Efek Ekstrak Akar Acalypha indica terhadap Ekspresi Itgax, TGF-1 dan Histopatologi Liver pada Tikus Obesitas = Effect of Acalypha Indica Root Extract on Expression of Itgax, TGF-B1 and Liver Histopathology in Obese Rats

Ilham Abid Hibattuloh, author

Abstrak

Latar Belakang

Obesitas merupakan masalah kesehatan pada abad ke-21 dan berkaitan erat dengan peningkatan masalah kesehatan seperti non-alcoholic fatty liver disease (NAFLD). Patofisiologi obesitas tersebut melibatkan makrofag proinflamatori M1 (salah satu marker adalah Itgax atau CD11c) dalam perkembangan NAFLD. Dalam kasus yang lebih berat, NAFLD dapat berkembang menjadi fibrosis liver yang melibatkan TGF-1. Meskipun pengobatan antiobesitas telah beredar dimasyarakat, namun obat tersebut dapat memiliki kontraindikasi dan efek samping masing-masing. Acalypha indica (Ai) merupakan salah satu tanaman herbal yang memiliki efek antihiperlipidemia dan antiobesitas. Penelitian ini akan menganalisis efek Ai terhadap perkembangan kerusakan liver melalui Itgax sebagai marker makrofag proinflamatori, TGF-1 dan histopatologi liver pada tikus obesitas.

Metode

Uji reverse transcription-quantitative polymerase chain reaction (RT-qPCR) dilakukan untuk mengukur ekspresi Itgax dan TGF- 1 serta pemeriksaan histologi untuk menilai ada/tidaknya inflamasi dan persentase rerata luas area sinusoid pada organ liver tersimpan tikus obesitas dengan perlakuan: (1) diet normal (kontrol normal), (2) diet tinggi fruktosa dan kolesterol (DTFK) (kontrol negatif), (3) DTFK + Gemfibrozil (kontrol positif), serta (4) DTFK + ekstrak Ai (DTFK + Ai).

Hasil

Ekspresi Itgax pada kelompok tikus DTFK+Ai (1,580 + 0,836) terbukti lebih rendah dibanding dengan kelompok kontrol negatif (1,880 + 1,293), ekspresi TGF-1 pada kelompok tikus DTFK+Ai (1,340 + 0,706) terbukti lebih rendah dibanding dengan kelompok kontrol negatif (1,850 + 1,358), walaupun tidak berbeda bermakna secara statistik. Di lain pihak, terjadi perbaikan inflamasi pada kelompok tikus DTFK+Ai dibanding dengan kontrol negatif, dan persentase rerata luas area sinusoid pada kelompok tikus DTFK+Ai (3,286 + 0,138) terbukti lebih tinggi dibanding dengan kontrol negatif (2,654 + 0,165).

Kesimpulan

Pemberian ekstrak akar Ai dapat menurunkan ekspresi Itgax dan TGF-1, memperbaiki inflamasi pada liver serta meningkatkan persentase luas rerata sinusoid liver tikus obesitas, walaupun memerlukan penelitian lebih lanjut.

.....Introduction

Obesity is a health problem in the 21st century and is closely related to an increase in health problems such as non-alcoholic fatty liver disease (NAFLD). The pathophysiology of obesity involves proinflammatory M1 macrophages (one of the markers is Itgax or CD11c) in the development of NAFLD. In more severe cases, NAFLD can progress to liver fibrosis involving TGF-1. Even though anti-obesity treatments have been circulating in the community, these drugs can have their own contraindications and side effects.

Acalypha indica (Ai) is a herbal plant that has antihyperlipidemia and antiobesity effects. This study will analyze the effect of Ai on the development of liver damage through Itgax as a marker for proinflammatory macrophages, TGF-1 and liver histopathology in obese mice.
Method
The reverse transcription-quantitative polymerase chain reaction (RT-qPCR) test was carried out to measure the expression of Itgax and TGF-1 as well as histology examination to assess the presence/absence of inflammation and the average percentage of sinusoid area in the stored liver organ of obese mice treated with: (1) diet normal (normal control), (2) high fructose and cholesterol diet (DTFK) (negative control), (3) DTFK + Gemfibrozil (positive control), and (4) DTFK + Ai extract (DTFK + Ai).
Results
Itgax expression in the DTFK+Ai group of mice (1.580 + 0.836) was proven to be lower than the negative control group (1.880 + 1.293), TGF- 1 expression in the DTFK+Ai group of mice (1.340 + 0.706) was proven to be lower than the negative control group. (1.850 + 1.358), although it is not statistically significantly different. On the other hand, there was an improvement in inflammation in the DTFK+Ai mice group compared to the negative control, and the average percentage of sinusoid area in the DTFK+Ai mice group (3.286 + 0.138) was proven to be higher than the negative control (2.654 + 0.165). Conclusion
Administration of Ai root extract can reduce the expression of Itgax and TGF-1, improve inflammation in the liver and increase the percentage of the average area of liver sinusoids in obese mice, although further research is needed.