

Phytochemicals and cytotoxic studies of *Zingiber cassumunar* Roxb.

ABSTRACT

Zingiber cassumunar belongs to the family Zingiberaceae and is locally known as bonglai in Malay and plai among Thais. It has been traditionally used as treatment for women after giving birth or during confinement. Extraction and isolation of phytochemical compounds from the rhizome of *Zingiber cassumunar* Roxb. using various chromatographic techniques identified five compounds, namely, cis-3-(3,4-dimethoxyphenyl)-4-[(E)-3,4-dimethoxystyryl]cyclo-hex-1-ene (1), (E)-4-(3,4-dimethoxyphenyl) but-3-en-1-ol (2), 3,4-dimethoxybenzoic acid (3), 8-(13,14-dimethoxyphenyl)-2-methoxynaphtho-1,4-quinone (4) and sitosterol (5). Structure elucidation of these compounds was carried out by various spectroscopic means. The cytotoxic activity of isolated compounds against human T-acute lymphoblastic leukemia cancer cells (CEMss) and human cervical cancer cells (HeLa) were carried out using MTT assay. Only the chloroform extract showed strong activity against CEMss cancer cells with IC₅₀ values of 9.20 ± 0.02 g/ml. Compounds (1), (2) and (4) showed strong cytotoxicity activity against HeLa cancer cells with IC₅₀ values <15 g/ml whilst compounds (1) and (4) demonstrated moderate cytotoxicity activity against CEMss cells with IC₅₀ values of 28.34 ± 0.39 g/ml and 25.96 ± 0.94 g/ml respectively. Therefore, *Zingiber cassumunar* has high potential to be commercially domesticated based on the anti-cancer properties of its compounds.

Keyword: Zingiberaceae; Cytotoxicity; Phenylbutenoid; Ginger; Bonglai; CEMss; HeLa