

ABSTRAK

Gen CYP2A6 merupakan gen dengan polimorfisme tinggi. Adanya polimorfisme menyebabkan terbentuknya varian alel CYP2A6, salah satunya CYP2A6*4. Nikotin dalam rokok merupakan salah satu substrat enzim CYP2A6 yang disandi oleh gen tersebut. Dampak akibat adanya alel CYP2A6*4 adalah penurunan aktivitas enzim pemetabolisme nikotin. Penurunan aktivitas enzim CYP2A6*4 menyebabkan kadar nikotin tinggi dalam darah, memicu terjadinya DMT2 dan peningkatan kadar kolesterol.

Tujuan utama penelitian ini untuk mengetahui pengaruh polimorfisme gen CYP2A6 alel*4 terhadap kadar kolesterol total pada penderita DMT2 dengan riwayat merokok. Hasil dari penelitian ini terdapat polimorfisme gen yang ditemukan pada subyek uji dengan frekuensi genotipe CYP2A6*1/*1 sebanyak 0,93%; CYP2A6*1/*4 sebanyak 57,94%; dan CYP2A6*4/*4 sebanyak 41,12%. Pada perokok aktif diperoleh nilai *odds ratio* sebesar 0,909 yang menunjukkan bahwa perokok aktif yang memiliki alel CYP2A6*4 berisiko 0,909 kali lebih besar mengalami peningkatan kolesterol total dibandingkan kelompok perokok aktif yang tidak memiliki alel CYP2A6*4; sedangkan perokok pasif sebanyak 0,833; dan non perokok sebanyak 0,639. Pada penelitian ini tidak ditemukan pengaruh yang signifikan dari polimorfisme gen CYP2A6*4 terhadap kadar kolesterol total subyek uji, dibuktikan dengan perolehan nilai *odds ratio* pada perokok aktif sebanyak 0,949, perokok pasif sebanyak 0,900, dan non perokok sebanyak 0,756.

Kata Kunci :CYP2A6 alel*4, Diabetes Melitus Tipe 2, Kolesterol Total, Nikotin.

ABSTRACT

The CYP2A6 gene is a gene with high polymorphism. The presence of polymorphism causes the formation of CYP2A6 allele variants, one of which is CYP2A6*4. Nicotine in cigarettes is one of the substrates for the CYP2A6 enzyme that is encoded by this gene. The impact due to the presence of the CYP2A6*4 allele is a decrease in the activity of the nicotine metabolizing enzyme. Decreased activity of the CYP2A6*4 enzyme causes high levels of nicotine in the blood, triggers DMT2 and increases cholesterol levels.

The main goal of this study was to determine the effect of the CYP2A6 allele*4 gene polymorphism on total cholesterol levels in T2DM patients with a history of smoking. The results of this study showed that gene polymorphisms were found in test subjects with a genotype frequency of CYP2A6*1/*1 as much as 0.93%; CYP2A6*1/*4 as much as 57.94%; and 41.12% CYP2A6*4/*4. In active smokers, an odds ratio value of 0.909 was obtained which indicates that active smokers who have the CYP2A6*4 allele have a 0.909 times greater risk of having an increase in total cholesterol than the group of active smokers who do not have the CYP2A6*4 allele; while passive smokers were 0.833; and non-smokers as much as 0.639. In this study, there was no significant effect of the CYP2A6*4 gene polymorphism on the total cholesterol levels of the test subjects, as evidenced by the acquisition of the odds ratio in active smokers as much as 0.949, passive smokers as much as 0.900, and non-smokers as much as 0.756.

Keywords : CYP2A6 allele*4, Nicotine, Total Cholesterol, Type 2 Diabetes Mellitus.