DETEKSI DELESI --^{SEA}, -$\alpha^{3,7}$ DAN –$\alpha^{4,2}$ PADA GEN α-GLOBIN PEMBAWA α-THALASSEMIA

Nailil Husna

INTISARI

α-thalassemia merupakan kelainan genetik yang menyebabkan gangguan pada sintesis rantai α-globin, subunit penyusun hemoglobin. Penyebab utama α-thalassemia adalah delesi pada satu atau lebih rantai α-globin. Delesi yang umum menyebabkan α-thalassemia yaitu delesi --^{SEA} (*South East Asia*), delesi -$\alpha^{3,7}$ dan delesi -$\alpha^{4,2}$. Penelitian ini dilakukan untuk mendeteksi dan melakukan analisis kejadian tiga delesi tersebut pada 31 sampel yang diprediksi sebagai pembawa α-thalassemia berdasarkan uji hematologis Laboratorium Klinik Prodia. Tiga puluh satu sampel yang terbagi menjadi pembawa α-thalassemia dan pembawa α-thalassemia jenis ringan dilakukan uji molekuler *multiplex* gap-PCR untuk mengetahui genotipnya. Hasil uji molekuler diberbandingkan dengan prediksi uji hematologis. Sekuen dari alel mutan tiap sampel dianalisis untuk diketahui titik potong delesinya. Empat belas sampel telah diketahui genotipnya meliputi – –^{SEA}/$\alpha\alpha$ pada dua sampel,–$\alpha^{3,7}$/αα pada 10 sampel,–$\alpha^{4,2}$/αα pada satu sampel, dan satu sampel mengalami heterozigot ganda dengan genotip –$\alpha^{3,7/}$–$\alpha^{4,2}$. Titik potong delesi --^{SEA} ujung 5’ pada basa nomor 165.396 dan ujung 3’ pada basa nomor 184.699 dari kromosom 16, titik potong delesi -$\alpha^{3,7}$ berada pada basa nomor 252 hingga 428 dari sekuen *box* homolog Z, dan titik potong delesi –$\alpha^{4,2}$ berada pada basa nomor 45 hingga 366 dari sekuen *box* homolog X pada kromosom 16. Hasil prediksi uji hematologis menunjukkan kesesuaian dengan hasil uji molekuler pada 12 sampel.

Kata kunci: α-thalassemia, delesi SEA, delesi –$\alpha^{3,7}$, delesi –$\alpha^{4,2}$.

DETECTION OF --^{SEA}, -$\alpha^{3,7}$ DAN –$\alpha^{4,2}$ DELETIONS OF α-GLOBIN GENE IN α-THALASSEMIA CARRIERS

Nailil Husna

ABSTRACT

α-thalassemia is a genetic disorder interrupting α-globin chain synthesis which is one of haemoglobin component. It is caused by deletion of one or more α-globin gene. --^{SEA} (South East Asia) deletion, -$\alpha^{3,7}$ deletion and - $\alpha^{4,2}$ deletion are the most common deletion detected. The aims of this research are to detect those three deletions in 31 samples predicted as α-thalassemia carrier based on its haematological parameter by Laboratorium Klinik Prodia. The Three deletions was analysed its DNA sequence to determine the breakpoint site. The samples were divided into α-thalassemia traits and α-thalassemia silent trait. Multiplex gap-PCR was applied to determine the genotypes. The genotype was compared to the prediction of haematological parameters. The breakpoint site was analysed by DNA sequencing. Out of 31 samples, 14 samples were confirmed its genotypes, they are two samples with – –^{SEA}/αα genotype, 10 samples with –$\alpha^{3,7}$/αα genotype, one samples with –$\alpha^{4,2}$/αα genotype and one sample with - $\alpha^{3,7}$ and - $\alpha^{4,2}$ deletions or –$\alpha^{3,7/}$–$\alpha^{4,2}$ genotype. The 5’ breakpoint of SEA deletion located at nucleotide number 165.396 and the 3’ breakpoint is at nucleotide number 184.699 of chromosome number 16. The boundaries of –$\alpha^{3,7}$and –$\alpha^{4,2}$ deletions presented in short ranges that are within nucleotide number 252 to 429 of Z box of chromosome number 16 for -$\alpha^{3,7}$ deletion, and within nucleotides number 47 to 367 of Z box of chromosome number 16 for -$\alpha^{4,2}$ deletion. The haematological prediction and molecular confirmation showed same result in 12 samples.

Keyword: α-thalassemia, SEA deletion, –$\alpha^{3,7}$deletion, –$\alpha^{4,2}$ deletion.