

Potensi ekstrak akar pasak bumi (*Eurycoma longifolia* jack) sebagai antimalaria terhadap ekspresi TNF- (Tumor Necrosis Factor) alpha pada mencit putih jantan (*Mus Musculus*) yang diinfeksi plasmodium berghei = The potential of the pasak bumi root (*Eurycoma Longifolia* Jack) extract as anti malaria for TNF- (Tumor Necrosis Factor) expressiveness in the white male mice (*Mus Musculus*) infected with plasmodium berghei / Muhammad Ibnu Kahtan

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Abstrak

ABSTRAK

Malaria masih menjadi masalah kesehatan di dunia terutama negara tropis, karena angka kesakitan dan kematiannya yang tinggi. Gejala yang berat sampai kematian akibat malaria dipengaruhi respon imun setiap individu maupun ketepatan pengobatan malaria. Penelitian ini bertujuan untuk mengetahui efek respon imun (TNF-) mencit terinfeksi Plasmodium berghei yang diberi ekstrak akar pasak bumi sebagai antimalaria. Jenis penelitian ini adalah eksperimental in vivo dengan membagi 5 kelompok perlakuan yang berbeda (kontrol, Plasmodium berghei dan akuades, CMC, Plasmodium berghei dan CMC, Plasmodium berghei dan ekstrak akar pasak bumi). Pemeriksaan tingkat parasitemia menggunakan pemeriksaan darah tipis dan tebal. Hasil pemeriksaan TNF- menggunakan teknik bead based multiplexing technique didapatkan nilai mean fluorescence intensity (MFI) yang digunakan sebagai ukuran kadar TNF-. Hasil penelitian ini menunjukkan kemampuan ekstrak akar pasak bumi sebagai antimalarial, dengan nilai rerata growth inhibit sebesar 88,93%. Hasil uji korelasi menunjukkan adanya hubungan bermakna antara tingkat parasitemia dengan TNF- (Uji Spearman, $r = -0,838$; $p = 0.002$). Hal ini menunjukkan bahwa ekstrak akar pasak bumi dapat mengaktivasi TNF- yang bekerja sebagai imunoproteksi. Berdasarkan hasil penelitian ini, dapat disimpulkan bahwa pemberian ekstrak akar pasak bumi meningkatkan ekspresi TNF- yang berhubungan dengan menurunnya tingkat parasitemia pada mencit yang diinfeksi plasmodium berghei.

ABSTRACT

Malaria is still the main health problem in the world, mainly in tropical countries since its incidence of illness and death is high. The severe symptoms, which may lead to death, are affected not only by the immune response of each individual but also by the efficacy in the malaria treatment. The purpose of this research is to investigate the effect of immune response (TNF-) of the Plasmodium berghei infected mice which was treated with the pasak bumi root extract as antimalaria. This was in vivo experimental study in which the experimental animals were divided into five different groups (control, Plasmodium berghei and aquades, CMC, Plasmodium berghei and CMC, Plasmodium berghei and pasak bumi root extract). The level of parasitemia were determined by using thin and thick blood staining. The bead based multiplexing technique was used in the TNF- examination in order to obtain mean fluorescence intensity (MFI) which was later used as TNF- standard. The results of this research showed the potential of the pasak bumi root extract as antimalaria with the mean percentage of growth inhibition was 88.93%. The correlation analysis showed a meaningful relation between the parasitemia level and TNF- (Spearman test, $r = -0,838$; $p = 0.002$).

This means that the pasak bumi root extract could activate TNF- which acts as immune protector. In conclusion, the pasak bumi root extract could enhance the TNF- expression as shown by the decline of the parasitemia level in the *Plasmodium berghei* infected mouse