INTISARI

Latar Belakang; Hiperlipidemia adalah suatu kondisi medis yang berhubungan dengan obesitas viseral. Manajemen hiperlipidemia berupa diet, olah raga, dan penurunan berat badan tetap merupakan kunci manajemen hiperlipidemia. Meskipun hubungan antara beberapa SNP dan obesitas/berat badan semakin jelas, peran risiko genetik pada efek paparan perilaku atau lingkungan seperti pola makan dan olahraga harus dieksplorasi lebih baik.

Tujuan Penelitian: Penelitian ini bertujuan untuk evaluasi variasi gen adipogenik seperti *Pparg* rs1801282, *Srebf1* rs2297508, *Lpl* rs285, dan *Adipoq* rs17300539 dan kukis isomaltooligosakarida terhadap persentase lemak tubuh, persentase lemak viseral, *body age*, dan *lipid accumulation product*.

Metode: Desain penelitian berupa kuasi eksperimental pra- dan pasca-perlakuan dengan kelompok kontrol. Intervensi kukis isomaltooligosakarida pada subjek acak dilakukan selama 4 minggu. Proses genotipe dilakukan dengan PCR-RFLP. Analisis data dilakukan uji ANOVA, t tidak berpasangan dan analisis multivariat dengan tingkat signifikansi $p < 0,05$.

Hasil:
Srebf1 rs2297508 alel C menunjukkan nilai awal persentase lemak tubuh yang lebih tinggi namun disertai penurunan setelah pemberian IMO sedangkan alel G justru menunjukkan peningkatan dari nilai awal yang lebih rendah walaupun perbedaan tersebut tidak signifikan (p=0,3169). Persentase lemak viseral tidak menunjukkan perbedaan antara masing-masing alel *Srebf1* rs2297508 (p=0,8427). *Srebf1* rs2297508 alel C juga menunjukkan nilai awal *body age* yang lebih tinggi dibanding alel G, namun tidak berbeda signifikan (p=0,2252). *Srebf1* rs2297508 tidak menunjukkan perbedaan bermakna untuk *lipid accumulation product* (p=0,8630). *Lpl* rs285 tidak menunjukkan perbedaan bermakna untuk persentase lemak tubuh, persentase lemak viseral, *body age*, dan *lipid accumulation product*. Varian *Pparg* rs1801282 dan *Adipoq* rs17300539 tidak ditemukan pada subyek penelitian ini. Penelitian lebih lanjut terkait mekanisme genotipe-fenotipe tersebut perlu dilakukan. Temuan ini juga menunjukkan keperluan studi serupa dan partisipan yang lebih banyak.

Kesimpulan: Variasi *Srebf1* rs2297508 maupun *Lpl* rs285 tidak berhubungan dengan penurunan persentase lemak tubuh, persentase lemak viseral, *body age*, dan *lipid accumulation product* pada pemberian kukis isomaltooligosakarida walaupun *Srebf1* rs2297508 alel C menunjukkan nilai awal persentase lemak tubuh dan *body age* yang lebih tinggi dibanding alel G. Penelitian serupa pada gen lain dan dengan jumlah subjek yang lebih besar diperlukan untuk pemahaman atas interaksi genotipe-fenotipe.

***Kata Kunci*:** Hiperlipidemia, isomaltooligosakarida, adipogenik

ABSTRACT

Background: *Hyperlipidemia is a medical condition associated with visceral obesity. Management of hyperlipidemia through diet, exercise, and weight loss remains the key to hyperlipidemia management. Although the association between several SNPs and obesity/weight is increasingly clear, the role of genetic risk on the effects of behavioral or environmental exposures such as diet and exercise should be better explored.*

Purpose: *This study aims to evaluate variations in adipogenic genes such as pparg rs1801282, srebf1 rs2297508, lpl rs285, and adipoq rs17300539 and isomaltooligosaccharide cookies on body fat percentage, visceral fat percentage, body age, and lipid accumulation product.*

Method: *The study design was a quasi-experimental pre- and post-treatment with a control group. Isomaltooligosaccharide cookie intervention in random subjects was carried out for 4 weeks. The genotyping process was carried out using PCR-RFLP. Data analysis was performed using ANOVA, unpaired t-test and multivariate analysis with a significance level of $p < 0.05$.*

Results: *The Srebf1 rs2297508 C allele showed a higher initial body fat percentage but decreased after IMO administration, while the G allele showed an increase from a lower initial value, although the difference was not significant ($p = 0.3169$). Visceral fat percentage did not show a difference between each Srebf1 rs2297508 allele ($p = 0.8427$). The Srebf1 rs2297508 C allele also showed a higher initial body age value than the G allele, but this difference was not significant ($p = 0.2252$). Srebf1 rs2297508 did not show a significant difference for lipid accumulation product ($p = 0.8630$). Lpl rs285 did not show a significant difference for body fat percentage, visceral fat percentage, body age, and lipid accumulation product. The Pparg rs1801282 and Adipoq rs17300539 variants were not found in the subjects of this study. Further research into the mechanisms of these genotype-phenotype associations is needed. These findings also highlight the need for similar studies with larger numbers of participants.*

Conclusion: *Variations in Srebf1 rs2297508 and Lpl rs285 were not associated with a decrease in body fat percentage, visceral fat percentage, body age, and lipid accumulation product when given isomaltooligosaccharide cookies, although the Srebf1 rs2297508 C allele showed a higher initial value of body fat percentage and body age than the G allele. Similar studies on other genes and with a larger number of subjects are needed to understand the genotype-phenotype interaction.*

Keywords: Hyperlipidemia, isomaltooligosaccharides, adipogenic