

**CHEMICAL CONSTITUENTS OF THE BARK OILS OF
GONIOTHALAMUS SPP.**



**PREPARED BY:
WONG MUI HUNG**

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ABSTRACT

Chemical constituents of bark oils from *Goniothalamus ridlei*, *Goniothalamus uvarioides* and *Goniothalamus velutinus* have been studied. The stem bark of *G. uvarioides* (1.50 %) composed of highest percentage of essential oil compared to the stem bark of *G. ridlei* (0.7-0.8 %) and *G. velutinus* (0.19 %). The oils were colorless to pale yellow characteristic pungent, aromatic camphoraceous odors and cooling spicy taste. Monoterpene was the principal component in the bark oil of *G. uvarioides* (75.58 %). However the bark oil of *G. velutinus* did not show the presence of monoterpene and *G. ridlei* had only one monoterpene component that is 1,8-cineole (0.13 %). α -Terpineol (33.06 %) was identified as the major monoterpene in the bark oil of *G. uvarioides*. Other monoterpenes identified include 1,8-cineole (eucalyptol), camphene, *p*-menth-1-en-8-ol and *d*-limonene. Sesquiterpene was the principal component in the bark oil obtained from *G. velutinus* (39.75 %), but as a minor component in the bark oil of *G. ridlei* (7.78 %) and *G. uvarioides* (1.69 %). γ -Eudesmol (19.24 %) was examined as the major sesquiterpene component in the bark oil of *G. velutinus*; while aromadendrene (1.61 %) and linalool (3.14 %) were the major sesquiterpene in the bark oil of *G. ridlei* and *G. uvarioides* respectively.

CHAPTER 1.0

INTRODUCTION

1.0.1 Background

Tropical rain forest of Southeast Asia in general and that of Malaysia in particular are widely acknowledged as one of the most species-rich terrestrial ecosystems in the world (Soepadmo, 1991). Approximately 250,000 species of flowering plant are found in this world, and about 150,000 species of plant are growth in tropical area (Muhamad and Mustafa, 1992). Around 35,000 species are distributed in Soutneast Asia, and Malaysia alone is a home to at least 12,000 to 15,000 species of flowering plants. Till now, there are 654 species have been reported as indigenous species in Malaysia (Muhamad and Mustafa, 1992). The Malaysian rain forests hold incalculable value as untapped bioresources for the development of herbal medicinal products and discovery of new biomolecules with potential usage in healthcare. An integrated approach of phytomedicine R&D programmes will allow us to develop these bioresources into high quality herbal and other botanical products.

There is growing interest worldwide in the utilization of plant materials and phytochemicals to support a sustainable and environmentally friendly living. Plants have been the major source of materials for modern and traditional healthcare products. World markets are now turning to plants as preferred sources for health care formulation ingredients. A greater interest has been shown by the consumers on the use of plant extract or phytochemical especially in the area of nutraceutical, pharmaceuticals, herbal medicine, flavor and fragrance and cosmeceuticals

Menispermaceae, Myrsinaceae, Myrtaceae, Rubiaceae, Rutaceae, Simaroubaceae, Thymelaeaceae and Zingiberaceae (Burkill, 1966; Soepadmo, 1991).

1.0.2 Literature Review

1.0.2.1 Volatile Oils

Phytochemicals are chemicals present naturally in plants. Phytochemicals are available as a complex mixture of chemicals within plant cellular structure. The desired phytochemicals need to be separated from cellular materials such as volatile oils/essential oils, lignin, hemicellulose, cellulose, polysaccharides, chlorophyll, triglycerides, waxes, oleoresin, plant proteins, alkaloids, flavonoids, glycosides, phenolic compounds and other bioactive compounds (Mohamad *et al.*, 2000).

Volatile oils are odorous principles found in various plant parts: leaves, stem, bark, roots, rhizome, seeds, and flowers (Claus *et al.*, 1970; Ahmad *et al.*, 1999). They can evaporate when exposed to the air at room temperature. They also called as essential oils and ethereal oils. The former name is applied because of the “essences” or the active constituents of the plants. Most of the volatile oils are colorless or pale in colour particularly when they are fresh. However, on long standing they may oxidize and resinify, thus darkening in colour. To prevent this, they should be stored in a cool and dry place in tightly stoppered, preferably in full amber glass containers (Claus *et al.*, 1970).