

Effect of Probiotics and Vitamin B on Plasma Interferon-Gamma and Interleukin-6 Levels in Active Pulmonary Tuberculosis

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Abstract : Interferon-gamma (IFN- γ) and interleukin-6 (IL-6) are pro-inflammatory cytokines, which have the protective immune response against Tuberculosis (TB). Indeed, pro-inflammatory cytokines Mycobacterium tuberculosis antigen-specific CD4+ and CD8+ T cells and NK cells increase the level of production of IFN- γ , a cytokine critical for augmenting the microbicidal activity of phagocytes. On the other hand, M. tuberculosis reduces the effects of IFN- γ by inhibiting the transcription of IFN- γ - responsive genes and by inducing the secretion of IL-6, which inhibits IFN- γ signaling. Probiotics Lactobacillus sp. and Bifidobacterium sp. were known to increase IFN- γ production in vivo, while vitamin B1, B6, and B12 worked on macrophages and releasing cytokines. Therefore, the present study was to evaluate the effect of probiotics and vitamin B supplement on changes of plasma cytokine levels in active pulmonary TB. From October to November 2016, twelve M. tuberculosis-infected patients starting anti-TB drugs were recruited, then divided into two groups. Seven patients were given a combination of probiotics and vitamin B, while five patients were in the control group. Plasma IFN- γ and IL-6 levels were measured by the ELISA kit before and a month after treatment. IFN- γ levels raised in four patients receiving the supplement ($P = 0.743$), while IL-6 increased in three patients in this group until day 30 of treatment ($P = 0.298$). Taken together, these results show the promising effect of probiotics and vitamin B on stimulation of IFN- γ and IL-6 production during intensive therapy of TB.

Keywords : interferon-gamma, interleukin-6, probiotic, tuberculosis

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