effect of Indonesian fermented rice bran on blood glucose levels in rat high fat high fructose

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Statement of the Problem: Hyperglycemia known to be factors of in many diseases. Actually, this condition can overcome by changing eating habits. Diets that directly target its pathogenesis pathway can be used as supporting therapy. Following that, Indonesia has been known as a country that produce lots of rice, thus the production of its rice bran is abundant. Unfortunately, rice bran has not been widely utilized and is more often used as a waste product for fodder. The micro components in rice bran cannot be absorbed either by the intestine. With fermentation, the fiber bonds in rice bran can be broken, so it will increase its absorption in the body. The fermentation process can also increase levels of organic compounds that function as hypoglycemic agents. Thus, the study aims to determine the effect of fermented Indonesian rice bran on body weight and blood glucose levels in rat with high-fat high-fructose diet.

Methodology: Twenty-four Sprague dawley males rats were induced with high-fat high-fructose diet for two weeks and standard diet for the following four weeks. The animals were randomized and grouped into four groups, namely normal control, negative control, treatment with 10% rice bran and treatment with 10% fermented rice bran.

Findings: At first, the high-fat high-fructose induced group experienced significant increases in blood glucose levels ($p < 0.001$) while the normal control group did not change significantly ($p > 0.05$). After two weeks treatment, the fermented rice bran group showed a significant decrease in blood glucose level ($p < 0.001$) and after four weeks treatment, all treatment groups experienced significant decrease in blood glucose levels ($p < 0.001$).

Conclusion & Significance: Indonesian fermented rice bran can significantly decrease blood glucose levels in rat with high-fat high-fructose diet. It is faster than other groups as two weeks treatment has shown its effect significantly.

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