

TESIS

**PERAN ZINC SULPHATE DAN OMEGA-3 TERHADAP PENINGKATAN BERAT
BADAN, KADAR ALBUMIN, JUMLAH LIMFOSIT T CD-4 DAN PERCEPATAN
KONVERSI SPUTUM PADA PENDERITA TUBERCULOSIS PARU DI RS PARU
SURABAYA**



FARA DISA DURRY

**UNIVERSITAS AIRLANGGA
FAKULTAS KESEHATAN MASYARAKAT
PROGRAM MAGISTER
PROGRAM STUDI ILMU KESEHATAN MASYARAKAT
SURABAYA
2015**

TESIS

**PERAN ZINC SULPHATE DAN OMEGA-3 TERHADAP PENINGKATAN BERAT
BADAN, KADAR ALBUMIN, JUMLAH LIMFOSIT T CD-4 DAN PERCEPATAN
KONVERSI SPUTUM PADA PENDERITA TUBERCULOSIS PARU DI RS PARU
SURABAYA**



**FARA DISA DURRY
NIM. 101314153064**

**UNIVERSITAS AIRLANGGA
FAKULTAS KESEHATAN MASYARAKAT
PROGRAM MAGISTER
PROGRAM STUDI ILMU KESEHATAN MASYARAKAT
SURABAYA
2015**

**PERAN ZINC SULPHATE DAN OMEGA-3 TERHADAP PENINGKATAN BERAT
BADAN, KADAR ALBUMIN, JUMLAH LIMFOSIT T CD-4 DAN PERCEPATAN
KONVERSI SPUTUM PADA PENDERITA TUBERCULOSIS PARU DI RS PARU
SURABAYA**

TESIS

**Untuk memperoleh gelar Magister Kesehatan
Minat Studi Gizi Kesehatan Masyarakat
Program Studi Ilmu Kesehatan Masyarakat
Fakultas Kesehatan Masyarakat
Universitas Airlangga**

Oleh:

**FARA DISA DURRY
NIM. 101314153064**

**UNIVERSITAS AIRLANGGA
FAKULTAS KESEHATAN MASYARAKAT
PROGRAM MAGISTER
PROGRAM STUDI ILMU KESEHATAN MASYARAKAT
SURABAYA
2015**

iii

PENGESAHAN

Dipertahankan di depan Tim Penguji Tesis
Minat Studi Gizi Masyarakat
Program Studi Ilmu Kesehatan Masyarakat
Fakultas Kesehatan Masyarakat Universitas Airlangga
dan diterima untuk memenuhi persyaratan guna memperoleh gelar
Magister Kesehatan (M.Kes.)
Pada tanggal 12 Agustus 2015

Mengesahkan

Universitas Airlangga
Fakultas Kesehatan Masyarakat

Dekan,

Prof. Dr. Tri Martiana, dr., M.S.
NIP. 195603031987012001 †

Tim Penguji :

Ketua : Prof. Kuntoro, dr., M.PH., Dr.PH
Anggota : 1. Prof. Bambang W., dr., M.S., MCN., Ph.D., Sp.GK
2. Dr. Merryana Adriani, S.KM., M.Kes
3. Dr. Sri Hartiningsih, dr., M.Kes
4. Dr. Kusdiantoro, Sp.P

PERSETUJUAN

TESIS

Diajukan sebagai salah satu syarat untuk memperoleh gelar
Magister Kesehatan (M.Kes.)
Minat Studi Gizi Kesehatan Masyarakat
Program Studi Ilmu Kesehatan Masyarakat
Fakultas Kesehatan Masyarakat
Universitas Airlangga

Oleh :

FARA DISA DURRY
NIM. 101314153064

Menyetujui,
Surabaya, 12 Agustus 2015

Pembimbing, Ketua

Pembimbing

Prof. Bambang W., dr., M.S., MCN., Ph.D., Sp.GK
NIP. 194903201977031002

Dr. Merryana Adriani, S.KM., M.Kes
NIP. 195905171994032001

Mengetahui,
Plt. Koordinator Program Studi Ilmu Kesehatan Masyarakat

Nurul Fitriyah, S.KM., MPH₂
NIP. 197511212005012002

PERNYATAAN TENTANG ORISINALITAS

Yang bertanda tangan dibawah ini, saya :

Nama : Fara Disa Durry
NIM : 101314153064
Program Studi : Ilmu Kesehatan Masyarakat
Minat Studi : Gizi Kesehatan Masyarakat
Angkatan : 2013/2014
Jenjang : Magister

Menyatakan bahwa saya tidak melakukan kegiatan plagiat dalam penulisan tesis saya yang berjudul:

PERAN ZINC SULPHATE DAN OMEGA-3 TERHADAP PENINGKATAN BERAT BADAN, KADAR ALBUMIN, JUMLAH LIMFOSIT T CD-4 DAN PERCEPATAN KONVERSI SPUTUM PADA PENDERITA TUBERCULOSIS PARU DI RUMAH SAKIT PARU SURABAYA

Apabila suatu saat nanti terbukti saya melakukan tindakan plagiat, maka saya akan menerima sanksi yang telah ditetapkan.

Demikian surat pernyataan ini saya buat dengan sebenar-benarnya.

Surabaya, 12 Agustus 2015

BETTER
TEMPEL
62700ADP2352045
6000
FARA DISA DURRY



KATA PENGANTAR

Puji syukur kehadiran Allah SWT atas lindungan, karunia, rahmat dan ridho-Nya sehingga penyusunan tesis dengan judul **PERAN ZINC SULPHATE DAN OMEGA-3 TERHADAP PENINGKATAN BERAT BADAN, KADAR ALBUMIN, JUMLAH LIMFOSIT T CD-4 DAN PERCEPATAN KONVERSI SPUTUM PADA PENDERITA TUBERCULOSIS PARU DI RS PARU SURABAYA** dapat diselesaikan.

Tesis ini berisikan mengenai peran Zinc Sulphate dan Omega-3 terhadap berat badan, kadar albumin, limfosit T CD-4 dan percepatan konversi sputum penderita TB paru, dan hasil temuan ini dapat membantu para peneliti untuk mengetahui fungsi Zinc Sulphate dan Omega-3 dengan lebih mendalam.

Ucapan terima kasih yang tak terhingga saya sampaikan kepada **Prof. Bambang Wirjatmadi, dr., MS., MCN., Ph.D., Sp.GK**, selaku pembimbing ketua yang dengan kesabaran dan perhatiannya dalam memberikan bimbingan, semangat dan saran hingga tesis ini dapat terselesaikan dengan baik. Ucapan terima kasih yang tak terhingga juga saya sampaikan kepada ibu **Dr. Merryana Adriani, SKM., M.Kes** selaku pembimbing kedua, yang telah banyak meluangkan waktu untuk memberikan bimbingan, motivasi dan saran demi kesempurnaan tesis ini.

Dengan terselesainya tesis ini, perkenankan saya mengucapkan terima kasih yang sebesar-besarnya kepada :

1. Prof.Dr.Moh.Nasih, SE., MT.AK selaku Rektor Universitas Airlangga Surabaya yang telah berkenan menerima kami untuk belajar di Program Magister Program Studi Ilmu Kesehatan Masyarakat.
2. Prof.Dr.Tri Martiana,dr.,M.S selaku Dekan Fakultas Kesehatan Masyarakat yang telah memberikan arahan dalam penyusunan tesis ini.
3. Nurul Fitriyah,S.KM.,M.PH selaku Plt. Koordinator Ketua Program Studi Ilmu Kesehatan Masyarakat beserta seluruh dosen dan karyawan yang telah memberikan bimbingan ilmunya serta memberikan pelayanan selama kami menuntut ilmu di Universitas Airlangga.
4. Ketua Minat Gizi Kesehatan Masyarakat, Prof. Bambang Wirjatmadi, dr., MS., MCN., Ph.D., Sp.GK, yang penuh kesabaran dalam membimbing kami selama perkuliahan di program magister Kesehatan Masyarakat.
5. Ketua penguji, Panitia penguji, Prof. Kuntoro,dr., M.PH., Dr. PH, Dr. Sri Hartiningsih, dr., M.Kes, dr. Koesdiantoro, Sp.P, yang telah memberikan saran dan koreksi dalam perbaikan tesis.
6. Seluruh Dosen Program Studi Ilmu Kesehatan Masyarakat - FKM Unair, yang telah memberikan ilmu dan pengalaman berharganya selama masa perkuliahan di FKM Unair
7. Direktur RS Paru Surabaya yang telah memberikan kesempatan dan ijinnya untuk melakukan penelitian di wilayah kerjanya.
8. Suami saya tercinta Sukma Sahadewa, dr., SH., MH., M.Kes., MIP, yang telah memberikan dorongan, pengorbanan, pengertian dan doanya.
9. Anak-anak saya tersayang, Devara Sukma Mahatma dan Astadevi Sukma

Kalyana, yang telah turut mendukung saya selama proses perkuliahan berlangsung.

10. Keluarga besar saya di Surabaya khususnya mama saya tercinta Ria Dhatus Solichah, dan keluarga besar Kediri (bapak, ibu serta adik-adik tersayang), yang turut memberi dukungan semangat dan doa kepada saya.
11. Semua teman-teman sepeminatan (Bu Tini, Mbak Kiki, Mbak Fitri, Bu Vera, Bu Yuni, Mbak Linda, Mbak Dessy, Mbak Inun, Mbak Ifa), yeni siswati dan Bu Wahyu yang selalu saya reportkan, terima kasih atas segala supportnya, serta semua teman IKM angkatan 2013 yang tidak bisa sebutkan satu-satu.
12. Semua pihak yang tidak dapat saya sebutkan satu persatu, terima kasih atas segala bantuan dan perhatiannya selama saya menyelesaikan pendidikan ini.

Demikian, semoga tesis ini bisa memberi manfaat bagi diri kami sendiri dan pihak lain yang menggunakan.

Surabaya, 12 Agustus 2015

Penulis

SUMMARY

The Role Of Zinc Sulphate And Omega-3 In Improving Body Weight, Albumin Level, Increasing T-Lymphocytes CD-4 Cells, And Accelerating Sputum Conversion On Pulmonary Tuberculosis Patients In Paru Hospital Surabaya

According to its epidemiology, Tuberculosis (TB) is associated with malnutrition. Several efforts have been consistently carried out by World Health Organization (WHO) to reduce global mortality and morbidity rate caused by TB as one of Millennium Development Goals (MDGs) to be achieved by 2015. The efforts have borne its results as indicated by decreasing TB case found globally by 1.5% each year since 2000 to 2013. It was expected that mortality rate caused by TB had been declining by 45% and TB prevalence had been reduced to 41% during period 1990-2013.

According to data released by Indonesian Ministry of Health (2011), Indonesia was ranked fifth among countries with biggest TB patients after India, China, South Africa, and Nigeria. East Java Province was the second largest province in Indonesia with the highest new AFB-positive cases after West Java Province while East Java Province was the third in terms of all-type TB cases after West Java and Central Java. In 2010, there were 37226 TB cases found in East Java while 23223 of them were AFB-positive for pulmonary TB cases. In 2011, the number of TB cases in East Java was decreased by 21477 however the number was increased to 41472 cases in 2012 with 25618 of them were AFB-positive. The rate of TB cases detection in East Java during 2010 and 2012 was 58.2% and 63.03% respectively. These rates were lower than expected target as much as 70%. In terms of Tuberculosis cured, in East Java the rate of Tuberculosis cured in 2010 and 2011 was 84.18% and 93.46% while the expected target was more than 90% (Basic Health Research of Indonesia, 2010).

There are several factors affecting Tuberculosis transmission, namely: the amount of bacteria contained within lungs, sputum droplets contained within the air, the amount of bacteria in the air, effectiveness of ventilation, length of exposure or contact with TB patient, and the ferocity of *Mycobacterium tuberculosis* strain. Tuberculosis is often detected stimulated by malnutrition, namely deficiencies in micro and macro-nutrients, such as protein, zinc, iron, vitamin A, and vitamin C. Malnutrition and lacking of certain important nutrients needed by immune system might cause immune function deficiency and improve susceptibility of bacterial and viral infections. The relationship between immune system and nutrition, such as vitamin C, zinc, and antioxidants had been proven could bring good effect on infections, including Tuberculosis. One of the efforts carried out to improve body weight and accelerate sputum conversion on pulmonary tuberculosis patients is through Sulphate and Zinc provision followed by Omega-3 supplementation.

This study was conducted in 2015 aimed to analyze the role of Zinc Sulphate and Omega-3 provision in improving weight, albumin level, amount and

accelerating sputum conversion on pulmonary tuberculosis patients in Paru Hospital, Surabaya.

This study applied randomized study design using Pre-test and Post-test Control group design on patients suffering pulmonary tuberculosis. This study was conducted by administering zinc sulphate and Omega-3 on treatment group and placebo on the control group. The samples of this study consisted of 20 pulmonary tuberculosis patients divided into two groups: treatment group and control group. Each group consisted of 10 patients. Statistical analysis was conducted using paired T-test, Kruskal wallis and Mann-Whitney test.

The findings of this study indicated that there was significant difference in body weight ($p = 0.021$) with strong correlation (0.989) in treatment group before and after Zinc Sulphate and Omega-3 supplementation. Meanwhile in control group, there was significant difference in body weight ($p = 0.285$) with lower correlation, namely 6.89. The results of paired t-test showed that there was significant difference on treatment group before and after the provision of zinc in terms of albumin level ($p = 0.001$) and there was no significant difference (in terms of albumin level) on the control group ($p = 0.224$). The result of Kruskal wallis test on treatment group indicated significant difference in terms of Acid-Fast Bacillus (AFB) before and after Zinc Sulphate and Omega-3 supplementations with significance rate 0.000, while the significance rate of the control group was 0.041. This statistical analysis result indicated that there was significant difference between treatment and control groups. The results of independent t-test showed that there was significant difference on treatment group before and after the provision of zinc in terms of T-lymphocytes CD-4 level ($p = 0,001$). Meanwhile, in the control group, there was no significant difference before and after the treatment.

Therefore, from the findings of this study, it can be concluded that Zinc Sulphate and Omega-3 provision plays a significant role in improving body weight, albumin level, increasing the amount of CD-4-lymphocytes and accelerating sputum smear conversion in pulmonary tuberculosis patients.