THE DISTINCT REGULATION OF INTERLEUKIN-17 AND INTERLEUKIN-22 PRODUCTION DURING HUMAN TH17 CELL DIFFERENTIATION

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Introduction: The Th17 cells are a subpopulation of T helper lymphocytes which produce several inflammatory cytokines, such as interleukin (IL)-17A, -17F, -21, -22, and tumor necrosis factor-α. The Th17 cells play an important role in the development of inflammation via their cytokine production as it was described in many autoimmune diseases. We studied the human in vitro Th17 cell differentiation during our work.

Methods: CD4 positive T cells were negatively separated by magnetic method from peripheral blood mononuclear cells (PBMC) of healthy volunteers. The cells were treated for 5-10 days with anti-CD3 and anti-CD28 antibodies and with TGFβ (2.5ng/ml), IL-6 (25ng/ml) and IL-1 (10ng/ml) cytokines, furthermore with anti-IL-4 (10μg/ml) and anti-IFNγ (10μg/ml) blocking antibodies. The IL-17 and IL-22 production were measured by ELISPOT and ELISA, the RORγt expression was measured by real-time PCR and by Western blot methods. Viability of the cells was monitored by the impendance based CASY TT system and by the flow cytometric measurement of Annexin V binding.

Results: Anti-CD3/CD28 treatment increased the IL-17 production, but did not alter the RORγt expression. The anti-IL-4 and anti-IFNγ antibody treatment significantly increased the anti-CD3/CD28, TGFβ, IL-6, and IL-1 induced RORγt expression. The IL-17 production was similar in the fifth and tenth day of the treatments by contrast the IL-22 production was greatly reduced by TGFβ, IL-6, IL-1, cytokines, anti-IL-4 and anti-IFNγ blocking antibodies. The applied treatments did not change the viability of the cells.

Implications: Our results suggest that IL-17 and IL-22 production are regulated in different ways during CD4 T cell activation and Th17 differentiation.

Academic subject
Oral presentation