

Effects of rice bran oil on lipid profiles of hypercholesterolemic junior high school teachers

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Abstract

Statement of the Problem: Rice Bran Oil (RBO) Rice bran oil is an abundant food source in Indonesia and contains high levels of monounsaturated fatty acids and is rich in antioxidants. However, clinical trials on this material are still very limited. This research aims to assess the differences of effect of rice bran oil (RBO) and olive oil (OO) on lipid profile alteration of hypercholesterolemic junior high school teachers. **Methodology & Theoretical Orientation:** This study used a quasi-experimental method with a non-randomized pre-test and post-test design with a control group. A total of 28 junior high school teachers in the Tamalanrea District of Makassar City who experienced hypercholesterolemia were recruited in this study and were divided into 2 groups. The intervention group was given rice bran oil (30 ml/day) while the control group was given olive oil (30 ml/day) for 30 days. **Findings:** After giving RBO for 30 days, the results were a decrease in total cholesterol by 4.59%, triglycerides by 15.8%, LDL by 4.87%, but HDL levels also decreased, although in insignificant amounts (3.41%). Meanwhile, giving OO as a control reduced total cholesterol by 5.04% and triglycerides by 28.2%. In addition, there was also a slight increase in HDL levels by 0.45%, in contrast to LDL levels which did not show any difference at all. At the end of the study of the four lipid profile parameters observed, significant improvements were observed in the reduction of total cholesterol and triglyceride levels significantly after administration of RBO and OO ($p < 0.05$). The results also showed that there was no significant difference between RBO and OO on changes in lipid profile ($p > 0.05$). **Conclusion & Significance:** Rice bran oil and olive oil have the same effect in improving lipid profiles by significantly lowering total cholesterol and triglyceride levels.

Introduction:

Adult individuals in Indonesia showed changes in diet and lack of physical activity, therefore increasing the risk of hypercholesterolemia and obesity. One of nutritional therapy for hypercholesterolemia is rice bran oil, which contains active substances that works synergistically in controlling lipid profile. The substances are gamma-oryzanol, phytosterols, and vitamin E isomers (tocotrienol

and tocopherol). Nutritional therapy became the first pillar as part of lifestyle intervention in hypercholesterolemia. Phytosterol, which is one of functional food, has been recommended by the National Cholesterol Education Program (NCEP) for controlling lipid profiles.⁷ Rice bran oil contains gamma-oryzanol, phytosterols, and vitamin E (tocotrienols and tocopherols), which are known as unsaponifiables fractions. Gamma-oryzanol consists of ferulic acid and phytosterol esters, which are structurally and functionally similar to cholesterol. Both substances can reduce the absorption of cholesterol in the intestine as competitive inhibitors. Unsaponifiable fractions of rice bran oil act synergistically in controlling blood lipid profile. The composition of fatty acids in rice bran oil is closest to the recommendation of the American Heart Association (AHA)

Conclusion:

Rice bran oil and olive oil have the same effect in improving lipid profiles by significantly lowering total cholesterol and triglyceride levels. It has been demonstrated that gamma oryzanol and plant sterols in rice bran oil have the capability to remove cholesterol from bile salt micelles, thus decreasing cholesterol absorption in intestine.