

**PENGARUH PEMBERIAN KOMBINASI PROBIOTIK
DAN ZINC TERHADAP KADAR LIMFOSIT,
NEUTROPHIL LYMPHOCYTE COUNT RATIO (NLR) DAN
MONOSIT PADA PASIEN TUBERKULOSIS PARU**

Studi Kasus di Balai Kesehatan Paru Masyarakat (BKPM) Semarang

***EFFECT OF COMBINED PROBIOTICS AND ZINC
SUPPLEMENTATION ON THE LYMPHOCYTES, NEUTROPHILE
LYMPHOCYTES COUNT RATIO (NLR) AND MONOCYTES LEVELS
OF PULMONARY TUBERCULOSIS PATIENTS***

The Case Study on Clinic Lung (BKPM) Semarang



Tesis

**Untuk memenuhi sebagian persyaratan
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ABSTRAK

PENGARUH PEMBERIAN KOMBINASI PROBIOTIK DAN ZINC TERHADAP KADAR LIMFOSIT, *NEUTROPHIL LYMPHOCYTE COUNT RATIO* (NLR) DAN MONOSIT PADA PASIEN TUBERKULOSIS PARU

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Latar Belakang: Pasien tuberkulosis paru umumnya mengalami malnutrisi akibat efek samping obat anti tuberkulosis, yang menyebabkan gangguan saluran cerna, hal ini mempengaruhi proses penyembuhan, daya tahan tubuh dan respon imunitas. Probiotik dan zinc diduga memiliki efek menguntungkan bagi status gizi dan respon imunitas.

Tujuan: Untuk menganalisis pengaruh pemberian kombinasi probiotik dan zinc terhadap kadar limfosit, *neutrophil lymphocyte count ratio* (NLR) dan monosit pada pasien tuberkulosis paru di Balai Kesehatan Paru Masyarakat (BKPM) Semarang.

Metode: Penelitian eksperimen semu (*quasi experiment*) dengan rancangan *randomized pre-post test control group design*. Lima puluh empat pasien tuberkulosis paru dibagi 2 kelompok, kelompok perlakuan diberikan kombinasi probiotik dan zinc, serta kelompok kontrol diberikan plasebo, pemberian selama 4 minggu. Analisis data menggunakan uji *Independent, Mann-Whitney, Wilcoxon, Pearson* dan *Covariance*.

Hasil: Tidak terdapat perbedaan rerata umur, kadar limfosit, NLR dan monosit pada awal penelitian ($p>0.05$). Terjadi peningkatan kadar limfosit dan penurunan kadar NLR serta monosit setelah pemberian kombinasi probiotik dan zinc ($p<0.05$). Tidak terdapat hubungan yang bermakna antara asupan zat gizi dengan kadar limfosit, NLR dan monosit ($p>0.05$). Efektifitas pemberian kombinasi probiotik dan zinc paling kuat terdapat pada kadar limfosit (12.8%).

Simpulan: Pemberian kombinasi probiotik dan zinc selama 4 minggu mampu meningkatkan sistem imunitas pasien tuberkulosis paru yang diukur dari kadar limfosit, NLR dan monosit.

Kata Kunci: Kombinasi Probiotik dan Zinc, Kadar Limfosit, Kadar NLR, Kadar Monosit, Tuberkulosis Paru.

ABSTRACT

EFFECT OF COMBINED PROBIOTICS AND ZINC SUPPLEMENTATION ON THE LYMPHOCYTES, *NEUTROPHILE LYMPHOCYTES COUNT RATIO* (NLR) AND MONOCYTES LEVELS OF PULMONARY TUBERCULOSIS PATIENTS

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Background: Patients with pulmonary tuberculosis generally malnourished due to side effect in anti-tuberculosis drugs, which altering gastrointestinal tract, it affects on recovery process, immune system and response. Probiotics and zinc are thought to have beneficial effects for nutritional status and immune response.

Objective: To analyze the effect of combined probiotics and zinc on levels of lymphocytes, neutrophils lymphocyte count ratio (NLR) and monocytes in patients with pulmonary tuberculosis in Clinic Lung (BKPM) Semarang.

Methods: a quasi-experimental study (quasi experiment) randomized design with pre-post test control group design. Fifty four pulmonary tuberculosis patients divided into 2 groups, the treatment group received a combination of probiotics and zinc, as well as a control group given a placebo, administration for 4 weeks. Independent data analysis using the test, Mann-Whitney, Wilcoxon, Pearson and Covariance.

Results: There were no differences in mean age, levels of lymphocytes, and monocytes NLR at baseline ($p > 0.05$). Increased levels of lymphocytes and decreased levels of monocytes and NLR after administration of the combination of probiotics and zinc ($p < 0.05$). There was no significant relationship between nutrients intake with high levels of lymphocytes, NLR and monocytes ($p > 0.05$). The most powerful effectiveness of the combination probiotics and zinc contained in the lymphocyte levels (12.8%).

Conclusion: the combined probiotics and zinc over 4 weeks improve the immune system of patients with pulmonary tuberculosis measured by lymphocytes, NLR and monocytes.

Keywords: Combined Probiotics and Zinc, Lymphocytes, NLR, Monocytes, Pulmonary Tuberculosis.

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