

## ABSTRACT

### EFFECT OF PROBIOTIC AND VITAMIN B<sub>1</sub>, B<sub>6</sub>, B<sub>12</sub> SUPPLEMENTATION ON IFN- $\gamma$ AND IL-12 REACTIVELY CHANGES IN TUBERCULOUS PATIENTS WITH ANTI TUBERCULOSIS CATEGORY 1

**Background:** Tuberculosis is an acute infectious disease that primarily affects the lungs. Probiotic supplementation proved to increase the number and activity of NK cell in peripheral blood by immunomodulation by IL-12, thus can increase IFN- $\gamma$  production by Th1 response. Vitamin B<sub>1</sub> acts on macrophages and affects neutrophil motility. Vitamin B<sub>6</sub> is associated with the release of cytokines and the responsiveness of NK cells, vitamin B<sub>12</sub> affects to lymphocytes, T cell proliferation, CD4<sup>+</sup> ratios, and NK cell activity.

**Objectives:** This study aimed to analyze the effects of probiotics and vitamin B<sub>1</sub>, B<sub>6</sub>, B<sub>12</sub> supplementation on IFN- $\gamma$  and IL-12 levels in patients with TB infection during intensive phase therapy.

**Methods:** This study was conducted on December 2016 to February 2017 at Universitas Airlangga Hospital and Community Health Centers in Surabaya. Patients were divided into two groups standard regimen group and treatment group with once daily supplementation of probiotics and vitamin B<sub>1</sub>, B<sub>6</sub>, B<sub>12</sub>. Primary outcomes were measured plasma IFN- $\gamma$  and IL-12 levels before initiation of study, after one month and two months after treatment.

**Results:** 22 patients were divided into two groups. Plasma IFN- $\gamma$  levels in the control (p=0.445) and treatment group (p=0.241) increased in first month then decreased after second months. Plasma IL-12 levels in control (p=0.091) and treatment group (p=0.061) increased in first month then decreased after second months.

**Conclusion:** Therapy of probiotics and vitamin B<sub>1</sub>, B<sub>6</sub>, B<sub>12</sub> supplementation tend to increase plasma IFN- $\gamma$  and IL-12 levels in the first month and decrease in the second month.

**Keywords:** IL-12, IFN- $\gamma$ , Probiotic, Tuberculosis infection, Vitamin B<sub>1</sub>, B<sub>6</sub>, B<sub>12</sub>