

# Potensi CD45 sebagai Biomarker untuk Diagnosis Kanker Kolorektal melalui Deteksi Ekspresi Gen pada Circulating Tumor Cells dan Peripheral Blood Mononuclear Cells = Potential of CD45 as a Biomarker for Diagnosis of Colorectal Cancer through Detection of Gene Expression in Circulating Tumor Cells and Peripheral Blood Mononuclear Cells

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## Abstrak

Kanker kolorektal adalah salah satu penyakit dengan jumlah penderita yang banyak di Indonesia. Metode deteksi dini kanker kolorektal merupakan hal yang penting karena dilaporkan bahwa diagnosa pada tahap awal dapat meningkatkan tingkat kesembuhan. Salah satu metode deteksi dini yang umum dilakukan adalah melalui skrining biomarker kanker kolorektal pada darah perifer (peripheral blood). Dalam darah perifer tersebut diketahui terdapat circulating tumor cells (CTCs) yang menandakan metastasis dan peripheral blood mononuclear cells (PBMCs) yang menandakan imunitas penderita kanker kolorektal. Biomarker CD45 (gen CD45) umum digunakan sebagai marker dalam metode seleksi negatif CTCs karena hanya diekspresikan pada PBMCs, akan tetapi telah dilaporkan bahwa CD45 juga diekspresikan pada microenvironment tumor kanker kolorektal, sehingga diperlukan penelitian lebih lanjut terkait ekspresi gen CD45 pada CTCs. Tujuan dari penelitian ini adalah untuk mendeteksi ekspresi gen CD45 pada CTCs dan PBMCs penderita kanker kolorektal dengan metode semi-kuantitatif RT-PCR dan direct immunofluorescence agar mengetahui potensinya sebagai biomarker deteksi kanker kolorektal. Delapan sampel darah perifer dari pasien kanker kolorektal RSUPN Dr. Cipto Mangunkusumo dikumpulkan, kemudian CTCs dan PBMCs diisolasi dari sampel darah tersebut. Hasil penelitian menunjukkan mRNA gen CD45 terdeteksi pada seluruh sampel CTCs dan PBMCs, serta ekspresi relatif lebih tinggi pada sampel PBMCs, sedangkan hasil deteksi protein gen CD45 hanya terdeteksi pada satu sampel PBMCs. Maka dapat disimpulkan bahwa mRNA gen CD45 terdeteksi baik pada CTCs maupun PBMCs sehingga berpotensi sebagai biomarker kanker kolorektal.

.....Colorectal cancer is one of the cancers with a high prevalence in Indonesia. The method for early detection of colorectal cancer is important because it has been reported that diagnosis in the early stages of the disease can increase the cure rate. One of the common methods for early detection is through screening the colorectal cancer biomarkers in peripheral blood that indicates metastasis (CTCs), and the immunity (PBMCs) of colorectal cancer patients. The CD45 biomarker (CD45 gene) is commonly used in the negative selection method for CTCs due to its expression only in PBMCs. Nevertheless, it has been reported that CD45 is also expressed in the microenvironment of colorectal cancer tumors, therefore further research is required. The purpose of this study is to detect the expression of the CD45 gene in CTCs and PBMCs of colorectal cancer patients using semi-quantitative RT-PCR and direct immunofluorescence in order to determine its potential as a biomarker for the detection of colorectal cancer. Peripheral blood samples from 8 patients at RSUPN Cipto Mangunkusumo were collected and then the CTCs and PBMCs were isolated from those samples. The results showed that the CD45 gene's mRNA was detected in all samples of both, with relatively higher expression in the PBMCs, while the CD45 gene's protein was detected only in one PBMCs sample. It can conclude that the mRNA of the CD45 gene was detected in both CTCs and PBMCs so that it

has the potential as a biomarker of colorectal cancer.