

**CHEMICAL CONSTITUENTS OF *Garcinia eugenifolia* AND *Garcinia nitida*
AND THEIR CYTOTOXIC ACTIVITIES AND ANTIOXIDANT PROPERTIES**

BY :

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1. Letter of Report Submission

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Dear Professor

FINAL RESEARCH REPORT "CHEMICAL CONSTITUENTS OF *Garcinia eugenifolia* AND *Garcinia nitida* AND THEIR CYTOTOXIC ACTIVITIES AND ANTIOXIDANT PROPERTIES"

With reference to the above, I am pleased to submit three copies of the Final Research Report entitled "Chemical Constituents of *Garcinia eugenifolia* and *Garcinia nitida* and Their Cytotoxic Activities and Antioxidant Properties".

Thank you.

Yours faithfully



KHONG HENG YEN
Leader
Research Project

5. Report

5.1 Proposed Executive Summary

There are several local Malaysian *Garcinia* species which have ethnobotanical uses but so far very few studies have been carried out to link these folkloric uses with the phytochemistry of these plant species. It would be interesting therefore, to develop phytochemical data of two such Sarawakian species which are *Garcinia eugenifolia* and *Garcinia nitida* which have not been reported before.

Some species of *Garcinia* have been shown to possess interesting biological activities such as cytotoxic, antibacterial, antioxidant and anti-cancer activities. Leaves and stem bark samples of *Garcinia eugenifolia* and *Garcinia nitida* will be extracted and purified using standard protocols which involve the conventional extraction technique such as chromatographic methods. Analyses for structural elucidations of pure bioactive compounds will involve the usual spectroscopic techniques such as NMR, FTIR, UV and MS.

The isolation and identifications of these natural products will lead the researchers to establish a profile of chemical and biological activities of the extract for standardisation and product development. The outcome of this project, which is a documentation of medicinal plants rich in active compounds, is for further investigation for their potential uses in drug development.

5.3 Introduction

Garcinia (Guttiferae) is distributed in Thailand, India, Sri Lanka, Myanmar, Indonesia, Malaysia, the Philippines and China. People in these countries often use *Garcinia* for traditional medicines including the treatment of abdominal pain, dysentery, diarrhea, suppuration, infected wound, leucorrhoea, and chronic ulcer and gonorrhoea (Jayaprakasha *et al.*, 2006). Furthermore, *Garcinia* exhibited an anti-inflammatory (Gopalakrishnan *et al.*, 1997), antibacterial activity against *Staphylococcus aureus* (Sakagami *et al.*, 2005) and *Helicobacter pylori* (Mahabusarakum *et al.*, 1983), and antitumour and antioxidant abilities (Williams *et al.*, 1995).

The *Garcinia* species are rich sources of mangostin, tannin, xanthone, isoflavone, flavone and other bioactive substances (Deachathai *et al.*, 2005; Jung *et al.*, 2006). Extensive researches have shown that some bioactive compounds from the *Garcinia* species exhibited a wide range of interesting biological and pharmacological activities such as cytotoxicity, anti-cancer, antibacterial and antioxidant activities. Such research findings are vital to the biotechnology industry in Malaysia as the country aims to be a global player in the natural product sector (Ismail, 2001). However, there are no studies on *Garcinia eugenifolia* and *Garcinia nitida* from Sarawak. Therefore, it is expected that there will be active compounds with potential cytotoxic and antioxidant activities of *Garcinia eugenifolia* and *Garcinia nitida* from Sarawak.