Abstract

Monocytes and macrophages are important components of the innate immune response. These mononuclear phagocytes form a heterogeneous cell population, of which phenotype and functions can be modified under the influence of different signals coming from the surrounding microenvironment. The aim of this work was to modulate the phenotype of these cells by a variety of stimulants and to compare the changes induced on the model of THP-1 monocytic cell line and on the human peripheral blood monocytes. Surface marker expression was analyzed by flow cytometry. Further on, IL-8 production was evaluated by Luminex assay and the concentration of soluble calprotectin was assessed by ELISA. The most significant changes in surface marker expression were induced by exposure to IFNγ. This cytokine increased the expression of CD54, CD14 and HLA-DR on the surface of THP-1 cell line. Higher concentrations of IFNγ promoted higher apoptotic rate and augmented calprotectin expression and production in THP-1 cell line. On the surface of monocytes, IFNγ stimulation resulted only in the upregulation of CD54 expression. IL-4 increased the expression of CD36 by THP-1 cell line and inhibited the expression of CD163 by human monocytes. LPS stimulation caused the suppression of HLA-DR activation in monocytes and enhanced IL-8 production in THP-1. TNFα activated CD54 expression and IL-8 production in THP-1 cells. This work contributed to the standardization of stimulating conditions leading to phenotype modulation of human mononuclear phagocytes and demonstrated some differences between human monocytes and THP-1 monocytic cell line in the response to cytokine stimulation.