Anticancer and antimicrobial activities of zerumbone from the rhizomes of Zingiber zerumbet

ABSTRACT

The aim of this study is to evaluate the anticancer and antimicrobial activities of zerumbone (ZER) from the rhizomes of Zingiber zerumbet. ZER is a crystalline sesquiterpene from the wild ginger, Z. zerumbet. This bioactive component has its unique structure, with a cross-conjugated ketone in an 11-membered ring, as well as remarkable biological activity. Thus, this compound has been isolated from the fresh rhizomes of Z. zerumbet using steam distillation and evaluated for its antimicrobial and anticancer activities. The antimicrobial effects were examined using disc diffusion method and group of microorganism, namely known as Methicillin resistant Staphylococcus aureus, Pseudomonas aeruginosa, Salmonella choleraesuis, Bacillus subtilis, Candida albicans, Aspergillus ochraceaus and Sacchoromyces cerevisiae. However, MTT assay was performed to determine the anti-cancer properties of zerumbone on human cervical cancer cells (HeLa) compared to cisplatin as positive control. Zerumbone has shown a dose dependent (p<0.05) anti-bacterial effect on S. choleraesuis, while no antifungal activity were observed. Zerumbone was also able to exert an antiproliferative effect towards cervical cancer cell line (HeLa) in time-dependent manner (p<0.05) (24, 48 and 72 h). It could be concluded that, zerumbone with its unique chemical structure and versatile pharmacological activities might be a potential primer to develop new curative agents for possible various ailments.

Keyword: Zerumbone; Biological activities; Structure activity relationship