ABSTRACT

Gamma oryzanol (γ-oryzanol) was found in rice bran oil, especially in purple glutinous rice bran oil. The main property of γ-oryzanol is an antioxidant which is by the rule of thumb, improving the immune response. The study aimed to prove this hypothesis and determine the optimal effective level on immune response, a complete randomized design (CRD) was applied. The experiments were proved through Swiss albino 6-week-old male mice, selected randomly, 4 mice per pen. There were 2 pens per treatment, γ-oryzanol were added 4 levels; 0, 280, 800 and 1340 mg/kg in mice diets, refer by body weight of human level supplement. All mice were fed with control diet on preliminary period until 7 weeks old. All mice were given BSA immunization 3 times at day 1, 14 and 28 respectively. Mice plasma were collected before immunization on day 1 and day 10, 14, 21, 28 and 42 respectively, and then stored at -20 °C. IgA, IgM and IgG titer were evaluated by Enzyme-Linked Immunosorbent Assay (ELISA). In the preliminary period of the second experiment, mice were treated the same as experiment I. The difference was shown in three groups of mice treated with purple glutinous rice bran at 0, 6 (equal to pure γ-oryzanol 1340 mg/kg), and 8 % (equal to pure γ-oryzanol 1800 mg/kg) in diets and the fourth group supplemented with 1340 mg/kg pure γ-oryzanol. The fourth group was supplemented with pure γ-oryzanol at 1,340 mg per kg. The methods and experimental steps were the same as experimental I.
- The result of experiment 1, it was found that the average \( \log_2 \) IgA and IgG titer of mice on the \( \gamma \)-oryzanol supplemented groups were significantly higher than those the control group (\( p < 0.05 \)). The increment of the average \( \log_2 \) IgA titer occurred on day 14-42. Moreover, it was the highest on day 42. The average \( \log_2 \) IgG titer of all groups increased between day 10-42, it was the highest on day 42. The mice received pure \( \gamma \)-oryzanol 800 mg per a kilogram of diet had a tendency to give higher average \( \log_2 \) IgA and IgG titer than those other groups. The overview of the average \( \log_2 \) IgM titer. The increase average \( \log_2 \) IgM titer appeared on day 10 and day 21, it was the highest on day 10, it was found that the mice in the control group had a higher average \( \log_2 \) IgM than the mice in supplemented groups (\( p < 0.05 \)), and the mice received pure \( \gamma \)-oryzanol 1340 mg per kg diet had the lowest average \( \log_2 \) IgM.

The second experimentation; it was found that the average IgA and IgG titer were increased and decreased similar to the first experimentation. The mice which had been fed with 6% and 8% purple glutinous rice bran were significantly higher average \( \log_2 \) IgA and IgG titer than that of the control group and the mice received pure \( \gamma \)-oryzanol 1,340 mg per kg diet (\( p < 0.05 \)), and the mice that had been supplemented with pure \( \gamma \)-oryzanol had a significantly higher average \( \log_2 \) IgG titer than control group on day 10 of the experimentation (\( p < 0.05 \)). The higher average \( \log_2 \) IgA titer appeared on day 14 and 28. The highest \( \log_2 \) IgA was found on day 28 of the experimentation. While the average \( \log_2 \) IgG titer was found to be higher on day 10-42 and the highest was found on day 42. It was found that the mice which had been fed with 8% purple glutinous rice bran gave the highest average \( \log_2 \) IgG. Consequently, it was found that the average \( \log_2 \) IgM titer in the control group was significance higher than that of the other groups (\( p < 0.05 \)), and the mice which had been fed with 8% purple glutinous rice bran had the lowest average \( \log_2 \) IgM. The increase average \( \log_2 \) IgM titer was found on day 10 and day 21, while the highest value was on day 10.