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Comparison of CD34+ and CD45+ cells enumeration by three different fluorescent methods

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Abstract

Enumeration of the stem cells and leukocytes in peripheral

blood and aphaeresis samples was performed by using biomarker expression of CD34+ and CD45+ proteins on their cell surface. The aim of this study was simultaneous counting of live stem cells and leukocytes in aphaeresis samples by using two different fluorescent conjugates. The conjugate between anti-CD34 monoclonal antibody and fluorescent dye DR110 stained stem cells in green color. The conjugate between anti-CD45 monoclonal antibody and fluorescent dye ATTO620 stained leukocytes in red color. The conjugates anti-CD34 antibody - DR110 and anti-CD45 antibody - ATTO620 were prepared by carbodiimide method and purified by gel filtration. The counting was performed by using a new automatic fluorescence microscope EasyCounter BC. The dead cells were counted by monomethyne cyanine dye - Sofia Green. The analyses of six aphaeresis samples were performed. The obtained results by EasyCounter BC were compared with results received by other two standard methods - flow cytometry (Guava easyCyte 8HT) and fluorescent microscopic method (Olympus BX51). The obtained cell counts from EasyCounter BC and the flow cytometer were very similar. The coefficients of variation of the obtained results with EasyCounter BC (3-6%) were lower than those with the flow cytometer (5-8%) and with the Olympus microscope (14-18%).



Biography:

Tzonka Godjevargova has completed her Phd and currently she is a professor at Department Biotechnology, in "Prof. Dr A. Zlatarov" University, Burgas, Bulgaria.



Speaker Publications:

1. "Biodegradation of Phenol and Phenolic Derivatives by a Mixture of Immobilized Cells of Aspergillus Awamori and Trichosporon Cutaneum"; April 2013 Biotechnology & Biotechnological Equipment 27(2):3681-3688

ISSN: 2161-1041

2. "Magnetic Nanoparticle-Based Fluorescence Immunoassay for Determination of Ochratoxin A in Milk"; August 2020Food Analytical Methods

DOI: 10.1007/s12161-020-01848-7

3. "CD34+ stem cell counting using labeled immobilized anti-CD34 antibody onto magnetic nanoparticles and EasyCounter BC image cytometer"; August 2020Analytical Biochemistry 610:113929

DOI: 10.1016/j.ab.2020.113929

4. "Immunofluorescence Assay Using Monoclonal and Polyclonal Antibodies for Detection of Staphylococcal Enterotoxins A in Milk"; November 2019The Open Biotechnology Journal 13(1):137-145 DOI: 10.2174/187407070190130137

24th European Biotechnology Congress; September 23-24, 2020, Webinar

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