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The Effect of Ethanol Extract of Dates (*Phoenix dactylifera)* on Blood Level of IFN-γ , IL-12 , and Bacterial Colonies of Mice Liver Infected with *Salmonella typhimurium*

Awatif Ali Khalifa*

[1]**Master Program of Medical Science, Faculty of Medicine, University of Brawijaya, Malang, Indonesia**

Abstract : Typhoid fever, is a serious and fatal disease in developing countries. Date fruit (*Phoenix dactilifera*) and its constituents have an important role in the disease prevention through anti-oxidant, anti-inflammatory, and anti-bacterial activities. this study aims to investigate the potential effect of *Phoenix dactylifera* fruits' extract in inhibiting the inflammation cytokines IFN-γ, IL-12 and decreasing the bacterial colonies in the liver of mice infected with *Salmonella typhimurium.* This study used 20 mice that were divided into 5 groups, including negative control (without infection), positive control (infected with *S. typhimurium*), P1 (100 mg/kg BW), P2 (200mg/kg BW), and P3 (400 mg/kg BW). ELISA was used to measure IL-12 and IFN-γ levels, while culture was used to measure the bacterial colonies in the liver. The results indicate that IFN-γ level was significantly decreasing at dose 400 mg/kg BW compared with C1 ($p<0.05$). In contrary, it increased at dose 100mg/kg BW. In addition, IL-12 level was significantly decreasing at dose 400 mg/kg BW compared with C1 ($p<0.05$), but decreased at dose 100mg/kg BW. The bacterial colonies in C1 were significantly different compared to other groups (C0, P1,P2,P3) ($p>0.05$). There were no bacteria found in all treatment groups. In conclusion, the ethanol extract of *Phoenix dactilifera* could improve immune response by decreasing the IL-12 level and decreasing IFN-γ level, as well as inhibiting the systemic disease by killing the bacterial colonies in the liver.
Keywords : Typhoid fever, *Salmonella typhimutrium*, IL-12, IFN-γ, bacterial colony.

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