

Thelper1 and T helper2 cytokine production patterns in stressed beta2-adrenergic receptor-deficient mice during chlamydia genital infection. **Kristen Rolen**, Tesfaye Belay. Dept of Applied Sciences and Mathematics, Bluefield State University. Bluefield, WV 24701

Murine CD4⁺ T cells have two distinct cytokine secretion patterns to play different functions. We have demonstrated that cold-induced stress (CIS) suppresses the immune system leading to increased intensity of *Chlamydia muridarum* in mice. We have reported that beta2-adrenergic receptor (β 2-AR) knockout (KO) mice resist chlamydia genital infection. However, the cytokine profile of CD4⁺ T cells is not well explored. This study aimed to determine the cytokine production of Th1 and Th2 types in stressed and non-stressed β 2-AR KO mice. We investigated the cytokine production levels of stressed and non-stressed mice during *C. muridarum* genital infection. Significantly increased production of cytokines was observed in plates pre-coated with anti-CD3/CD28 or in the presence of Con A or LPS. A decrease in the production of IFN- γ and IL-2, whereas an increase in the secretion of IL-10, IL-13, and IL-23 in CD4⁺ T cells of stressed wild-type mice was obtained; however, the secretion of IFN- γ and IL-2 was restored in T cells of β 2-AR KO mice. Moreover, *in vitro* proliferation of CD4 T cells in the presence of β 2-AR antagonists, ICI 118, 551 stimulated the production of Th1 cytokines, whereas β 2-AR agonist, Fenoterol, decreased the production of Th1-type cytokines. Overall, Th1 cytokine responses are reduced in stressed mice suggesting that the cytokine status was polarized toward a Th2 immune response that can be restored by removing β 2-AR from immune cells. (Supported by pilot grant CNPR of WV-INBRE).