

EFFECTIVENESS OF ETHANOL  
EXTRACT AND ETHYL ACETATE  
FRACTION OF ARECA NUT  
(ARECA CATECHU L.) ON THE IL-  
18 SERUM CYTOKINE LEVEL IN  
MICE (MUS MUSCULUS)  
INFECTED WITH TRICHURIS  
MURIS EGG

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**EFFECTIVENESS OF ETHANOL EXTRACT AND ETHYL ACETATE FRACTION OF ARECA NUT (*ARECA CATECHU L.*) ON THE IL-18 SERUM CYTOKINE LEVEL IN MICE (*MUS MUSCULUS*) INFECTED WITH *TRICHURIS MURIS* EGG**

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**ABSTRACT**

**Background:** Interleukin-18 is a protein which in humans is encoded by the IL-18 gene. The protein encoded by this gene is a proinflammatory cytokine. IL-18 promotes the development of chronic gastrointestinal helminth infection. There were some contradictory studies regarding the role of IL-18. In recent years, various studies have found natural and traditional ingredients for developing the alternative anthelmintic drugs, included areca nut (*Areca catechu L.*). This study aimed to examine the effectiveness of ethanol extract and ethyl acetate fraction of areca nut (*Areca catechu L.*) on the IL-18 serum cytokine level in mice (*Mus musculus*) infected with *T. muris* egg.

**Subjects and Method:** This was a quasi-experiment post-test only with control group design conducted at the Biology Laboratory, Faculty of Mathematics and Natural Sciences, University of North Sumatra, from September 2018 to July 2019. A sample of 70 mice was divided into 7 groups: (1) 10 mice in negative control group not infected with *T. muris* eggs; (2) 10 mice in positive control group infected with 200 *T. muris* eggs; (3) 10 mice in intervention group (I1) infected with *T. muris* eggs received 100 mg/kgBW areca nut ethanol extract p.o.; (4) 10 mice in intervention group (I2) infected with *T. muris* eggs received 150 mg/kg wt areca nut ethanol extract p.o.; (5) 10 mice in intervention group (I3) infected with *T. muris* eggs received 100 mg/kg wt ethyl acetate fraction of areca nut p.o.; (6) 10 mice in intervention group (I4) infected with *T. muris* eggs received 150 mg/kgBW ethyl acetate fraction of areca nut p.o.; and (7) 10 mice in intervention group (I5) infected with *T. muris* eggs received 1 mg/BW Albendazole p.o. The mean differences between groups were tested by One Way ANOVA.

**Results:** The means of IL-18 serum cytokine level in all 7 groups as follows: (1) Negative control group (Mean= 75.22; SD= 35.06); (2) Positive control group (Mean= 57.66; SD= 13.40); (3) I1 group with 100 mg/kgBW areca nut ethanol extract (Mean= 64.24; SD= 24.68); (4) I2 group receiving 150 mg/kgBW areca nut ethanol extract (Mean= 71.64; SD= 35.50); (5) I3 group with (Mean= 63.77; SD= 41.13); (6) I4 group with 150 mg/kgBW ethyl acetate fraction of areca nut (Mean= 74.98; SD= 42.27); and (7) I5 group with 1 mg/kgBW Albendazole (Mean= 70.72; SD= 12.98). The mean differences between groups were statistically non-significant (p= 0.899).

**Conclusion:** The administration of ethanol extract or ethyl acetate fraction of areca nut (*Areca catechu L.*) is not effective in changing the IL-18 serum cytokine level in mice (*Mus musculus*) infected with *Trichuris muris* egg.

**Keywords:** *Areca catechu L.*, IL-18, *Mus musculus*, *Trichuris muris*, mice

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PAGE 1

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