THESIS

THE PROTECTIVE EFFECT OF *Nigella sativa* EXTRACT TO MICE (*Mus Musculus*) LIVER INDUCED WITH NICOTINE

By
FLORENTINA EVELYN PURNOMO
SIN 061611133008

FACULTY OF VETERINARY MEDICINE
UNIVERSITAS AIRLANGGA
SURABAYA
2020

THE PROTECTIVE EFFECT OF *Nigella sativa* EXTRACT TO MICE (*Mus Musculus*) LIVER INDUCED WITH NICOTINE

Thesis

Submitted in partial fulfillment of requirement for degree of

Bachelor of Veterinary Medicine

At

Faculty of Veterinary Medicine Universitas Airlangga

By:

FLORENTINA EVELYN PURNOMO
061611133008

Approval of

Supervisor Committee

Prof. Sri Agus Sudjarwo, drh., Ph. D	**Dr. Thomas Valentinus Widiyatno., drh., M.Si**
Supervisor	Co-supervisor

DECLARATION

I hereby declare that the thesis entitled:

THE PROTECTIVE EFFECT OF *Nigella sativa* EXTRACT TO MICE (*Mus Musculus*) LIVER INDUCED WITH NICOTINE

There is no paperwork that has filled to obtain a bachelor's degree at the university and also according to my knowledge, there is no paperwork or self-opinions that ever written or published by others, except which is written in this paperwork that had mentioned in the bibliography.

Surabaya, January 17th 2020

Florentina Evelyn Purnomo

SIN 061611133008

Examination of Seminar Research Result

Date: January 3rd 2020

ASSESMENT COMMITTEE OF RESULT SEMINAR

Chairman	: Dr. Eka Pramyrtha Hestianah, drh., M. Kes.
Secretary	: Dr. Lilik Maslachah, drh., M. Kes.
Member	: Dr. Kadek Rachmawati, drh., M. Kes.
Supervisor	: Prof. Sri Agus Sudjarwo, drh., Ph. D.
Co-supervisor	: Dr. Thomas Valentinus Widiyatno, drh., M. Si

Examination of Thesis

Date : 13th January 2020

ASSESMENT COMMITTEE OF THESIS SEMINAR

Chairman : Dr. Eka Pramyrtha Hestianah, drh., M. Kes.

Secretary : Dr. Lilik Maslachah, drh., M. Kes.

Member : Dr. Kadek Rachmawati, drh., M. Kes.

: Prof. Sri Agus Sudjarwo, drh., Ph. D.

: Dr. Thomas Valentinus Widiyatno., drh., M. Si

Surabaya, 15th January 2020

Faculty of Veterinary Medicine

Universitas Airlangga

Dean,

Prof. Dr. Pudji Srianto, M.Kes., drh

NIP : 195601051986011001

SUMMARY

Smoking becomes a global health problem in the world. Cigarette smoke consists of more than 7000 chemical substances, and around 250 chemical substances have been identified poisonous and 70 others are carcinogenic. One of them is nicotine, in the body, nicotine will produce free radicals, waste substances produced by cells from processes food and reacts to the environment. If the body cannot process and remove free radicals efficiently, Reactive Oxygen Species (ROS) can result. The excessive number of ROS can affect to endogen antioxidant activity then can increase the oxidative stress in the body.

Nigella sativa, among the whole medicinal plants known as a miracle herb with historical and religious background since many kinds of research reveal its potential from a lot of aspects. The most popular antioxidant in *Nigella sativa* is thymoquinone, it was evaluated and its work like SOD administration in our body. It also increasing activity of quinone reductase, catalase, superoxide dismutase, and glutathione transferase, inhibition of NF-κB activity and inhibition of cyclooxygenase and lipoxygenase. With oral administration of thymoquinone also significantly reduced the levels of pro-inflammatory mediators (IL-1β, IL-6, TNF-α, IFN-γ, and PGE2) and increased level of anti-inflammatory mediators (IL-10 and IL 3). But there is no research yet about potential effect of *Nigella sativa* extract to protect liver from nicotine administration.

This research used experimental laboratory research with pre-treatment method as a liver protector. This research used 25 male mice as an experimental animal which divided into 5 groups with 5 repetition each group. This research held

for 28 days with C(-), the negative control only administrated with suspension of CMC Na and Tween 80 orally and injected with aquadest. C(+), for control positive was administrated with suspension of CMC Na and Tween 80 orally and injected intraperitoneal with 2 mg/kg BW nicotine 0.1% solution. For T(1), T(2), and T(3) were administrated with *Nigella sativa* extract with CMC Na 1%, and Tween 80 as a suspensator with doses of 200, 400, 800 mg/kg BW orally as a pretreatment 30 minutes before injected with 2 mg/kg BW nicotine 0.1 % solution. A day after the last day of treatment, mice euthanised with cervical dislocation and did the liver organ collection and placed into buffer formalin 10% then did the histopathological slide with Haematoxylin Eosin stain.

The result of histopathological liver changes scored and analysed with Kruskal Wallis with post hoc test by Mann-Whitney U test showed significant difference $p<0.05$.

ACKNOWLEDGEMENT

Thank you to everyone who gave me courage, understanding and many advices from start until finish this work of thesis which entitles **THE PROTECTIVE EFFECT OF *Nigella sativa* EXTRACT TO MICE (*Mus Musculus*) LIVER INDUCED WITH NICOTINE.**

In arranging this thesis, I would like to give my sincere gratitude to: Dean of Faculty of Veterinary Medicine, Universitas Airlangga, Prof. Dr. Pudji Srianto, drh., M. Kes. On the opportunity to follow education here. I also thank my supervisor committee, Prof. Sri Agus Sudjarwo, drh., Ph. D. and Dr. Thomas V. Widiyatno drh., M.Si. for the guidance, advices, motivations, and patience until this thesis finished. In addition I would thank to the examiner committee Dr. Eka Pramyrtha Hestianah, drh., M. Kes., Dr. Lilik Maslachah, drh., M. Kes., and Dr. Kadek Rachmawati, drh., M. Kes. who also guided me in completing my research.

I also thank to my former education supervisor, Prof. Mas'ud Hariadi, drh., M. Phil., Ph. D. whom give me advices and motivation during my study in Faculty of Veterinary Medicine, Universitas Airlangga. Thank you to all of lecturer and staff of Faculty of Veterinary Medicine, Universitas Airlangga for supporting of whole research and learning process to get my bachelor degree.

Thank you to all my friend in Faculty of Veterinary Medicine, Universitas Airlangga, especially my International class batch 2016 classmates for support and made my degree life around 3.5 years.

Thank you for my family in university, Sie Kerohanian Katolik which made up my degree life. Thanks for the support, memories, laugh, and all wonderful

journey for around 3.5 years. Also thank you for BPH SKK 2018 and all VENOL committee which help me to improve my organization skill also all wonderful things.

Special thanks to the greatest family I have ever had, firstly my parents Mr. Pamudji Purnomo and Mrs. Margareta Widiawati Tjundawan, also my brother Florentino Edwin Tjandra Prunomo for love, support, advices, also all prayers. Also for my grandparents Mr. Sudji Tjundawan, Mrs. Coandiwati Gunawan, Mr. Hendro Purnomo, and Mrs. Maria Suaniati Ningsih For the last of all, thanks to God that blessing and care and all strength and patient for me. Because without all of them I wouldn't be here.

I, as the author, acknowledge that this writing is a lot of lack and far from perfection. However, I hope this research will be useful for the advancement of science and may give contributions to veterinary medicine world, heath problem and society.

Surabaya, January 13th 2020

Author