

**Thesis Title** Anti-inflammatory, Analgesic and Antipyretic Activities of Gamboge Extract from *Garcinia hanburyi* Hook f.

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**Degree** Master of Science (Pharmacology)

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### ABSTRACT

The anti-inflammatory, analgesic and antipyretic activities of a methanol extract from *Garcinia hanburyi* Hook f. (GH5763) were assessed in comparison with the reference drugs. Anti-inflammatory activity was performed using both acute and chronic inflammatory models. It was found that GH5763 possessed marked inhibitory activity on the acute phase of inflammation as seen in ethyl phenylpropionate-induced ear edema as well as carrageenin-induced hind paw edema in rats. The mechanisms of anti-inflammatory activity of GH5763 might be due to its inhibitory effect on the biosynthesis and/or release of some inflammatory mediators, such as histamine, serotonin, kinins and prostaglandins. However, its mechanism of action seemed not to be related to the inhibition of the lipoxygenase pathway, since GH5763 extract did not elicit any inhibitory effect on arachidonic acid-induced hind paw edema in rats. In the subchronic inflammatory model, GH5763 provoked a significant reduction of

transudation and had an effect on the proliferative process of granuloma in cotton pellet-induced granuloma model, whereas prednisolone, a steroidal drug, exerted a profound inhibitory effect on both parameters. Furthermore, it is unlikely that GH5763 possessed a similar mechanism of anti-inflammatory action as steroidal drugs, since it was found to be devoid of steroidal-like effects, such as a decrease of the body weight gain and the thymus weight. However, GH5763 reduced the alkaline phosphatase activity in serum of rats in this animal model likewise aspirin and prednisolone. The action of GH5763 on alkaline phosphatase activity in serum during subchronic inflammation might be due to lysosomal membrane stabilization. In the analgesic test, GH5763 possessed marked inhibitory activity on acetic acid-induced writhing response and formalin test in mice. Moreover, GH5763 possessed an excellent antipyretic effect when tested using yeast-induced hyperthermia in rats. It is postulated that the antipyretic effect of GH5763 is caused by the inhibition of the biosynthesis and/or release of prostaglandins as well as of endogenous pyrogens. Although the mechanism of action of GH5763 is unclear, this extract shows beneficial properties since it possesses marked anti-inflammatory, analgesic and antipyretic effects without an ulcerogenic effect.

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อาจเนื่องมาจากการทำให้ผนังของไลโซโซมคงทน ในการทดสอบฤทธิ์ระงับความเจ็บปวด GH5763 มีฤทธิ์ระงับความเจ็บปวดได้ดีในการทดลองที่ทำให้เกิดการเจ็บปวดโดยการฉีดกรดอะซิติก เข้าทางช่องท้อง และการทดสอบโดยการฉีดฟอร์มัลลินเข้าอุ้งเท้าของหนูถีบจักร นอกจากนี้ในแบบจำลองที่ใช้สัตว์กระตุ้นให้เกิดไข้ในหนูขาว พบว่า GH5763 มีฤทธิ์สูงในการลดไข้ ซึ่งคาดว่าฤทธิ์ลดไข้ของ GH5763 เกิดจากการยับยั้งการสังเคราะห์และ/หรือการหลั่งของโพรสตาแกลนดินส์ รวมทั้ง เอนโดจีนัสไพโรเจน แม้ว่ากลไกการออกฤทธิ์ของ GH5763 ยังไม่ทราบแน่ชัด สารสกัดนี้ได้แสดง ถึงคุณสมบัติที่เป็นประโยชน์ เพราะว่ามีฤทธิ์ในการต้านการอักเสบ, ระงับปวดและลดไข้ได้ดีโดยไม่มีผลทำให้เกิดแผลในกระเพาะอาหาร

The logo of Chiang Mai University is a circular emblem. In the center is a detailed illustration of an elephant standing and facing left. Above the elephant's head is a traditional Thai decorative element, a 'chakra' or 'phra' symbol, which is a stylized flame or sunburst. The entire emblem is enclosed within a circular border. The Thai text 'มหาวิทยาลัยเชียงใหม่' is written along the top inner edge of the circle, and 'CHIANG MAI UNIVERSITY 1964' is written along the bottom inner edge. There are also two small floral motifs on either side of the elephant's head.

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