Full Length Research Paper

Cytotoxic activity of leaf and rhizome extracts of *Alpinia scabra* (Blume) Náves, a wild ginger from Peninsular Malaysia

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Accepted 19 October, 2010

The leaves and rhizomes of *Alpinia scabra* (Zingiberaceae) were investigated for their cytotoxic effect against selected human cancer cell lines, namely MCF7 (hormone-dependant breast carcinoma cell line), HT29 (colon carcinoma cell line) and SKOV-3 (ovarian cancer cell line) by using an *in vitro* neutral red cytotoxicity assay. The methanol extracts of both leaves and rhizomes did not show active cytotoxic activity against the selected cancer cell lines. The n-hexane extract of the leaves exhibited remarkable cytotoxic effect against SKOV-3 cells with IC₅₀ value of 6.3 µg/ml while dichloromethane extract showed high cytotoxic effect against MCF7 and SKOV-3 with IC₅₀ values of 6.7 and 5.9 µg/ml, respectively. The n-hexane and dichloromethane extracts of the rhizomes possessed high cytotoxic effect against SKOV-3 cells with IC₅₀ values of 8.3 and 7.0 µg/ml, respectively. This is the first report of the cytotoxic activity of *A. scabra*.

Key words: Zingiberaceae, *Alpinia scabra*, cytotoxic activity, cancer cell lines.

INTRODUCTION

Recently, there is increasing interest in the search for plant based lead compounds for the development of new pharmaceuticals, along with the increase of deadly illness such as AIDS and cancer (Newman et al., 2003). There are approximately 250,000 plant species in the world and 60% of them are located in the tropical rainforests. The plant resources of Malaysia comprise about 15,000 species. It was estimated that about 1,000 species of the Malaysian flora have undergone simple chemical screening and much less have been subjected to thorough chemical or pharmacological studies (Goh et al., 1993). Plants in the Zingiberaceae family are widely distributed throughout the tropics, but concentrated mainly in Southeast Asia. Current work indicates that there are about 18 genera with over 160 species of Zingiberaceae in Peninsular Malaysia (Larsen et al., 1999). Several species from the genera *Alpinia, Amomum, Curcuma, Kaempferia* and *Zingiber* are reported to have medicinal values and have been used for generations in various traditional health care systems.

*Alpinia scabra* (Blume) Náves belonging to the botanical family Zingiberaceae, is an aromatic, perennial and rhizomatous herb, which is sometimes known by its vernacular name ‘Lengkuas raya’ among the locals. It is a wild species and grows mainly on mountains at moderate elevations in Peninsular Malaysia. However, it can also survive in the lowlands as this has been recorded in the states of Terengganu and Northern Johor. *A. scabra* is closely related to *A. galanga* (alternatively called greater galangal), an edible species which is utilized in traditional medicine preparations. Apart from having black ripe fruits, *A. scabra* differs slightly from *A. galanga* in its inflorescence and floral details. Recent researches reported that *A. galanga* has been categorized as anticancer, antimicrobial, carminative, anti-rheumatic, anti-flatulent and anti-itching agents (Matsuda et al., 2003; Lee and Houghton, 2005). There are extensive investigations on *A. galanga*. However, there is little information available in the literature about *A. scabra*.

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