THESIS

THE NEPHROPROTECTIVE EFFECT OF *Ocimum sanctum* LEAF EXTRACT ON BLOOD UREA NITROGEN AND SERUM CREATININE IN MICE EXPOSED BY LEAD ACETATE

By:

NINA KRISMAHARANI
SIN 061611133053

FACULTY OF VETERINARY MEDICINE

UNIVERSITAS AIRLANGGA

SURABAYA

2020

ENDORSEMENT FORM

THE NEPHROPROTECTIVE EFFECT OF *Ocimum sanctum* LEAF EXTRACT ON BLOOD UREA NITROGEN AND SERUM CREATININE IN MICE EXPOSED BY LEAD ACETATE

Thesis

Submitted as partial fulfillment of requirement for degree of
Bachelor of Veterinary Medicine

at

Faculty of Veterinary Medicine, Universitas Airlangga, Surabaya

By:

NINA KRISMAHARANI
SIN 061611133053

Approving

Supervisor Committees,

(Prof. Dr. Fedik A. Rantam, DVM.)	**(Prof. Dr. Bambang Sektiari L., DEA., DVM.)**
Supervisor	Co-Supervisor

DECLARATION

Hereby, I declare that in this thesis entitled:

THE NEPHROPROTECTIVE EFFECT OF *Ocimum sanctum* LEAF EXTRACT ON BLOOD UREA NITROGEN AND SERUM CREATININE IN MICE EXPOSED BY LEAD ACETATE

there is no other work ever published to obtain a college degree in a certain college and according to my knowledge there is also no work or opinion ever written or published by others, except those in writing referred to this paper and mentioned in the references.

Surabaya, February 2020

Nina Krismaharani
SIN 061611133053

Has been assessed in Result Seminar

On: February 18th 2020

RESULT SEMINAR ASSESSMENT COMMITTEE

Head of Assessor	: Prof. Dr. Wiwik Misaco Y., M.Kes., drh.
Secretary	: Retno Sri Wahjuni, drh., M.S.
Member	: Dr. Nove Hidajati, M.Kes., drh.
Supervisor	: Prof. Dr. Fedik Abdul Rantam, drh.
Co-supervisor	: Prof. Dr. Bambang Sektiari L., DEA., drh.

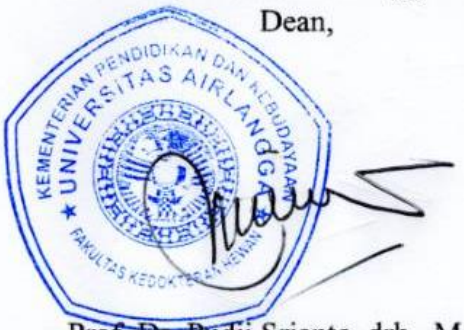
Has been assessed in Thesis Exam

On: February 28th 2020

THESIS ASSESSMENT COMMITTEE

Head of Assessor	: Prof. Dr. Wiwik Misaco Y., M.Kes., drh.
Member	: Retno Sri Wahjuni, drh., M.S.
	Dr. Nove Hidajati, M.Kes., drh.
	Prof. Dr. Fedik Abdul Rantam, drh.
	Prof. Dr. Bambang Sektiari L., DEA., drh.

Surabaya, February 28th 2020
Faculty of Veterinary Medicine
Universitas Airlangga
Dean,



Prof. Dr. Pudji Srianto, drh., M.Kes.
NIP. 195601051986011001

SUMMARY

Nina Krismaharani, research entitled **The Nephroprotective Effect of *Ocimum sanctum* Leaf Extract on Blood Urea Nitrogen and Serum Creatinine in Mice Exposed by Lead Acetate** was conducted under the supervision of Prof. Dr. Fedik Abdul Rantam, drh. as the supervisor and Prof. Dr. Bambang Sektiari Lukiswanto, DEA., drh. as co-supervisor.

Lead is highly dangerous pollutant waste affecting almost every organ in the body. Lead can enter animal, plant, and human tissues via diet, inhalation, and direct exposure. Toxicity mechanism of lead triggers over production of reactive oxygen species (ROS). The imbalance between ROS and antioxidant causes oxidative stress which results in cellular damage.

Organs can be protected by antioxidant constituents contained in *Ocimum sanctum* leaf extract to prevent damage due to oxidative stress. Flavonoids, eugenol, ursolic acid, ascorbic acid, and tocopherol are constituents of Ocimum sanctum leaf extract that act as antioxidant.

This research aimed to prove the nephroprotective effect of *Ocimum sanctum* leaf extract towards serum creatinine and blood urea nitrogen (BUN) in mice exposed by lead acetate. The effects were investigated by measuring concentrations of serum creatinine and BUN as sensitive parameters of kidney function.

This research was conducted in Laboratory of Experimental Animal, Faculty of Veterinary Medicine, Universitas Airlangga on December 2019 to January 2020. Twenty male mice approximately aged 2-3 months used in this

research were divided into 5 groups. The groups consisted of control groups (C- and C+) and treatment groups (T1, T2, and T3). Negative control group (C-) was orally administrated Tween 80 1%. Lead dosage used was 20 mg/kg BW and were orally administrated to positive control group (C+) and treatment groups (T1, T2, and T3). Dosages of *Ocimum sanctum* leaf extract orally administrated to treatment groups were 140 mg/kg BW, 280 mg/kg BW, and 560 mg/kg. *Ocimum sanctum* leaf extract were administrated in day 1-24 and lead acetate were administrated in day 4-24. Blood sampling was conducted in day 25 to examine value of serum creatinine and BUN after treatments.

Obtained data from this research were statistically analyzed with One Way Analysis of Variance (ANOVA), and were continued for post hoc test with Duncan Multiple Range Test (DMRT). Results showed insignificant increase of serum creatinine and BUN in C+ group compared to C-. Significant decrease of serum creatinine level were occurred in all treatment groups (T1, T2, and T3). Significant decrease of BUN were occurred in all treatment groups (T1, T2, and T3), there was no significant decrease on BUN level between those dosages.

Based on this research, it is concluded that *Ocimum sanctum* leaf extract is able to be nephroprotector. This research also proved that administration 140 mg/kg BW of *Ocimum sanctum* leaf extract has already reached effective potential to protect kidney. Further research is suggested to investigate activities of enzyme such as superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx), investigate histopathological change of kidney, and also measure malondialdehyde (MDA) level of kidney.