

CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME II

Editors:

Ibrahim Ali Noorbatcha
Hamzah Mohd. Salleh
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Raha Ahmad Raus



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(VOLUME II)

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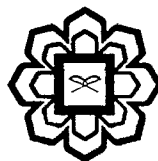
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QUALITATIVE AND QUANTITATIVE ANALYSIS OF ANTI-GOUT FROM *Carica papaya* LEAVES

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ABSTRACT

Xanthine oxidase (XO) catalyzes the metabolism of hypoxanthine and xanthine into uric acid. It is responsible for the medical condition known as gout, caused by the deposition of uric acid in the joints leading to painful inflammation. Inhibition of XO leads to remission in gout. *Carica papaya* is a member of the family Caricaceae. In folk medicine, *Carica papaya* was used as an important traditional herbal medicine due to its vast bioactive compounds including kaempferol, quercetin, 5, 7-dimethoxycoumarin, alkaloids, carpaine and pseudocarpaine. Our preliminary screening studies have shown that *Carica papaya* leaves have great potential to be utilized as new source of inhibitor against XO. Thus, in this study, distilled water extract of *Carica papaya* leaves were subjected to qualitative and quantitative analyses as preliminary identification and quantification of the metabolites that may accounts for the superiority of *Carica papaya* leaves to inhibit XO. The results revealed that the sample possessed several secondary metabolites, mainly, flavonoids, alkaloids, saponins, xanthine alkaloids and anthranol-glycosides which could partially explain the pharmacological properties of this plant and demonstrates its importance in alimentation and daily intake especially for gout patient. Quantitatively, flavonoids have shown the highest percentage in the sample with 27.51–33.15%.

Keywords: *Carica papaya*, xanthine oxidase inhibitor, gout, qualitative analysis, quantitative analysis.

INTRODUCTION

Uric acid is a product of purine metabolism generated during the enzymatic degradation of hypoxanthine and xanthine, catalyzes by an enzyme named xanthine oxidase (XO) (González et al., 1995; Ramallo et al., 2006; Wang et al., 2008). Elevated concentrations of uric acid in the blood stream created a metabolic arthritis disease called gout. Gout is more common in prosperous and affluent societies due to a diet rich in proteins, fat and alcohol (Choi and Curhan, 2004; Trivieri et al., 1999). Factors like inherited enzyme deficiencies, obesity, decrease renal function and hypertension also contribute to the elevated concentrations of uric acid (Schlesinger and Schumacher, 2002), subsequently the formation