PREVENTIVE EFFECT OF JICAMA (*Pachyrhizus erosus* L.) FIBER IN HIGH-FAT DIET AGAINST OXIDATIVE STRESS AND INFLAMMATION ON THE INTESTINUM OF WHITE MICE (*Mus musculus* L.)

MASTER'S THESIS

WILKA RAMADHIA

2120421009

MASTER STUDY PROGRAM IN BIOLOGY

FACULTY OF MATHEMATICS AND NATURAL SCIENCES

ANDALAS UNIVERSITY

PADANG

2022

ABSTRACT

Jicama (*Pachyrhizus erosus* L.) fiber has been shown to prevent oxidative stress and inflammation in the development of obesity. Efficacy of jicama fiber on indicators of oxidative stress and inflammation in the intestine, intestinal histopathology, hematological profiles and its mechanism in inhibiting the inflammatory signalling pathway is not clearly known. This study aimed to analyze the effect of jicama fiber supplementation on oxidative stress indicator, histophatology and inflammation of intestine, hematological profiles and analyze the ability of bioactive compounds in jicama fiber as anti-inflammatory trough molecular docking simulation. This research was carried out from April to August 2022 experimentally using completely randomized design (CRD) with three treatments and nine replications on male white mice DDY strain. Mice were treated with normal diet (ND), high-fat diet (HFD), HFD combined with 25% of jicama fiber. The results of this study demonstrated that the suplementation of jicama fiber in HFD could prevent significantly an increase malondialdehyde (MDA) level and a decrease catalase activity, prevent the histophatology alteration and inflammation on the intestinal tissue of mice, prevent an increase total leukocytes count and a decrease in the mean cospular hemoglobin concentration (MCHC) as well as bioactive compounds in jicama fiber particularly cycloartenol and astaxanthin have a potential to inhibit activation of inflammatory signalling pathway based on molecular docking simulation. It is concluded that supplementation jicama fiber 25% in HFD, could exert a beneficial effect in preventing oxidative stress and inflammation in the intestine of white mice.

Keyword: Astaxanthin, Catalase Activity, Cycloartenol, MDA, Total Leukocytes .


UNIVERSITAS ANDALAS
UNTUK
KEDJAJAAN
BANGSA