Chemical constituents from the branches of *Garcinia schomburgkiana* and their cytotoxic activities

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Abstract

Statement of the Problem: *Garcinia schomburgkiana* accommodates a diverse range of phytochemicals, such as xanthones, biphenyls, depsidones, and polyprenylated benzoylphloroglucinols (PPBPs), and some of which exhibited potential biological and pharmacological properties, especially as anticancer candidates. Researchers have reported that the acetone (polar) extract of the branches of *Garcinia schomburgkiana* resulted in the isolation of xanthones and flavonoids with their antioxidant potential. However, the CH_2Cl_2 extract of *Garcinia schomburgkiana* branches has not been previously studied. The purpose of this study is to investigate phytochemicals from the CH_2Cl_2 extract of the branches of *Garcinia schomburgkiana* and to evaluate their *in vitro* cytotoxicity towards five human cancer cell lines (Hep G2, MCF-7, HeLa S-3, KB, and HT-29). Methodology & Theoretical Orientation: The CH_2Cl_2 extract of *Garcinia schomburgkiana* branches was fractionated using various chromatography techniques (silica gel, Sephadex LH-20, RP C-18, and chromatotron). The structures of the isolated compounds were characterised based on their spectroscopic data (^1H and ^{13}C NMR) and comparison with the literature. All of the isolated compounds were tested for the *in vitro* cytotoxicity using MTT assay. Findings: Two polyprenylated benzoylphloroglucinols (**1** and **2**), seven xanthones (**3**–**9**), two chalcones (**10** and **11**), one benzophenone (**12**), and one biphenyl (**13**) were isolated from the branches of *Garcinia schomburgkiana*. Conclusion & Significance: Among all of the isolated compounds, cudratricusxanthone K (**9**), 2′-hydroxydihydrochalcone (**10**), and 1-(2′-6′-dihydroxyphenyl)-3-phenyl-1propanone) (**11**) were isolated from genus *Garcinia* for the first time. Oblongifolin C (**2**) showed most potent cytotoxicity against Hep G2, MCF-7, HeLa S-3, KB, and HT-29 cancer cell lines with IC_{50} values in the range of 5.15–7.09 μM.

Image

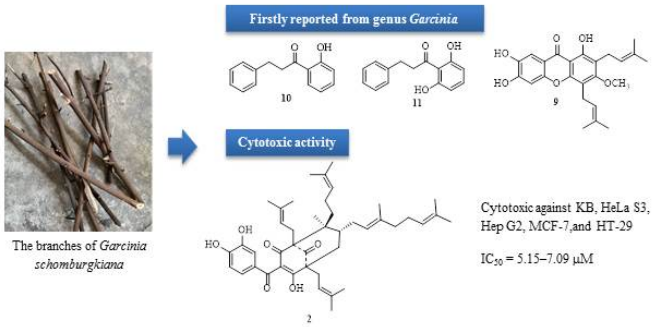


Figure 1: Compounds **9**, **10**, and **11** were firstly found in genus *Garcinia*, while compound **2** gave the most potent cytotoxicity against all five cancer cell lines.

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Photograph



Biography

Nindyashinta Maharani Darnasmara, currently pursue her master degree at Chulalongkorn University, majoring in Chemistry. She joins the Center of Excellence in Natural Products Chemistry research group and her works focus on the isolation and structural elucidation of the isolated compounds.

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Notes/Comments: