

THESIS

**THE EFFECTS OF VIRGIN COCONUT OIL (VCO)
ON THE HISTOPATHOLOGY OF THE LIVER
OF AN ALCOHOL INDUCED MALE
MICE (*Mus musculus*)**



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AIRLANGGA UNIVERSITY
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INDUCED MALE MICE (*Mus musculus*)**

Thesis

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Co-Supervisor

DECLARATION

I hereby declare that in the thesis entitled:

**THE EFFECTS OF VIRGIN COCONUT OIL (VCO) ON THE
HISTOPATHOLOGY OF THE LIVER OF AN ALCOHOL
INDUCED MALE MICE (*Mus musculus*)**

There are no works that have ever been submitted to obtain a degree of scholarship in a college and to the best of my knowledge no work or opinion has ever been written or published by anyone else, except those written in this manuscript and mentioned in the references.

Surabaya, 22nd April 2022



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SUMMARY

Rekha Flora Suppiah. Research on The Effects of Virgin Coconut Oil (VCO) on The Histopathology of The Liver of An Alcohol Induced Male Mice (*Mus musculus*) under the supervision of the first supervisor Prof. Mas'ud Hariadi, drh., M.Phil., Ph.D. and Prof. Dr. Wiwik Misaco Y., drh., M.Kes as the co-supervisor.

This study aims to examine the histopathology on the liver of an alcohol induced male mice (*Mus musculus*) and determine whether VCO can repair the histopathology of the liver in a male mice (*Mus musculus*) induced by alcohol. The experimental design used in this study is called Completely Randomized Design (CRD). With that being said environmental conditions and the age of the mice are made homogenous so that the only source of variation is the effect of the treatment. The results obtained in this study is due to the effect of the treatment and also random influences.

This research requires 20 male mice which will then be divided into 5 groups in which each group contains 4 mice with each mice weighting about 20-30 g and aged 2-3 months. This experiment will be conducted at the Laboratory of Experimental Animal, Faculty of Veterinary Medicine, Universitas Airlangga, Surabaya. This experiment will take place in January 2020. The preparation of the histopathology slides of the liver of the mice will be conducted at the Department of Pathology, Faculty of Veterinary Medicine, Universitas Airlangga, Surabaya for Hematoxylin Eosin (HE) staining and in a Laboratory in Malaysia for Masson's Trichrome staining.

In conclusion, Virgin Coconut Oil could repair the histopathology of the liver of the mice (*Mus musculus*) induced by alcohol. It is seen that the dosage of treatment3 group (0.37 ml/20g BW) was the most effective to lessen the damage of focal necrosis and fibrosis found in the liver of the mice (*Mus musculus*). This is because of the antioxidant properties that can be found in VCO.

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ABSTRACT

This study aims to examine the histopathology on the liver of an alcohol induced male mice (*Mus musculus*) and determine whether VCO can repair the histopathology of the liver in a male mice (*Mus musculus*) induced by alcohol. This research requires 20 male mice which will then be divided into 5 groups in which each group contains 4 mice with each mice weighting about 20-30 g and aged 2-3 months. Virgin Coconut Oil could repair the histopathology of the liver of the mice (*Mus musculus*) induced by alcohol. It is seen that the dosage of treatment 3 group (0.37 ml/20g BW) was the most effective to lessen the damage of focal necrosis and fibrosis found in the liver of the mice (*Mus musculus*).

Keywords: Virgin Coconut Oil (VCO), Liver, Alcohol, *Mus musculus*.

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The author realizes that this paper is far from perfect, the author accepts every critics and suggestions from everyone as the efforts to improve this

research. Hopefully this research can provide valuable information for the public and also the veterinary medicine field. Thank you.

Surabaya, 9th May 2022

Author

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ABBREVIATION AND SYMBOLS

ADH	: Alcohol Dehydrogenase
ALD	: Alcoholic Liver Disease
ASH	: Alcoholic Steatohepatitis
BAC	: Blood Alcohol Concentration
BBB	: Blood – Brain Barrier
CNS	: Central Nervous System
CO ₂	: Carbon Dioxide
FACS	: Fluorescence – Activated Cell Sorter
HCC	: Hepatocellular Carcinoma
HDL	: High Density Lipoprotein
H ₂ O	: Water
LDL	: Low Density Lipoprotein
LPS	: Lipopolysaccharide
MCFA	: Medium Chain Fatty Acids
MCT	: Medium Chain Triglycerides
mtDNA	: Mitochondrial Deoxyribonucleic Acid
NAFLD	: Non Alcoholic Fatty Liver Disease
ROS	: Reactive Oxygen Species
SFA	: Saturated Fatty Acids
TBW	: Total Body Water
TNF	: Tumour Necrosis Factor
VCO	: Virgin Coconut Oil
VLDL	: Very Low Density Lipoprotein