

องค์ประกอบทางเคมีจากกิ่งมังคุดป่า

CHEMICAL CONSTITUENTS FROM THE BRANCH OF *GARCINIA COSTATA*

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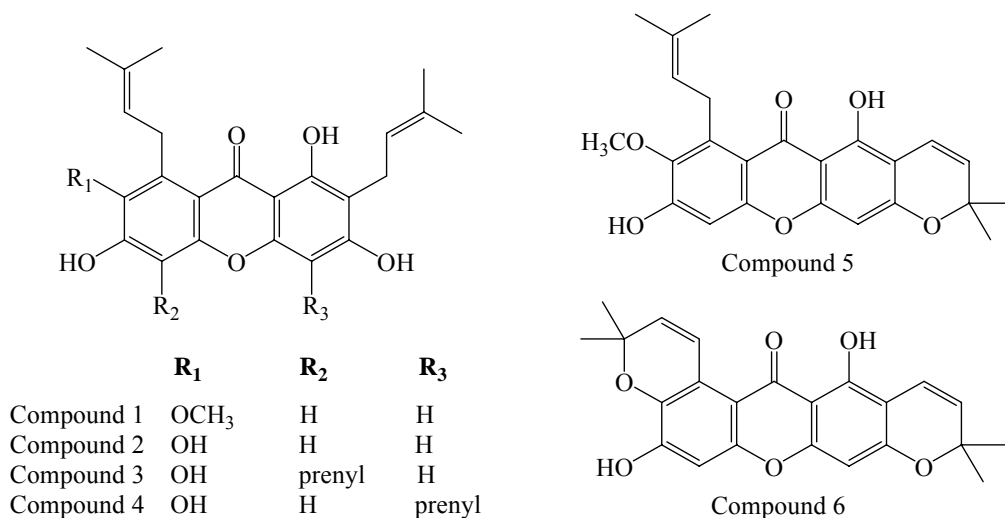
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บทคัดย่อ: ส่วนสกัดหยาบไดคลอโรมีเทนจากกิ่งมังคุดป่าแสดงฤทธิ์ยับยั้งเซลล์มะเร็งเต้านม (Breast Cancer) และเชื้อมาลาเรีย (Anti-*Plasmodium falciparum*, K1 Strain) ด้วยค่า IC₅₀ 15.07 และ 7.50 µg/mL ตามลำดับ หลังจากแยกให้บริสุทธิ์ด้วยเทคนิคทางโครมาโทกราฟี ได้สารในกลุ่มแซนโทน

Abstract: The dichloromethane (CH₂Cl₂) extract from the branch of *Garcinia costata* exhibited cytotoxic activity against human breast cancer and antimalarial activity against *Plasmodium falciparum* K1 strain with the IC₅₀ of 15.07 and 7.50 µg/mL, respectively. Upon chromatographic purification, xanthone derivatives were isolated.



Introduction: The phytochemistry of *Garcinia spp* has been widely studied. Previously isolated compounds include various types of xanthenes and flavonoids, many of them have been shown to exhibit significant biological activities such as anti-HIV, antioxidation and antibiotic activities. In the present study, we have investigated the branches of *Garcinia costata* (wild mangosteen), one of the native plants of South East Asia. The CH₂Cl₂ extract exhibited anticancer (Breast Cancer) and antimalarial activities (Anti-*Plasmodium falciparum*, K1 Strain) with IC₅₀ 15.07 and 7.50 µg/mL, respectively.

Methodology: Dried branches of *Garcinia costata* were extracted with dichloromethane. Removal of solvent produced dichloromethane extract which was subjected to column chromatography to give six fractions. The bioactive fraction 6 with notable TLC profile were further purified to afford six compounds which were then identified by analyses of the spectroscopic data, UV, NMR, IR and MS.

Results, Discussion and Conclusion: The crude CH_2Cl_2 extract gave one new (compound 4) together with five known xanthone derivatives as a yellow solid. These compounds showed the UV absorption bands characteristic of xanthenes. The IR spectra showed the absorption bands of conjugated carbonyl ($\text{C}=\text{O}$ stretching) and hydroxyl ($\text{O}-\text{H}$ stretching) functionalities. The ^1H NMR spectra showed a sharp singlet signal of a chelated hydroxyl group, singlet signal of aromatic proton, sharp singlet signal of methoxyl group and signal of prenyl moiety or signal of chromene ring. Compound 4 gave the HMBC correlations of $\text{H}-1'$ to $\text{C}-2$, $\text{C}-3$, $\text{C}-2'$, $\text{C}-3'$, $\text{H}-1''$ to $\text{C}-3$, $\text{C}-4$, $\text{C}-4\text{a}$, $\text{C}-2''$, $\text{C}-3''$ and $\text{H}-1'''$ to $\text{C}-7$, $\text{C}-8$, $\text{C}-8\text{a}$, $\text{C}-2'''$, $\text{C}-3'''$, indicating that the three prenyl groups were attached to $\text{C}-2$, $\text{C}-4$ and $\text{C}-8$ of the xanthone (Figure 1). The five xanthone derivatives were assigned as α -mangostin (compound 1), γ -mangostin (compound 2), garcinone E (compound 3), 5,9-dihydroxy-8-methoxy-2,2-dimethyl-7-(3-methylbut-2-enyl)-2H,6H-pyrano[3,2-b]xanthen-6-one (compound 5) and brasilixanthone B (compound 6) by spectroscopic method and the ^1H and ^{13}C NMR spectroscopic data were identical to those reported in the literatures.

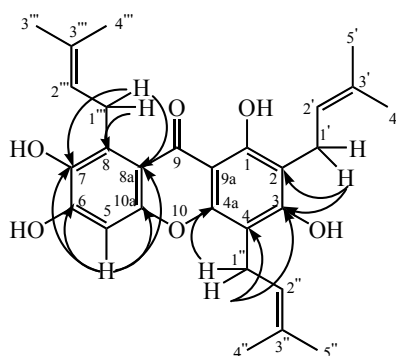


Figure 1 Key HMBC correlations of compound 4

Keywords: *Garcinia costata*, xanthone, mangosteen

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