Penentuan Intensitas Infeksi Blastocystis sp. Menggunakan Real-Time Polymerase Chain Reaction pada Masyarakat di Kecamatan Karawaci = Estimation of Infection Intensity of Blastocystis sp. by using Real-Time Polymerase Chain Reaction in a Community of Karawaci Sub-District

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Abstrak

Blastocystis sp. merupakan protozoa usus dengan variasi penyebaran subtipe di seluruh dunia. Infeksi Blastocystis sp. bersifat oportunistik, terjadi melalui jalur oral fekal dari makanan dan minuman terkontaminasi. Prevalensi parasit ditemukan tinggi di negara berkembang karena sanitasi dan higienisitas kurang. Korelasi antara subtipe berpotensi patogen dan manifestasi klinis tidak konsisten. Faktor lain yang belum diketahui dan mungkin berkorelasi dengan manifestasi klinis adalah intensitas infeksi. Deteksi infeksi Blastocystis sp. saat ini belum dapat menentukan intensitas infeksi, diagnosis secara molekuler terus dikembangkan. Tujuan penelitian untuk mengetahui estimasi jumlah kista berdasarkan nilai Cycle threshold (Ct) dari real-time PCR. Pada penelitian digunakan real-time PCR untuk mendeteksi berbagai konsentrasi parasit Blastocytis sp. dari hasil kultur untuk mendapatkan nilai Ct sehingga dapat diperoleh persamaan untuk menghitung intensitas infeksi. Hasil pemeriksaan mikroskopis tinja langsung (n=158) di Kecamatan Karawaci didapatkan sebanyak 58 orang (36,7%) terdeteksi positif terinfeksi Blastocystis sp. kemudian terkonfirmasi menggunakan real-time PCR sebanyak 73 orang (46,2%). Penggunaan real-time PCR pada penelitian ini dapat mendeteksi hingga tingkat pengenceran terendah yaitu 63 kista. Intensitas infeksi berdasarkan nilai Ct didapatkan rumus persamaan yaitu y = 100.000.000 × e-0.581X, sehingga dapat ditentukan intensitas infeksi Blastocystis sp. sampel tinja populasi pada nilai Ct 18,6 hingga 50 berkisar antara 0 hingga 81.080 kista per 100 mg tinja. Pada penelitian ini menunjukkan bahwa penggunaan nilai Ct pemeriksaan real-time PCR dapat menentukan intensitas infeksi Blastocystis sp.
.....Blastocystis sp. is an intestinal protozoan with various sub-types and is widely distributed in the world. Blastocystis sp. is an opportunistic parasite. Transmission may occur through the fecal-oral route of contaminated food and water. The prevalence is high in developing countries due to poor sanitation and hygiene. The correlation between potentially pathogenic subtypes of Blastocystis sp. and the clinical manifestations was considered inconsistent. The clinical manifestations may be correlated to the intensity of infection. Currently there is no standard diagnosis of Blastocystis sp. which can determine the intensity of infection. The aim of the study was to estimate the intensity of infection using Ct value of real time PCR. In this study, real-time PCR was used to determine Ct values from different concentrations of cysts produced by culture. The relationship between cyst concentrations and Ct values was used to make a mathematical equation for determination of infection intensity. Direct microscopic examination of fecal samples (n=158) from the Karawaci district revealed that 58 individuals (36.7%) were infected with Blastocystis sp. while real-time PCR could detect 73 individuals (46.2%). The PCR assay was able to detect the lowest concentration of 63 cysts. Using the mathematical equation based on parasite concentrations and Ct values, y = 100.000.000 × e-0.581X, the result showed that the intensity of infection from stool samples were ranging from 0 to 81,080 cysts per 100 mg stool with Ct values 18.6-50. This study demonstrated that real time PCR can be used to estimate the intensity of Blastocystis sp infection.