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A Potent Aromatase Inhibitor from the Leaves of *Croton oblongifolius* Roxb

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Abstract

*Croton oblongifolius*Roxb. is one of the plants that belongs to family Euphorbiaceae. Several species have been used in the traditional medicine systems in Asia, Africa and South America including *Croton tiglium* in Aurveda medicine in Sri Lanka. The plant used in the current study, *C. oblongifolius* has a long history in traditional Thai medicine for many applications such as for dysmenorrhea, as a purgative and to treat dyspepsia and dysentery. Diterpenoids are the major type of secondary metabolite found in this plant and they exhibited various structures, which include cembrane, labdane, clerodane, halimane, *ent*-kaurane, and neocrotocembrane. Many diterpenoids isolated from this plant possess interesting biological activities such as, cytotoxicity and Na+ K+-ATPase inhibitory activity. In the current study, a clerodane type diterpene, 15-Hydroxy-cis-*ent*-cleroda-3,13(*E*)-diene was isolated from a leaf extract of *C. oblongifolius* using several chromatographic techniques. Structure of the compound was elucidated by analysis of spectroscopic data (1D and 2D NMR, IR, UV, and MS). Antibacterial and cancer chemoprevention activities including aromatase inhibitory activity (AIA) and measurement of oxygen radical absorbance capacity (ORAC) were evaluated using standard procedures. The compound was inactive as an antibacterial agent even at a concentration of 100 µg/ mL. However, it exhibited aromatase inhibitory activity (AIA) with an IC_{50} value of 2.6 µM, which was in line with Ketoconazole, the reference drug with an IC_{50} value of 2.4 µM. Therefore, this compound is a promising drug candidate for the treatment of breast and ovarian cancers.

Key words: *chromatography, cytotoxicity, diterpenoids, ORAC*

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