

# CURRENT RESEARCH AND DEVELOPMENT IN BIOTECHNOLOGY ENGINEERING AT IIUM

VOLUME II

Editors:

Ibrahim Ali Noorbatcha  
Hamzah Mohd. Salleh  
Mohamed Elwathig Saeed Mirghani  
Raha Ahmad Raus



IIUM PRESS

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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**IIUM Press**

Published by:  
IIUM Press  
International Islamic University Malaysia

First Edition, 2011  
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Perpustakaan Negara Malaysia

Cataloguing-in-Publication Data

Ibrahim Ali Noorbacha, Hamzah Mohd. Salleh, Mohamed Elwathig Saeed Mirghani & Raha Ahmad Raus: Current Research and Development in Biotechnology engineering at IIUM  
Volume II

ISBN: 978-967-418-151-2

Member of Majlis Penerbitan Ilmiah Malaysia – MAPIM  
(Malaysian Scholarly Publishing Council)

Printed by :  
**IIUM PRINTING SDN. BHD.**  
No. 1, Jalan Industri Batu Caves 1/3  
Taman Perindustrian Batu Caves  
Batu Caves Centre Point  
68100 Batu Caves  
Selangor Darul Ehsan

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## CHAPTER 33

### PHYTOCHEMICAL SCREENING AND PURIFICATION OF XO FROM SELECTED MEDICINAL PLANT

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#### ABSTRACT

Xanthine oxidase is an enzyme that catalyzes the oxidation of xanthine to uric acid, which will be the cause of gout. Allopurinol is a medicine to cure gout nowadays, but it has many drawbacks. This study attempts to evaluate three local medicinal plants for their potential to be an alternative to allopurinol. The plant species were *Labisia pumila*, *Mentha spicata* and *Lycopersicon esculentum*. The results have revealed that methanolic extract of *Lycopersicon esculentum* leaves has the highest XO inhibitory activity with 89.61%. Therefore, it was selected for the isolation and purification of the bioactive component that may be responsible for the said activity via two chromatographic procedures, namely, column chromatography and thin layer chromatography. One spot was recovered from the separation via column chromatography utilizing 8% MeOH – CHCl<sub>3</sub> as the elution system. The R<sub>f</sub> value obtained via TLC for the spot is 0.813.

**Keywords:** *Lycopersicon esculentum*, *Labisia pumila*, *Mentha spicata*, xanthine oxidase inhibitor, purification.

#### INTRODUCTION

Gout is one of the most frequently recorded medical illnesses. It is a condition resulted from the deposition of uric acid crystals in tissues of the body and recurring attacks of joint inflammation. People who suffer from gout usually either overproduce uric acid or under excrete it. However, some patients may have high blood uric acid levels (hyperuricemia) without having arthritis. Hyperuricemia due to increased catabolism or decreased excretion may precipitate urate crystals causing nephrolithiasis and gouty arthritis, activating lipoxygenases and cyclooxygenases that result in further liberation of reactive oxygen radicals (Middleton et al., 2000). Gout is mostly influenced by high intake of foods rich in nucleic acids such as meats, leguminous seeds and seafood (Nguyen et al., 2004). Gout is nine times more common in men than in women. It attacks males after puberty, with a peak age of 75. For women, gout attacks usually occur after