

ABSTRACT

Faiq Fayzul Haq. 24020122120040. The Effect of Black Rice (*Oryza sativa* var. *indica*) Ethanolic Extract on the Spleen Microanatomy of Hypercholesterolemic Wistar Rats Induced by a High-Fat Diet and Propylthiouracil. Supervised by Sunarno and Sri Isdadiyanto.

Hypercholesterolemia is known to induce oxidative stress, which contributes to alterations in the microanatomy of lymphoid organs, including the spleen. One approach developed to address this condition is the use of natural compounds such as black rice (*Oryza sativa* var. *indica*), which is rich in bioactive constituents. Previous studies have investigated the effects of black rice ethanol extract on the spleen using a lipopolysaccharide-induced acute inflammation model. However, limited information is available regarding its effects on spleen microanatomy in hypercholesterolemic rats induced by a high-fat diet and Propylthiouracil. Therefore, this study aimed to evaluate the effect of black rice ethanol extract on the spleen microanatomy of Wistar rats under hypercholesterolemic conditions induced by a high-fat diet and Propylthiouracil. This study employed a completely randomized design using 24 rats divided into six groups: normal control, negative control, positive control (simvastatin), and hypercholesterolemic treatment groups administered ethanol extract of black rice at three different doses of 50, 100, and 200 mg/kg body weight. The variables observed included spleen weight, lymphosomatic index, white pulp diameter, and germinal center diameter. Data were analyzed using One-Way ANOVA or Kruskal–Wallis tests at a 5% significance level. The results showed that hypercholesterolemia reduced spleen weight and was associated with contraction of white pulp and germinal center structures. Administration of black rice ethanolic extract significantly affected white pulp and germinal center diameters ($p < 0.05$), with the most pronounced response observed at a dose of 100 mg/kgBW, while other variables did not show consistent differences among treatment groups. In conclusion, black rice ethanol extract influences spleen microanatomy in hypercholesterolemic rats, with 100 mg/kgBW showing a tendency to be the optimal dose.

Keywords: white pulp, germinal center, immunomodulator, oxidative stress