

UNIVERSITI TEKNOLOGI MARA

**IN VITRO ANTI- INFLAMMATORY
PROPERTIES OF AQUEOUS
ERYTHROXYLUM CUNEATUM STANDARDIZED
EXTRACT ON ANTIOXIDANT ENZYMES IN
LPS-INDUCED RAW264.7**

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ABSTRACT

During inflammation, reactive oxygen species (ROS) will be released into the injured site and cause further injury to the cells by initiating lipid peroxidation process. The action of ROS are limited by antioxidant enzymes. Antioxidant enzymes, including superoxide dismutase (SOD), catalase (CAT) and glutathione peroxidase (GPx) are produced in the body as body's defense against ROS to prevent them from damaging the body cells. This study was carried out to determine the anti-inflammatory properties of *Erythroxylum cuneatum* aqueous leaf extract in vitro by measuring the activity of superoxide dismutase, catalase and glutathione peroxidase on LPS-induced RAW 264.7. Measurements of these enzymes were carried out using commercialized ELISA kits. Our findings showed that the aqueous leaf extract of *E. cuneatum* was able to inhibit the inflammation induced by LPS on RAW 264.7. SOD and GPx levels were increased significantly in the cells compared to indomethacin. However, concentrations of catalase was not affected compared to the untreated LPS-induced cells. In conclusion, *E.cuneatum* extract contain anti-inflammatory properties through modulation of the activities of the antioxidant enzymes activities in the LPS-induced RAW 264.7. This further supports the folkloric claims of the medicinal values of the plant and showed its potential to be exploited in the nutraceutical industries.

CHAPTER 1

INTRODUCTION

1.1 Background of study

Inflammation is a disease involving localized increases in number of leukocytes and a variety of complex mediator molecules including prostaglandins (Mantri&Witiak, 1994). Inflammation causes pain, heat, swelling and redness. Inflammation is usually induced by antigens such as pathogens or foreign matters. Chronic inflammation occurs due to the continuous exposure of the antigens or from the inability of cells to recover from acute inflammation. Chronic inflammatory is responsible in causing a lot of diseases such as rheumatoid arthritis, tuberculosis, chronic peptic ulcer, ulcerative colitis and Crohn's disease (Wakefield & Kumar, 2001). Agent that helps in reducing this inflammation signs is known as anti-inflammatory. Nonsteroidal anti-inflammatory drugs (NSAIDs) are used primarily to treat inflammation. Even though modern drugs are effective in the management of inflammation and associated conditions, but their use is often limited because of side effects (Lipsky, 1999). Therefore, this study is conducted to investigate natural plant resources that has potential as an anti-inflammatory agent. The plant of interest in this study is *Erythroxylum cuneatum*.