

INTISARI

Latar Belakang: Otot berperan pada homeostasis glukosa dan kejadian resistensi insulin. Otot rentan terhadap gangguan kerja insulin akibat peningkatan FFA penyebab perkembangan DMT2 dengan resistensi insulin. Asam palmitat merupakan jenis FFA yang mana pemberian berlebihan pada sel C2C12 dapat mempengaruhi stres oksidatif dan stres RE dengan peningkatan ekspresi TRB3 dan IL-6 terkait persinyalan insulin. Flavonoid biji mahoni mengandung antioksidan dan senyawa flavonoid 7-hidroksi-2-(4-hidroksi-3-metoksi-fenil)-kroman-4-one diketahui dapat mempengaruhi resistensi insulin.

Tujuan: Penelitian dilakukan untuk mengetahui pengaruh isolat 7-hidroksi-2-(4-hidroksi-3-metoksi-fenil)-kroman-4-one dari biji mahoni (*S. macrophylla* King.) terhadap ekspresi mRNA TRB3 dan IL-6 sel C2C12 yang diinduksi asam palmitat.

Metode: Sampel terbagi menjadi kelompok kontrol sel, PA, Metformin, IMF200, IMF100, dan IMF50. Pengukuran ekspresi gen TRB3 dan IL-6 dari sel C2C12 menggunakan metode qPCR dan analisis statistik dengan uji *one-way* ANOVA menggunakan GraphPad Prism dengan tingkat signifikansi $p < 0.05$.

Hasil: Ekspresi gen TRB3 lebih tinggi dibandingkan kelompok PA dan ekspresi gen IL-6 lebih rendah dibandingkan kelompok PA, namun pada kedua ekspresi gen tersebut berdasarkan hasil analisis statistik tidak terdapat perbedaan yang signifikan pada semua kelompok. Hasil uji *one way* ANOVA ekspresi mRNA gen TRB3 $p=0,6107$ dan IL-6 $p=0,2198$.

Kesimpulan: Tidak terdapat perbedaan ekspresi mRNA gen TRB3 dan IL-6 pada kelompok perlakuan isolat 7-hidroksi-2-(4-hidroksi-3-metoksi-fenil)-kroman-4-one dari biji mahoni (*S. macrophylla* King.) dengan kelompok PA.

Kata kunci: resistensi insulin, isolat *S. macrophylla* King, C2C12 myotube, TRB3, IL-6

ABSTRACT

Background: Muscle plays a role in glucose homeostasis and the incidence of insulin resistance. Muscle is susceptible to impaired insulin action due to an increase in FFAs that cause the development of T2DM with insulin resistance. Palmitic acid is a type of FFA which excessive administration to C2C12 cells can affect oxidative stress and RE stress with increased expression of TRB3 and IL-6 related to insulin signaling. Mahogany seed flavonoids contain antioxidants and the flavonoid compound 7-hydroxy-2-(4-hydroxy-3-methoxy-phenyl)-chroman-4-one is known to affect insulin resistance.

Objective: This study was conducted to determine the effect of 7-hydroxy-2-(4-hydroxy-3-methoxy-phenyl)-chroman-4-one isolate from mahogany (*S. macrophylla* King.) seeds on mRNA expression of TRB3 and IL-6 in palmitic acid-induced C2C12 cells.

Methods: Samples were divided into cell control, PA, Metformin, IMF200, IMF100, and IMF50 groups. Measurement of TRB3 and IL-6 gene expression of C2C12 cells using qPCR method and statistical analysis with one-way ANOVA test using GraphPad Prism with a significance level of $p < 0.05$.

Results: TRB3 gene expression was higher than the PA group and IL-6 gene expression was lower than the PA group, but in both gene expressions based on the results of statistical analysis there were no significant differences in all groups. One-way ANOVA test results of TRB3 gene mRNA expression $p = 0.6107$ and IL-6 $p = 0.2198$.

Conclusion: There was no difference in mRNA expression of TRB3 and IL-6 genes in the 7-hydroxy-2-(4-hydroxy-3-methoxy-phenyl)-chroman-4-one isolate treatment group from mahogany (*S. macrophylla* King.) seeds with the PA group.

Keywords: insulin resistance, *S. macrophylla* isolate, C2C12 myotube, TRB3, IL-6