

TITLE: ANTIMICROBIAL ACTIVITY OF ESSENTIAL OIL FROM *ZINGIBER ZERUMBET* (L.) SMITH AGAINST *Propionibacterium acnes*

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ABSTRACT:

Acne is the eighth most prevalent disease worldwide that affects more than 90% of the global population. This disease is a chronic and relapsing inflammatory condition with different severity levels, which may require long-term chronic treatment. The lesions caused by this common condition involve many factors, as the following: excess sebum production, disturbed keratinization within the follicle and colonization of the pilosebaceous duct by *Propionibacterium acnes*, among others. The purpose of this study was investigate antibacterial activity of the essential oils extracted from *Zingiber zerumbet* (L.) Smith (bitter ginger) rizhomes against *P.acnes*. All extracts were submitted to chromatographic and spectrophotometric analysis to determine its purity, before being used in the tests. Only purified essential oil samples containing at least 90% of Zerumbona (major biomolecule found in *Zingiber zerumbet* rizhomes) in its composition were used in the assays. Different concentrations of essential oil were tested against the standard strain *P.acnes* ATCC 11827 by using an adaptation of cavity-plate, agar dilution and microdilution methods. The essential oil produced from bitter ginger showed a minimum inhibitory concentration (MIC) of 0,100 mg/mL and a minimum bactericidal concentration (MBC) of 0,25 mg/mL against *P acnes*. To determine the speed of cidal activity, a time kill-curve assay was performed. After sixty hours of bacteria-essential oil interaction, it was observed 2 log reduction in the *P. acnes* viable cell counts. These results draw attention to the great potential *Zingiber zerumbet* as antimicrobial agent against *P. acnes*, indicating its possible use in the *phyto-pharmaceutical* industry as new approach for treating acne disease.

Key words: essential oil; *Zingiber zerumbet*, antibactericidal

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