

**CYTOTOXIC ACTIVITIES OF *GARCINIA*  
*EUGENIFOLIA* FOR MEDICINAL USES**

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**OCTOBER 2009**

Date : 30 October 2009

Project Fail No: 600-IRDC/ST/DANA5/3/Dst(24/2008)

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Dear Professor,

**FINAL RESEARCH REPORT “CYTOTOXIC PROPERTIES OF *GARCINIA EUGENIFOLIA* FOR MEDICINAL USES”.**

With reference to the above, I am pleased to submit three copies of the Final Research Report entitled, “Cytotoxic Properties of *Garcinia Eugenifolia* for Medicinal Uses”.

Thank you.

Yours sincerely,



VIVIEN JONG YI MIAN

The Leader  
Research Project

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## ABSTRACT

Chemical and biological studies were carried out on *Garcinia Eugenifolia* (Clusiaceae). The chemical investigation covered xanthenes, flavonoids, benzophenones and terpenes. These compounds were isolated using common chromatographic techniques and were identified using spectroscopic experiments such as NMR, MS, IR and UV.

*Garcinia Eugenifolia* (twigs) afforded one xanthone, 5,9-dihydroxy-8-methoxy-2,2-dimethyl-7-(3-methylbut-2-enyl)pyrano[3,2-b]xanthen-6(2H)-one (**86**) and one triterpenoid, sitosterol (**87**). Meanwhile, studies on the leaves of *Garcinia Eugenifolia* provided another triterpenoid, friedelin (**88**).

Cytotoxic tests were carried out using HL-60 cell line. The crude hexane and ethyl acetate extracts of *Garcinia Eugenifolia* showed strong cytotoxic towards the HeLa cell line with  $IC_{50}$  1.9  $\mu\text{g/ml}$  and 2.5  $\mu\text{g/ml}$  respectively. The methanol extracts of *Garcinia Eugenifolia* showed good cytotoxic activity with  $IC_{50}$  values of 9  $\mu\text{g/ml}$ .

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 General Introduction**

Natural product chemistry is a branch of chemistry that deals with the isolation, identification, structure elucidation, and study of the chemical characteristics of chemical substances produced by living organisms. Natural products are defined as chemical compounds that are derived from the living organisms such as plants, animals, insects and other organisms. Natural product is a term used commonly in reference to chemical substances found in nature that have distinctive pharmacological effects.

Natural products have been used as medicinal agents for many years. Before the availability of synthetic drugs, mankind was completely dependent on medicinal herbs for the prevention and treatment of diseases. This is particularly true in Chinese medicine. Chinese herbs have been used as tonics (they increase energy, mood,