

Profil Imunitas Bawaan Tikus Diabetes Melitus yang Diterapi Ekstrak *Acalypha Indica*: Fokus Pada TLR-2, TLR-4, Nos2, Arg1 dan Peradangan Hati = Innate Immune Profile in Diabetes Mellitus Rat Treated with *Acalypha indica* Extract: Focus on TLR-2, TLR-4, Nos2, Arg1 and liver inflammation

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Abstrak

Acalypha indica (Ai) merupakan herbal yang diketahui memiliki efek anti-inflamasi dan anti-diabetik. Penelitian ini dilakukan dengan tujuan untuk mengetahui efek ekstrak Ai terhadap proses inflamasi sebagai bagian dari respons imun bawaan yang terjadi pada diabetes melitus tipe 2. Metode penelitian dilakukan dengan menggunakan dua puluh lima ekor tikus Sprague-Dawley yang dibagi menjadi lima kelompok yaitu kelompok normal, kelompok yang diinduksi diet tinggi fruktosa dan kolesterol (DTFK), kelompok DTFK+Ai 250 mg/kgBB, kelompok DTFK+Ai 400 mg/kgBB dan DTFK+kelompok pioglitazone. Hasil penelitian menunjukkan bahwa ekstrak Ai dosis 400 mg/kgBB dapat menurunkan kadar glukosa darah sewaktu (GDS) ($p=0.005$) dengan mean $\pm$ SEM berturut-turut (82 ± 5.73), (199.9 ± 27.55), (260.6 ± 67.29), (147.2 ± 12.18) dan (148.8 ± 29.4). Ekstrak Ai dosis 400 mg/kgBB juga dapat menurunkan kadar glukosa darah puasa (GDP) ($p=0.02$) dengan mean $\pm$ SEM berturut-turut (76.65 ± 2.612), (144.7 ± 13.03), (193.0 ± 46.17), (117.0 ± 2.629) dan (130.5 ± 8.890). Selain itu pemberian ekstrak Ai menunjukkan efek peningkatan pada kadar TLR4 ($p=0.03$) dengan mean $\pm$ SEM berturut-turut (1.967 ± 0.149), (2.632 ± 0.146), (2.687 ± 0.134), (2.902 ± 0.136) dan (2.513 ± 0.334). Pemberian ekstrak Ai juga menunjukkan peningkatan jumlah hitung sel radang di hati ($p=0.0001$) dengan mean $\pm$ SEM berturut-turut (25.92 ± 2.03), (46.76 ± 3.43), (44.28 ± 3.69), (46.32 ± 3.13) dan (30.72 ± 2.94). Pemberian ekstrak Ai tidak menunjukkan perbedaan bermakna pada kadar TLR2 serta ekspresi gen Nos2 dan Arg1. Kesimpulannya, ekstrak Ai dapat menurunkan kadar GDS dan GDP serta meningkatkan kadar TLR4 dan jumlah sel radang di hati.

.....*Acalypha indica* (Ai) is an herb that is known to have anti-inflammatory and anti-diabetic effects. This research was carried out with the aim of determining the effect of Ai extract on the inflammatory process as part of the innate immune response that occurs in type 2 diabetes mellitus. The research method was carried out using twenty-five Sprague-Dawley rats which were divided into five groups : the normal group, high fructose high cholesterol (DTFK) group, DTFK+Ai 250 mg/kgBW group, DTFK+Ai 400 mg/kgBW group and DTFK+pioglitazone group. The results showed that Ai extract at a dose of 400 mg/kgBW could reduce random blood glucose levels (GDS) ($p=0.005$) with mean $\pm$ SEM respectively (82 ± 5.73), (199.9 ± 27.55), (260.6 ± 67.29), (147.2 ± 12.18) and (148.8 ± 29.4). Ai extract at a dose of 400 mg/kgBW can also reduce fasting blood glucose (GDP) levels ($p=0.02$) with mean $\pm$ SEM respectively (76.65 ± 2.612), (144.7 ± 13.03), (193.0 ± 46.17), ($117.0\pm 2,629$) and ($130.5\pm8,890$). In addition, administration of Ai extract showed an increasing effect on TLR4 levels ($p=0.03$) with mean $\pm$ SEM respectively (1.967 ± 0.149), (2.632 ± 0.146), (2.687 ± 0.134), (2.902 ± 0.136) and (2.513 ± 0.334). Administration of Ai extract also showed an increase in the number of inflammatory cells in the liver ($p=0.0001$) with mean $\pm$ SEM respectively (25.92 ± 2.03), (46.76 ± 3.43), (44.28 ± 3.69), (46.32 ± 3.13) and (30.72). ±2.94). Administration of Ai extract did not show significant differences in TLR2 levels and Nos2 and Arg1 gene expression. In conclusion, Ai extract can

reduce GDS and GDP levels but increase TLR4 levels and the number of inflammatory cells.