CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

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CONTENTS

CHAPTER 35

POTENTIAL REMEDIES FOR GOUT FROM MEDICINAL PLANTS

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ABSTRACT

Malaysia has diversity of medicinal plants and some of them have the property to inhibit xanthine oxidase (XO), which can be introduced as a new natural source of gout medication and a substitute for synthetic xanthine oxidase inhibitors (XOI). In this study, the leaves from twenty plant species were examined for inhibition of XO. Selection of plants was based on their frequent usages by local folks for their medicinal benefits. The degree of XO inhibition was determined by measuring the absorbance spectrophotometrically at 295 nm associated with uric acid formation. Hundred percent of the crude extracts were found to inhibit XO at 100 µg/ml, and 63.33% showed greater than 50% inhibition. The leaves of *Garcinia mangostana* and *Morinda elliptica* have the potential to be exploited as an alternative to allopurinol as the crude extracts of these plant materials from all three solvents, namely, 70% methanol, ethanol and distilled water, exhibited the highest XO inhibitory activity. The leaves of *Averrhoa bilimbi*, *Carica papaya* and *Solanum lycopersicum* can also be considered as alternatives to allopurinol as they have demonstrated among the third best XO inhibitory activity under their respective solvent systems.

Keywords: medicinal plants, *Garcinia mangostana*, *Morinda elliptica*, xanthine oxidase inhibitor, gout.

INTRODUCTION

Xanthine oxidase (XO) is an enzyme that catalyzes the oxidation of hypoxanthine and xanthine to uric acid (Fig. 1). XO derived superoxide formation plays a pathogenetic role in a variety of diseases including inflammatory bowel disease, shock, acute respiratory distress syndrome, and chronic heart failure (Berry and Hare, 2004).

Gout which is also called as metabolic arthritis is a common disease which occurs in individuals who have high serum uric acid levels. It represents a group of heterogeneous diseases characterized by hyperuricemia and recurrent attacks of arthritis (Faraawi, 2004). Gout affects a substantial proportion of the adult population. It is the most common form of arthritis in men over the age of 40, and though women are less commonly affected, the prevalence of gout may be increase among postmenopausal women (Choi and Curhan, 2007). Gout is more common in