

ABSTRAK

Potensi Fermentasi *Crescentia kujete* L Terhadap Gambaran Hematologi, Imunoekspresi Dan Kadar Granulocyte-Macrophage Colony-Stimulating Factor Serta Interleukin-6 Paru Tikus Model Pasteurellosis

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Pneumonic pasteurellosis (PP) adalah penyakit pneumonia disebabkan oleh *Pasteurella multocida* yang dapat menginfeksi berbagai hewan dan ternak berpotensi zoonosis. *Pasteurellosis* termasuk sebagai salah satu jenis penyakit hewan menular strategis (PHMS) dan *neglected tropical diseases* (NTDs) atau penyakit tropis yang terabaikan yang menular di Indonesia. Penanganan PP direkomendasikan menggunakan kombinasi antibiotik dan antiinflamasi. Fermentasi buah berenuk (FBB) memiliki potensi sebagai anti-inflamasi, dan antioksidan. Buah ini mengandung komponen biokimia kolin, fitonadion, alfa-tokoferol dan retinol. Penelitian ini bertujuan untuk mengetahui potensi anti-inflamasi fermentasi buah berenuk terhadap hematologi dan imunoekspresi GM-CSF dan IL-6 paru tikus model pada kejadian PP induksi. Penelitian ini menggunakan 20 ekor tikus spargue dawley jantan yang dibagi dalam 5 perlakuan, P1 = kontrol sehat, P2 = PP induksi tanpa terapi, P3 = PP induksi dan enrofloxacin 20 mg/kgBB, P4 = PP induksi, enrofloxacin 20 mg/kgBB dan ibuprofen 30 mg/kgBB, P5 = PP induksi, enrofloxacin 20 mg/kgBB dan FBB 5.92 mg/kgBB. Terapi diberikan pada hari ke-11 setelah infeksi dan hari ke-18 pengambilan sampel darah untuk analisis hematologi dan paru untuk analisis GM-CSF dan IL-6. Data dianalisis menggunakan SPSS 27. Hasil penelitian menunjukkan bahwa pemberian fermentasi buah berenuk memberikan pengaruh signifikan terhadap parameter hematologi, imunoekspresi, dan kadar sitokin paru pada tikus model pasteurellosis. Terapi kombinasi enrofloxacin dan fermentasi buah berenuk secara signifikan memperbaiki kadar hemoglobin, MCH, MCHC, TPP, fibrinogen, leukosit, dan neutrofil ($p < 0,05$) dan perlakuan mampu menurunkan imunoekspresi serta kadar GM-CSF dan IL-6 paru pasca induksi *Pneumonic pasteurellosis* hingga mendekati kondisi fisiologis normal ($p < 0,05$), yang mengindikasikan pengendalian dan resolusi respons inflamasi paru. Kesimpulan penelitian ini yaitu fermentasi buah berenuk dapat memperbaiki profil hematologi khususnya hemoglobin, MCH, MCHC, TPP, fibrinogen, leukosit, neutrofil dan menurunkan imunoekspresi GM-CSF dan IL-6.

Kata kunci: fermentasi buah berenuk, *pneumonic pasteurellosis*, antiinflamasi hematologi, GM-CSF, IL-6

ABSTRACT

*Potential of Fermented *Crescentia cujete L.* on Hematological Profile, Immunoexpression, and Levels of Granulocyte-Macrophage Colony-Stimulating Factor and Interleukin-6 in the Lungs of Pasteurellosis Rat Models.*

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*Pneumonic pasteurellosis (PP) is a pneumonia disease caused by *Pasteurella multocida* that can infect various animals and livestock with zoonotic potential. Pasteurellosis is classified as one of the strategic animal infectious diseases (PHMS) and neglected tropical diseases (NTDs) that are transmissible in Indonesia. Management of PP is recommended using a combination of antibiotics and anti-inflammatory agents. Berenuk fruit fermentation (BFF) has potential as an anti-inflammatory and antioxidant. This fruit contains biochemical components such as choline, phytonadione, alpha-tocopherol, and retinol. This study aims to investigate the anti-inflammatory potential of fermented berenuk fruit on hematology and immune expression of GM-CSF and IL-6 in lung tissue of mouse models during PP induction. This study used 20 male Sprague Dawley rats divided into 5 treatment groups: P1 = control, P2 = induced PP without therapy, P3 = induced PP and enrofloxacin 20 mg/kgBW, P4 = induced PP, enrofloxacin 20 mg/kgBW, and ibuprofen 30 mg/kgBW, P5 = induced PP, enrofloxacin 20 mg/kgBW, and BFF 5.92 mg/kgBW. Therapy was administered on day 11 post-infection, and blood samples were collected on day 18 for hematological analysis and lung samples for GM-CSF and IL-6 analysis. Data were analyzed using SPSS 27. The results showed that the administration of fermented calabash fruit significantly influenced hematological parameters, immunoexpression, and lung cytokine levels in the pasteurellosis rat models. The combination therapy of enrofloxacin and fermented calabash fruit significantly improved hemoglobin, MCH, MCHC, TPP, fibrinogen, leukocyte, and neutrophil levels ($p < 0.05$). Furthermore, the treatment was able to reduce immunoexpression as well as GM-CSF and IL-6 levels in the lungs following induced Pneumonic pasteurellosis to near-normal physiological conditions ($p < 0.05$), indicating the control and resolution of the pulmonary inflammatory response. The conclusion of this study is that fermentation of berenuk fruit can improve hematological profiles, particularly hemoglobin, MCH, MCHC, TPP, fibrinogen, leukocytes, and neutrophils, while reducing the immunoexpression of GM-CSF and IL-6.*

Keywords: *calabash fruit fermentation, *pasteurella multocida*, hematology, GM-CSF, IL-6*