

# Peran Ekstrak Biji Ketumbar (*Coriandrum sativum* L.) terhadap Ekspresi Gen HMG-KoA Reduktase pada Jaringan Hati Tikus Obesitas = The Role of Coriander (*Coriandrum sativum* L.) Seeds Extract on the Expression of HMG-CoA Reductase Gene in Obese Rat Liver

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## Abstrak

Latar Belakang Prevalensi obesitas dunia maupun Indonesia terus meningkat. Pada obesitas, terjadi peningkatan sintesis kolesterol hati dan dislipidemia yang berisiko menyebabkan kematian. Ketumbar diduga memiliki efek anti dislipidemia dengan menghambat enzim HMG-KoA reduktase. Oleh sebab itu, peneliti ingin meneliti pengaruh ekstrak biji ketumbar pada ekspresi HMG-KoA reduktase dalam sintesis kolesterol hati tikus obesitas. Metode Studi eksperimental melibatkan 29 tikus Wistar yang dibagi menjadi 5 kelompok: pakan standar, pakan standar yang diberi ekstrak ketumbar, pakan standar yang setelahnya diberi pakan tinggi lemak sekaligus ekstrak ketumbar, pakan tinggi lemak, dan pakan tinggi lemak yang diberi ekstrak ketumbar. Ketumbar diberi dengan dosis 100 mg/kgBB selama 12 minggu. Selanjutnya, jaringan hati dinekropsi dan RNA diekstraksi. Kemudian, dilakukan analisis RNA menggunakan quantitative real time reverse transcriptase polymerase chain reaction (qRT-PCR) dan ekspresi relatif HMG-KoA reduktase dihitung dengan metode Livak. Hasil Tidak terdapat peningkatan signifikan ( $p > 0.05$ ) ekspresi relatif mRNA HMG-KoA reduktase pada hati kelompok kontrol obes dibandingkan kontrol normal. Penurunan tidak signifikan ( $p > 0.05$ ) dari ekspresi relatif enzim juga terlihat pada kelompok normal yang diberi ekstrak ketumbar (dibanding kontrol normal) maupun obes yang diberi ekstrak ketumbar (dibanding kontrol obes). Kesimpulan Efek ekstrak etanol biji ketumbar dosis 100 mg/kgBB selama 12 minggu tidak memiliki dampak signifikan kuratif maupun preventif) dalam menurunkan sintesis kolesterol de novo hati melalui inhibisi ekspresi mRNA HMG-KoA reduktase pada tikus obesitas pasca pemberian pakan tinggi lemak.

.....Introduction The global prevalence of obesity, including in Indonesia, continues to increase. In obesity, there is an increase in hepatic cholesterol synthesis and dyslipidemia which carries the risk of causing death. Coriander is thought to have anti-dyslipidemic effects by inhibiting the HMG-CoA reductase enzyme. Therefore, researcher wants to analyze the effect of coriander seed extract on HMG-CoA reductase expression in liver cholesterol synthesis in obese rats. Method 29 Wistar rats are involved in this experimental study and divided into 5 groups: standard feed, standard feed given coriander extract, standard feed which was then changed to a high-fat diet and simultaneously given coriander extract, high-fat feed, and high-fat diet given coriander extract. Coriander was given at a dose of 100 mg/kgBW for 12 weeks. Next, the liver tissue was necropsied and RNA was extracted. RNA analysis was carried out using quantitative real time reverse transcriptase polymerase chain reaction (qRT-PCR). The relative expression of HMG-CoA reductase was calculated by the Livak method. Results There is no significant increase ( $p > 0.05$ ) in the relative expression of HMG-CoA reductase mRNA in the liver of obese controls compared to normal controls. Non-significant decrease ( $p > 0.05$ ) in the enzyme relative expression was also observed in the normal group given coriander extract (100 mg/kgBW) when compared to normal controls, as well as in the obese group given coriander extract when compared to obese controls. Conclusion The effect of coriander seed ethanol extract at a dose of 100 mg/kgBW for 12 weeks does not have a significant impact

(curative or preventive) to reduce hepatic de novo cholesterol synthesis, particularly through the inhibition of HMG-CoA reductase mRNA expression in obese mice following the consumption of a high-fat diet.