

## **Immunologic Characteristics of Milk: Differences Between Nonallergic and Allergic Mothers**

Maternal milk influences positively the development of newborn's immune system. Differences between milk of healthy and allergic mothers are not well established and the results concerning effect of allergic milk on newborn's immunity are controversial. In the present work, the effects of healthy and allergic colostrum/milk on the stimulation of cord blood lymphocytes of children of healthy and allergic mothers were studied. The properties of milk and cord blood cells were tested using cytokine and immunoglobulin detection by immunoenzymatic methods (ELISA and ELISPOT respectively), cell cultivation, <sup>3</sup>H-thymidine incorporation and cytokine mRNA expression by real-time PCR. According to the results obtained, there are not larger differences between healthy and allergic milk. Colostrum/milk in high concentration suppresses proliferation of cord blood lymphocytes after stimulation by polyclonal activators. Lymphocytes of children of allergic mothers incorporate <sup>3</sup>H-thymidine more intensively than lymphocytes of children of healthy mothers. On the other hand, colostrum/milk increases Ig production by stimulated cord lymphocytes in vitro. Cocultivation of milk cells with stimulated cord mononuclear leucocytes in Transwell system influences cytokine mRNA expression in cord leucocytes (suppresses IL-8 and EGF). Stimulated lymphocytes of children of allergic mothers express larger amount of IL-2 which is not further increased by milk cells. In nonstimulated cord blood cells immediately after birth, significantly lower expression of TGF- $\beta$ , IL-8 and IFN- $\gamma$  and higher expression of IL-10 in children of allergic mothers in comparison with children of healthy mothers were found..

In conclusion: Colostrum and milk influence stimulation of cord blood leucocytes. There are not significant differences between the effects of healthy and allergic colostrum/milk. There are differences in cord blood leucocytes of children of healthy and allergic mothers. Cord blood cells from allergic group are more prompt to proliferation and express different pattern of cytokines corresponding to allergic phenotype.

Key words: milk, cord blood leucocytes, immunoglobulin, cytokine, ELISPOT, real-time PCR, Transwell system, proliferation, expression

Klíčová slova: mléko, kolostrum, imunoglobulin, cytokin, ELISPOT, real-time PCR, exprese, proliferace