VCO REDUCE IL-6 AND CRP IN *WISTAR* RATS WITH HIGH FAT DIET

VCO MENURUNKAN IL-6 DAN CRP TIKUS WISTAR DENGAN DIET TINGGI LEMAK

Thesis
Submitted as partial fulfilling of the requirement

for Master Degree of Biomedical Science

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SEMARANG
2014

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DECLARATION

I hereby declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education, there are no elements belonging Plagiarism forth in Decree No. 17 of 2010. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of reference is given.

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ACKNOWLEDGEMENT

First of all, I would like to express my deepest sense of Gratitude to Diponegoro University for their support, encouragement and care. I would like to express my gratitude to all those who gave me the possibility to complete this thesis.

I am deeply grateful to :-

1. Prof. Dr.dr. Tri Nur Kristina. DMM. M.Kes as Chairman of Program Administrator Master Biomedical Sciences, University of Diponegoro Semarang who has given an opportunity to gain knowledge in Biomedical Science Program Graduate Biomedical Sciences, University of DiponegoroSemarang.udi GraduateProgram who have given permission to continue ((his studies)) to such great degree.
2. My supervisor I: Prof. Dr.dr. Tri Nur Kristina, DMM, M.Kes and Supervisor II: Prof.Dr.dr.Winarto,DMM,Sp.MK,Sp.M(K) whose help, stimulating suggestions and encouragement helped me in all the time of research and writing of this thesis.
3. My examiners Dr.dr. RA. Kisdjamiatun, RMD, M.Sc and Dr. dr. Indrannila Kustarini,Sp. PK (K). Thank you for the suggestions,ideas and comments for overall my project
4. My former colleagues from the Department of Biomedicine Science of Diponegoro University in my class and the all staph. I want to thank them for all their help, support, interest and valuable hints.

5. Ms. NataSulastri, Mbakfika, Mas abdul who have helped smooth implemetation of administrative and facility study, I am really grateful to your help.
6. I want to thank the Department of biochemical at GadjahMada University for giving me permission to commence this thesis especially Prof.Dr.Wayan Tunas Artama.
7. I would like to thank my family my parents Ali Ahmed Mohalhel and my mother Zahra Mohmmed Uanis and my brothers ,my sisters, for giving birth to me at the first place and supporting me spiritually throughout my life.
8. I would like to thank all of my friends who giving me support during my study and thanks for University of Diponegoro Semarang, biomedic department, Kariadi Hospital and Indonesia.

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LIST OF ABBREVIATION

ABI	:	ankle-brachial index
ASCVD	:	Atherosclerotic cardiovascular disease
CRP	**:**	C-reactive protein
BMI	:	Body mass index
Ecs	:	Endothelial cells
ELISA	:	Enzyme-linked immunosorbent assay
GL	:	glycemic load
HAECs	**:**	human acrtic endothelial
HDL	:	High density lipoproteins
HDL-C	:	HDL cholesterol
Hs CRP	:	highsensitivity C-reactive protein
HSD	:	Honestly significant differnce
ICAM	:	Intercellular adhesion molecule
IL -6	:	Interleukin -6
LCT	:	Long Chain Triglyserid
LDL	:	Low density lipoprotein
LDL-C	**:**	LDL cholesterol
LOX	:	lipoxygenase
LOX-1	:	A lectin-like oxidized low-density lipoprotein scavenger receptor
MAPK	:	mitogen-activated protein kinase
MCP-1	**:**	Monocyte chemotactic protein-1

MCT **:** medium chain triglyserid

NF-κB : Nuclear factor-κB

NK : Natural killer

Ox-LDL **:** Oxidized LDL

PAD **:** peripheral arterial disease

PARS : Peripheral blood mononuclear cell

PC : Phenolic compound

PKC : Prostaglandins

ROS : Reactive oxygen species

SMCs : Smoot muscle cells

SPSS : Statistical Package for the Social Sciences

TC : Total cholesterol

TGs : Triglycerides

TNF : Tumor necrosis factor

TNF-a : Tumor necrosis factor -a

VCAM1 : Vascular cell adhesion molecular 1

VCO : Virgin coconut oil

VLDL : Very-low density lipoproteins

WHO : World Health Organization

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VCO REDUCE IL-6 AND CRP IN *WISTAR* RATS WITH HIGH FAT DIET

Ahmed Ali Mohalhel [*], Winarto[*], Tri Nur Kristina[*]

ABSTRACT

Background: High fat diet is associated with body weight gain, which can lead to high blood lipid level especially low density lipoprotein and Triglycerides. Changes in the level of fat product from high fat diet lead to produce pro inflammatory cytokines, including TNF and IL-6. IL-6 stimulates the hepatic synthesis of CRP as inflammatory marker. VCO contains of biological active substance such as antioxidant, which have advantage in preventing the oxidation of LDL leading to regulate of inflammatory response. This research aims to prove that VCO can reduce IL6 and CRP in wistar rats with high fat diet (HFD).

Methods: The design of the study was Post-test Only Randomized Control Group Design. 30 Wistar rats were randomly allocated into five groups with 6 rats in each group. First group was given normal diet, the second group only HFD, the third group HFD and VCO 1ml /day, fourth group HFD and VCO 1.2ml /day, and fifth group HFD and VCO 2ml /day.This research was carried out for 8 weeks, then blood was drawn from the eye to measure IL-6 and CRP by using ELISA.

Result: serum level IL6 in ANOVA results indicate there is significant different of all group ($p < 0.05$). The post hoc showed the negative control significantly lower than those of rats treated with 1ml/day ($p = 0.031$) , 1.2m l/ day ($p = 0.025$), 2ml/day ($p = 0.012$) and positive control($p = 0.002$). CRP serum test homogeneity showed non homogeneity ($p=0.010$). Kruskal-Wallis test. This analysis showed no significance difference of CRP levels all groups ($p = 0.177$).

Conclusions: VCO at any doses studied could not lowered the IL-6 and CRP levels of HFD rats.

Keywords : VCO, HFD, IL-6, CRP, rats.

ABSTRAK

Latar Belakang: diet lemak tinggi berhubungan dengan kenaikan berat badan yang dapat menyebabkan tingginya kadar lipid dalam darah terutama *low density lipoprotein* (LDL) dan trigliserida. Perubahan kadar lemak dari diet tinggi lemak menyebabkan produksi sitokin proinflamasi, termasuk TNF dan IL-6. IL-6 merangsang hepar untuk mensintesis CRP sebagai penanda inflamasi.. Penelitian ini bertujuan untuk membuktikan bahwa VCO dapat menurunkan kadar IL6 dan CRP pada tikus wistar dengan diet lemak tinggi

Metode: Desain penelitian ini adalah *Posttest Only Randomized Control Group Design*. Tiga puluh ekor tikus Wistar secara acak dibagi ke dalam lima kelompok perlakuan dan tiap kelompok perlakuan terdiri dari 6 tikus. Kelompok pertama adalah diet normal, kelompok kedua diet tinggi lemak (DTL), kelompok ketiga diberi DTL dan VCO 1m/day, kelompok keempat diberi DTL dan VCO 1.2ml /day, kelompok kelima diberi DTL dan VCO 2ml /day. DTL dan VCO diberikan dalam waktu yang sama dari awal sampai akhir percobaan. Penelitian dilakukan selama 8 minggu, kemudian darah diambil dari mata dan penanda inflamasi (IL-6 dan CRP) yang diukur dengan ELISA.

Hasil : serum IL 6 dengan tes ANOVA menunjukkan ada perbedaan yang signifikan dari semua kelompok ($p < 0,05$). Haril post hoc menunjukkan kontrol negatif secara signifikan lebih rendah dibandingkan tikus yang diobati dengan 1ml/day ($p = 0,031$), 1.2ml / hari ($p = 0,025$), 2ml/day ($p = 0,012$) dan kontrol positif ($p = 0,002$). CRP serum memiliki Uji homogenitas menunjukkan non homogenitas ($p = 0,010$). Uji Kruskal-Wallis. menunjukkan tidak ada perbedaan yang signifikan dari CRP pada semua kelompok ($p = 0,177$).

Kesimpulan: VCO tidak dapat menurunkan kadar IL-6 dan CRP pada tikus dengan DTL.

Kata kunci: VCO, diet tinggi lemak, IL-6, CRP, tikus.