INTISARI

EKSPRESI GEN PENYANDI SMARCD1 DAN p16 PADA HEPAR TIKUS MODEL OBESITAS

Rizky Triutami Sukarno[1,2], Andreanyta Meliala[1], Rita Cempaka[3]

[1]Departmen Fisiologi, Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan, Universitas Gadjah Mada
[2]Magister Ilmu Biomedik, Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan, Universitas Gadjah Mada
[3]Patologi Anatomi, Fakultas Kedokteran, Kesehatan Masyarakat dan Keperawatan, Universitas Gadjah Mada

Latar Belakang: Pemberian *High Fat Diet* (HFD) menyebabkan lipogenesis pada jaringan adiposa. Lipid yang tersimpan dalam jaringan adiposa akan dilepas melalui proses lipolisis, menurunnya aktivasi lipoprotein lipase pada kondisi obesitas menyebabkan kegagalan lipolisis dan mengubah rute metabolisme lipid yang memicu terjadinya penuaan seluler pada organ hepar.
Tujuan: penelitian ini bertujuan untuk mengkaji pengaruh pemberian HFD terhadap ekspresi gen penyandi SMARCD 1 dan p16 pada organ hepar pada tikus model obesitas
Metode: Dua puluh empat ekor tikus *Sprague-Dawley* dibagi menjadi 4 kelompok (Kontrol, OB1, OB2, dan OB4) dengan masing-masing 6 ekor tikus. Kelompok Kontrol sebagai kontrol, OB1 obesitas 1 bulan, OB2 obesitas 2 bulan, dan OB4 obesitas 4 bulan. Kontrol diberi pakan standar AIN76-A. Tikus diterminasi setelah periode waktu yang telah ditentukan. *Reverse Transcription*-PCR (RT-PCR) dilakukan untuk mengetahui ekspresi SMARCD1 dan p16 dari jaringan hepar.
Hasil: Hasil pengukuran berat badan terdapat perbedaan yang signifikan antara kelompok kontrol *vs* perlakuan ($p \leq 0.05$), walau mengalami perbedaan kenaikan berat badan, tetapi semua kelompok perlakuan tidak masuk dalam kategori obesitas. Tidak terdapat perbedaan bermakna pada ekspresi gen SMARCD1 ($p=0.631$) Perbedaan bermakna pada ekspresi gen p16 hanya ditunjukkan pada kelompok Kontrol *vs* OB4 ($p=0.037$). Kadar tirgliserid menunjukkan perbedaan bermakna pada setiap kelompok Kontrol *vs* perlakuan ($p=0.009$). Kadar kolesterol darah menunjukkan perbedaan bermakna ($p=0.000$) kecuali pada kelompok Kontrol *vs* OB1 ($p=0.055$).
Kesimpulan: induksi HFD semala 1,2, dan 4 bulan tidak berpengaruh kepada ekspresi gen SMARCD1, namun induksi HFD selama 4 bulan terdapat pengaruh pada ekspresi gen p16 pada organ hepar
Kata kunci: metabolisme lipid, penuaan seluler, SMARCD1, p16.

ABSTRACT

EXPRESSION OF SMARCD1 AND p16 CODING GENES IN THE LIVER OF THE MOUSE MODEL OF OBESITY

Rizky Triutami Sukarno[1,2], Andreanyta Meliala[1], Rita Cempaka[3]

[1]Department of Physiology, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada
[2]Postgraduate Program of Biomedical Science, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada
[3]Department of Pathological Anatomy Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada

Background: High Fat Diet (HFD) administration causes lipogenesis in adipose tissue. Lipids stored in adipose tissue will be released through the process of lipolysis, decreased activation of lipoprotein lipases in obese conditions causes lipolysis failure and changes the route of lipid metabolism that triggers cellular senescence of the liver.
Purpose: This study aims to examine the effect of giving HFD on the expression of the SMARCD 1 and p16 coding genes in the liver in obese mice.
Methods: Twenty-four Sprague-Dawley rats were divided into 4 groups (Control, OB1, OB2, and OB4) with 6 mice each. The Control group as a control, obese 1 month OB1, 2 months obese OB2, and 4 months obese OB4. Controls were fed AIN76-A standard feed. The mice were terminated after a predetermined period of time. Reverse Transcription-PCR (RT-PCR) was performed to determine the expression of SMARCD1 and p16 from the hepatic tissue.
Results: The results of body weight measurement showed a significant difference between the control vs treatment group ($p \leq 0.05$), although there were differences in weight gain, all treatment groups were not included in the obesity category. There was no significant difference in the SMARCD1 gene expression ($p = 0.631$). The significant difference in p16 gene expression was only shown in the Control vs OB4 group ($p = 0.037$). Thyrglyceride levels showed significant differences in each control vs treatment group ($p = 0.009$). Blood cholesterol levels showed a significant difference ($p = 0.000$) except in the Control vs OB1 group ($p = 0.055$).
Conclusion: HFD induction for 1, 2, and 4 months has no effect on SMARCD1 gene expression, but HFD induction for 4 months has an effect on p16 gene expression in the liver.
Key words: lipid metabolism, cellular senescence, SMARCD1, p16