

Anticancer and antimicrobial activities of zerumbone from the rhizomes of *Zingiber zerumbut*

ABSTRACT

The aim of this study is to evaluate the anticancer and antimicrobial activities of zerumbone (ZER) from the rhizomes of *Zingiber zerumbut*. 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 Methicilin resistant *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Salmonella choleraesuis*, *Bacillus subtilis*, *Candida albicans*, *Aspergillus ochraceus* and *Saccharomyces 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