

## The Effect of Probiotic and Vitamin B Complex Supplementation on Interferon- $\gamma$ and Interleukin-10 Levels in Patients with TB Infection during Intensive Phase Therapy

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**Abstract :** Approximately, a million new cases of TB have been found out per year, making Indonesia as the second greatest country with TBC after India. Nevertheless, until now, there are still many patients failure to conventional therapy with oral anti tuberculosis. Thus, the discovery of supplement therapy is urgently needed. Many studies showed that probiotic had the positive impact in lung diseases, diarrhea, pneumonia and it was attributed to its capability to balance the level of cytokine pro-inflammatory and anti-inflammatory. It was demonstrated in active disease the production of IFN- $\gamma$  is strongly depressed and IL-10 level increases. This study aimed to investigate the effect of probiotic (multi strains) and vitamin B complex supplementation on IFN- $\gamma$  and IL-10 level in patients with TB infection during intensive phase therapy. A randomized controlled trial, open labeled was conducted in TB patients with the following criteria: 1) age 18-55 years old 2) receiving oral antituberculosis during intensive therapy 3) not using probiotic, vitamin B1, B6, B12 2 weeks before enrollment 4) willing to participate in this study and signed an informed consent. While, patients with HIV, pregnant, had the history of diabetes mellitus, using corticosteroid or other immunosuppressants were excluded. IFN- $\gamma$  and IL-10 levels were drawn before observation and after a month observation. The assay was performed by ELISA. There were seven patients in treated group and five patients in controlled group obtained in this study. Between groups, there was no statistical difference in comorbid, age, and disease duration. The mean level of IFN- $\gamma$  after a month observation increased in treated group and controlled group, which were  $31.47 \pm 105.46$  pg/ml and  $15.09 \pm 24.23$  pg/ml, respectively ( $p > 0.005$ ). Although, there were not statistically different, treated group showed a greater increase of IFN- $\gamma$  level than that of the controlled group. IFN- $\gamma$  plays an important role in immune response to Mycobacterium Tuberculosis, by activating macrofag, monosit and furthermore killing Mycobacterium Tuberculosis. Thus the level was expected to increase after supplementation with probiotic and Vitamin B complex. While the mean level of IL-10 also increased after one month observation in the treated group and controlled group ( $4.28 \pm 12.29$  pg/ml and  $5.77 \pm 6.21$  pg/ml, respectively) ( $p > 0.005$ ). To be compared, the increased level of IL-10 in the treated group were lower than the controlled group, although it was not statistically different. IL-10 is a cytokine anti-inflammatory, thus, the level after the observation was expected to decrease. In this study, a month therapy of probiotic and vitamin B complex was not able to demonstrate the decrease of the IL-10 level. It is suggested to prolong observation up to 2 months, because, in intensive phase, the level of cytokine anti-inflammatory is very high, so the longer therapy is needed. It is indicated that supplementation therapy with probiotic and vitamin B complex to Oral Anti-Tuberculosis may have a positive effect on increasing IFN- $\gamma$  level and slowing the progression of IL-10.

**Keywords :** TB Infection, IFN- $\gamma$ , IL-10, probiotic, vitamin B complex

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