

## INTISARI

### **POLIMORFISME GEN *STEROL REGULATORY ELEMENT BINDING TRANSCRIPTION FACTOR-1* rs2297508 SEBAGAI FAKTOR RISIKO TERJADINYA DIABETES MELITUS TIPE 2 PADA ETNIS BUGIS**

**Latar Belakang:** Prevalensi diabetes melitus diprediksi akan terus meningkat hingga 3 kali lipat secara global termasuk di Indonesia. Peningkatan prevalensi ini dapat meningkatkan risiko terjadinya komplikasi dan berujung pada kematian dini. Variasi genetik pada gen *SREBF1* (Sterol Regulatory Element Binding Transcription Factor 1) rs2297508 (substitusi C>G) diketahui menjadi salah satu faktor yang dapat mempengaruhi kejadian DMT2 pada berbagai populasi. **Tujuan:** Penelitian ini bertujuan untuk menganalisis hubungan polimorfisme gen *SREBF1* rs2297508 sebagai faktor risiko terjadinya Diabetes Melitus Tipe 2 pada etnis Bugis di Sulawesi Tengah. **Metode:** Penelitian observasional dengan desain *case control*. Sampel yang digunakan merupakan sampel *whole blood* dari subjek etnis Bugis yang tinggal di Sulawesi Tengah. Sebanyak 200 subjek dikelompokkan menjadi 2 kelompok, yaitu kelompok DMT2 dan kelompok kontrol. Subjek dinyatakan DMT2 apabila memiliki kadar GDP  $\geq 126$  mg/dL dan atau HbA1c  $\geq 6,5\%$ . Pengukuran GDP dilakukan dengan metode GOD-PAP, sedangkan HbA1c diukur menggunakan HPLC. Analisis genotip dilakukan dengan metode PCR-RFLP. Analisis bivariat dan multivariat digunakan untuk mengetahui hubungan antara polimorfisme gen *SREBF1* rs2297508 dengan kejadian DMT2. **Hasil:** Frekuensi genotip GG dan gabungan genotip CG+GG pada kedua kelompok lebih tinggi dibandingkan genotip CC. Alel G meningkatkan risiko DMT2 pada keseluruhan subjek (OR=1,365; 95% CI = 1,161-3,168; nilai  $p = 0,045$ ) dibanding dengan genotip CC. Rerata kadar HbA1c dan GDP pada genotip GG lebih tinggi dibanding genotip CG dan CC. Analisis multivariat menunjukkan bahwa polimorfisme gen *SREBF1* rs2297508 berkaitan dengan risiko DMT2 pada kedua populasi setelah dikendalikan dengan variabel IMT, usia, jenis kelamin dan obesitas sentral. **Kesimpulan:** Individu dengan genotip CG + GG dan alel G polimorfisme gen *SREBF1* rs2297508 berperan dalam meningkatkan risiko terjadinya DMT2 dibanding individu dengan genotip CC dan alel C.

**Kata Kunci:** HbA1c, Diabetes Melitus Tipe 2, gen *SREBF1*, rs2297508

## ABSTRACT

### POLYMORPHISM OF STEROL REGULATORY ELEMENT BINDING TRANSCRIPTION FACTOR-1 GENE rs2297508 AS A RISK FACTOR OF TYPE 2 DIABETES MELLITUS IN BUGINESE TRIBE

**Background:** The prevalence of diabetes mellitus is predicted to rise threefold globally, including in Indonesia. The increasing prevalence can lead to a higher risk of complications and premature death. Genetic variation in *SREBF1* (Sterol Regulatory Element Binding Transcription Factor 1) gene rs2297508 (C>G substitution) is known to be one of the factors that can affect the incidence of T2DM in various populations. **Objective:** This study aims to analyze the relationship between the polymorphism *SREBF1* gene rs2297508 as a risk factor for Type 2 Diabetes Mellitus in the Buginese Tribe in Central Sulawesi. **Methods:** Observational research with a case-control design. The samples used were whole blood samples from Buginese tribe subjects living in Central Sulawesi. A total of 200 subjects were grouped into 2 groups, which were the T2DM group and the control group. Subjects were categorized as having T2DM if they had GDP  $\geq 126$  mg/dL and or HbA1c  $\geq 6.5\%$ . GDP was measured using the GOD-PAP method, while HbA1c was measured using HPLC. Genotyping analysis was performed using the PCR-RFLP method. Bivariate and multivariate analyses were used to determine the association between polymorphism *SREBF1* gene rs2297508 and T2DM incidence. **Results:** The frequency of the GG genotype and the combined CG+GG genotype in both groups was higher than the CC genotype. The G allele increased the risk of T2DM in all subjects (OR = 1.365; 95% CI = 1.161–3.168; p value = 0.045) compared to the C allele. Mean HbA1c and GDP levels in the GG genotype were higher than those in the CG and CC genotypes. Multivariate analysis showed that the polymorphism *SREBF1* gene rs2297508 was associated with T2DM risk in both populations after controlling for BMI, age, gender, and central obesity variables. **Conclusion:** Individuals with the CG + GG genotype and G allele of the polymorphism *SREBF1* gene rs2297508 contribute to an increased risk of T2DM compared to individuals with the CC genotype and C allele.

**Keywords:** HbA1c, Type 2 Diabetes Mellitus, *SREBF1* gene, rs2297508