Asosiasi alel risiko SNP rs1421085 gen Fat Mass and Obesity-associated (FTO) terhadap obesitas pada populasi masyarakat Bali = Association of Fat Mass and Obesity-associated (FTO) gene snp rs1421085 risk allele with obesity in Balinese population

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Abstrak

Obesitas merupakan kondisi kelebihan lemak dalam tubuh akibat ketidakseimbangan energi. Obesitas dapat terjadi karena kombinasi dari faktor lingkungan dan faktor genetik. Beberapa penelitian menunjukkan bahwa single nucleotide polymorphism SNP rs1421085 gen fat mass and obesity-associated FTO bersosiasi dengan obesitas. Penelitian ini bertujuan untuk menentukan asosiasi alel risiko SNP rs1421085 dengan obesitas pada populasi Bali.

Studi dilakukan pada 573 sampel arsip yang berasal dari empat desa, yaitu Desa Legian yang mewakili populasi urban, serta Desa Penglipuran, Nusa Ceningan, dan Pedawa yang mewakili populasi rural. Obesitas dikategorikan berdasarkan indeks massa tubuh IMT dan obesitas sentral berdasarkan lingkar pinggang LP mengikuti klasifikasi WHO dan IDF untuk populasi Asia: IMT ge; 25 kg/m2 baik pada pria dan wanita, LP ge; 90 cm untuk pria dan LP ge; 80 cm untuk wanita.

Deteksi alel dilakukan menggunakan metode amplification refractory mutation system polymerase chain reaction ARMS PCR. Analisis asosiasi SNP rs1421085 dengan obesitas dan obesitas sentral dilakukan menggunakan uji regresi logistik ordinal dengan penyesuaian usia dan jenis kelamin.

Hasil penelitian menunjukkan bahwa frekuensi alel minor SNP rs1421085 ditemukan sebesar 0,41 serta distribusi genotipe sesuai dengan keseimbangan Hardy-Weinberg p = 0,227. Keberadaan dua alel C pada seorang individu kelompok rural berasosiasi dengan obesitas berdasarkan tiga model genetik, yaitu kodominan koefisien = 1,065, p = 0,008, resesif koefisien = 0,812, p = 0,016, dan aditif koefisien = 0,527, p = 0,010.

<hr><i>Obesity is a condition of excess fat in the body due to energy imbalance. Obesity can occur due to a combination of environmental factors and genetic factors. Several studies have shown that single nucleotide polymorphism SNP rs1421085 of fat mass and obesity associated FTO gene is associated with obesity. This study was conducted to determine the association of SNP rs1421085 risk allele with obesity in Balinese population.

The study was conducted on 573 archive samples from four villages Legian village representing urban population, and Penglipuran, Nusa Ceningan, and Pedawa villages representing rural population. Obesity was categorized based on body mass index BMI and central obesity based on waist circumference WC following WHO and IDF standard for Asian populations BMI ge 25 kg m2 both in male and female, WC ge 90 cm for male and WC ge 80 cm for female.

Allele detection was performed using amplification refractory mutation system polymerase chain reaction ARMS PCR method. Association analysis of SNP rs1421085 with obesity and central obesity was performed with ordinal logistic regression test with adjustments for age and gender.

The minor allele frequency of SNP rs1421085 was 0.41 and the genotype distribution corresponded to Hardy Weinberg equilibrium p 0.227. The existence of two C alleles in an individual of Balinese rural

population was associated with obesity based on codominant genetic model coefficient 1.065, p 0.008, recessive genetic model coefficient 0.812, p 0.016, and additive genetic model coefficient 0.527, p 0.010.