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Real time PCR study of cathelicidin gene expression in murine macrophages pretreated with different types of interferons and treated with *Candida albicans* and lipopolysaccharide

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Background and Aims: The present study was designed to explore the effects of different types of interferons (IFNs) pretreatment on gene expression of cathelicidin, an antimicrobial peptide, compare to treatment with Lipopolysaccharide (LPS) and C.albicans, in murine macrophages by Real time PCR method.
Methods: Murine macrophages were cultured in RPMI medium and sterile flasks. When cells reached to appropriate confluency, were counted and transferred to 24-well plate, in 6 groups: negative control (cells + medium), positive control (cells + medium + LPS), Interferon (cell + medium + IFN), Yeast (cell + medium + C.albicans), Test1 (cell + medium + IFN + C.albicans) and Test2 (cell + medium + IFN + LPS). Experiments, all were performed triplicate. After 18 hrs Pretreatment with IFNs and 6 hours treatment with C. albicans and LPS, Cells were washed and their RNA was extracted by Trizole. Then, the complementary DNA (cDNA) was synthesized by Reverse Transcriptase PCR. After drawing the standard curve for the murine Cathelicidin primer, expression of the gene was studied in each group in compared with house keeping gene beta-actin by Real Time PCR.
Results: IFN-α and IFN-β decreased the cathelicidin expression, respectively to 0.89 and 0.73, but IFN-γ increased that to 1.41. C.albicans decreased the value to 0.79 but LPS increased that to 67.21. In Test1 groups, the value decreased to 0.51 for IFN-α, 0.93 for IFN-β, and 0.52 for IFN-γ. But this amount in Test2 groups, raised to 298.0 for IFN-α, 205.51 for IFN-β, and 84.22 for IFN-γ.
Conclusions: These findings confirm that pretreatment with IFN-α and IFN-β decrease and IFN-γ increase the cathelicidin gene expression in murine macrophages. Treatment with LPS, and C.albicans respectively Upregulate and downregulate the value. Co-treatment with IFN + C.albicans reduce, and with IFN + LPS raise the gene expression but less than LPS alone.

Keywords: Cathelicidin; Interferons; Real time PCR