

# PROCEEDINGS

## International Seminar & Symposium: Use of Herbs for Prevention of Vascular and Neurodegenerative Diseases

(Golden Anniversary of Brawijaya University)

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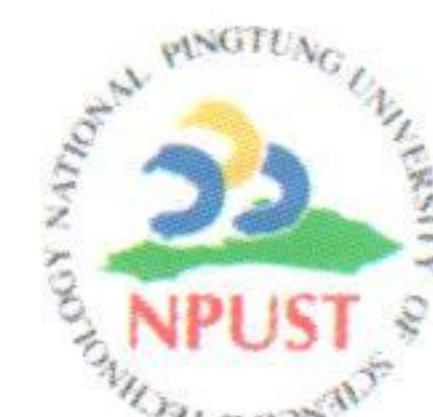
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OKLAHOMA

**Effect of Bitter Melon Ethanol Extract (*Momordica charantia*)  
in Inhibition of NF- $\kappa$ B Activation and Improvement of HDL Cholesterol Blood Level on  
*Rattus novergicus* with Atherogenic Diet**

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**ABSTRACT**

Atherosclerosis is the most common cause of death in the world. Endothelial dysfunction, caused by the inflammation process, is an initial lesion of the development of this disease. NF- $\kappa$ B (Nuclear Factor Kappa Beta) is a transcription factor that plays an important role in the inflammation process. Atherogenic diet activates NF- $\kappa$ B and leading to inflammation. HDL cholesterol protects the vascular inflammation by uptake the lipid excess from the vessel wall. The bitter melon contains momordicins, flavonoids, vitamins A, C, E and phenols that have effect as an antioxidant and improve the lipid profile. The aim of this study is to find out the effect of bitter melon fruit extract in inhibiting the endothelial dysfunction by measuring the NF- $\kappa$ B level in the aorta by ELISA and HDL cholesterol blood level by spectrophotometer. It was experimental studies with posttest only control group design. Twenty five male Wistar rats, divided into five groups, normal diet group (negative control), atherogenic diet group (positive control), atherogenic diet + bitter melon extract 250 mg/kg/day group (P1), atherogenic diet + bitter melon extract 500 mg/kg/day (P2), atherogenic diet + bitter melon extract 1000 mg/kg/day (P3). The duration of study was 60 days. One way ANOVA statistical analysis showed a slight increased HDL cholesterol level among the group and significant decreased NF- $\kappa$ B level ( $p < 0.05$ ). This study showed that the administration of bitter melon ethanol extract inhibits the endothelial dysfunction on atherosclerosis.

**Keywords:** bitter melon, NF- $\kappa$ B, HDL, atherogenic diet, endothelial dysfunction.

**INTRODUCTION**

Atherosclerosis is the leading causes of death all over the world. It is estimated 2 million deaths occur each year in Europe as a result of coronary heart disease (George and Lyon, 2010). Indonesia Household Health Survey (SKRT) in 1996 showed an increased proportion of this disease over the years. National census in 2001 states 26.4% of the death case caused by cardiovascular disease. Prevention of atherosclerosis formation plays an important role in lowering the incidence of cardiovascular disease (Barter, 2005).

Endothelial dysfunction, caused by the inflammation process, is an initial lesion of the development of atherosclerosis. The development of these diseases has been associated to several factors such as high fat diet intake, hypertension, cigarette smoking, and infectious agents. However, hypercholesterolemia is a major risk factor for atherosclerosis (Kumar *et al*, 2010).

Nuclear factor- $\kappa$ B (NF- $\kappa$ B) is a transcription factor that has an important function in the regulation of a variety of genes involved in the inflammatory and proliferative responses of