Background: Human immunodeficiency virus (HIV) enters the cells using its surface glycoprotein gp120 that interacts with CD4 receptor. The immune dysfunction induced by HIV is then characterized not only by depletion of CD4+ T-cells, but also with anergy of cytotoxic CD8+ T lymphocytes which facilitates the persistence of HIV in the host organism. Stimulation CTLs by histamine is used in oncology patients with melanoma or in patients with chronic viral hepatitis C. We proposed that histamine will similarly induce activation of T lymphocytes in HIV+ patients and that it will stimulate HIV-specific response of CD8+ T cells by a similar mechanism and we evaluated this stimulation in context of total number of CD4+ cells.

Aim: We compared blood samples from 27 HIV-seronegative and 37 HIV-seropositive subjects after in vitro stimulation by histamine. We tested production of IFN-gamma by CTLs. This production was compared with total number of CD4+ T lymphocytes.

Hypothesis: We proposed that HIV specific CTLs can be activated after histamine incubation. As parameter of activation we considered the production of IFN-gamma. Methods: 1. We measured IFN-gamma production by HIV specific CTLs using stimulation by two HIV peptides (gp 120 and gag) and histamine by means of ELISPOT assay (BD Bioscience). 2. The level of CD4 T lymphocytes we measured using the monoclonal antibody: isotype control (gamma1FITC/gamma2aPE) anti-CD45 FITC, anti-CD14 PE, anti-CD3 FITC and anti CD4 PE (BD Bioscience). For analysis we used flow cytometry (BD Facscan).

Results: We found statistically significant differences in HIV specific CTLs IFN-gamma production between HIV positive subjects after activation by HIV peptide and histamine in contrast with stimulation by HIV peptide alone (T test, p = 0.02). We found differences in this production in context with total number of CD4+ cells, too. This statistically significant difference was detected only in patients with higher number of CD 4+ cells - over 0.5.10^9/l (T test, p = 0.05) in comparison with patients with level of CD4+ cells under 0.5.10^9/l (T test, p = 0.18).

Conclusion: HIV specific CTLs production of IFN-gamma was statistically significantly higher after stimulation by HIV peptides and histamine in HIV positive subjects compared to the production after stimulation by HIV peptides alone and this production depended on number of total CD4+ cells.