Alternative approaches for total protein isolation from human blood leukocytes

Amar Balihodžić*[,1], Haris Henić*[,1], Nedim Maltez*[,1], Aladin Mrzić*[,1], Emin Musić*[,1], Zulejha Omerbašić*[,1], Abdallah Salhab*[,1], Muhammed El-Amin Zeid*[,1], Nadira Ibrišimović Mehmedinović[2], Velid Salihović[3], Semira Galijašević[1], Mirza Ibrišimović[1]

* contributed equally

[1]Sarajevo Medical School Faculty, University Sarajevo School of Science and Technology (SSST), Hrasnička cesta 3a, 71000 Sarajevo, Bosnia and Herzegovina
[2]Department of Chemistry, Faculty of Science, University of Tuzla, Univerzitetska 4, 75000 Tuzla, Bosnia and Herzegovina
[3]Department of Hematology and Transfusiology, General Hospital Brčko Distrikt, Banjalučka 3, 76100 Brčko Distrikt, Bosnia and Herzegovina

Abstract. White blood cells, also called leukocytes, are present in peripherial blood as a part of the human immune system against foreign invaders and different diseases. Studying the role of proteins within various types of leukocytes is cruical for understanding their mechanisms of action such as transendothelial migration during inflammation and the immune cell signaling. Proteomic analysis of leukocyte proteins requires a sufficient amount of total cellular proteins that must be isolated from a blood test sample. There are only a few studies dealing with the analysis of the total protein extract from human blood leukocytes, and many questions regarding the leukocyte signaling are still unanswered. In our study we investigated and optimized the best optimal method for total protein extraction from human blood leukocytes that allows preparation of large quantities of leukocyte proteins from the blood sample. Our study included human blood from 50 test individuals of different gender, age and blood groups.

Keywords: leukocytes, protein extraction, proteomic analysis, immunity.