Abstract

Vitamin D_3 is important for keeping the right concetration of Ca^{2+} in plasma. Therefore it is essential for proper bone growth and development. Nevertheless, vitamin D_3 has also a number of immunomodulating effects.

Our thesis has been targeted on evaluation and comparison of vitamin D_3 influence on expression of chosen surface markers (CD14, CD54, HLA-DR, CD16, CD36 and CD163) with THP-1 cells and monocytes gained from human peripheral blood. Other aims have been analysing the vitamin D_3 influence on longevity of THP-1 cells and measuring the soluble CD14 and IL-8 production with THP-1 cells under the vitamin D_3 influence. The cells have been stimulated with five different concentrations of vitamin D_3 for the time 24, 48 and 72 hours.

Higher used concetrations of vitamin D_3, i.e. 100 nM and 1000 nM have increased the expression of CD14 with THP-1 cells in the time 48 and 72 hours of the stimulation time. With the monocytes from peripheral human blood the increase of the CD14 expression hasn´t been remarkable from the physiological point of view. Together with the vitamin D_3 concentration increase the sCD14 production with THP-1 cells was considerably higher. The sCD14 was the highest in the time 72 hours after the stimulation with the highest used vitamin D_3 concetration. The IL-8 quantity with THP-1 cells was getting higher together with increasing vitamin D_3 concetration. This amount was the highest in the time 48 hours of the stimulation time, then it decreased. Higher vitamin D_3 concentrations increased the CD54 expression with THP-cells. Neverheless, it hasn´t been observed with the peripheral human blood. Vitamin D_3 had no impact on HLA-DR, CD16, CD36 and CD163 expression with THP-1 cells and monocytes from peripheral human blood. No influence on the THP-1 cells longevity has been seen with either of vitamin D_3 concentration.