

Assessment of the Phytochemical Analysis and Antimicrobial Potentials of Zingiber zerumbet

ABSTRACT

Antimicrobial resistance (AMR) has arisen as a global concern in recent decades. Plant extracts used in combination with antibiotics are promising against AMR, synergistically. The purpose of this study was to evaluate the component of the bitter ginger (*Zingiber zerumbet*) extract in different solvents using high-performance liquid chromatography (HPLC), in addition to evaluate the antibacterial activity of these extracts, in combination with their antibiotic potential against four multidrug resistant (MDR) bacterial strains (*Lactobacillus acidophilus*, *Streptococcus mutans*, *Enterococcus faecalis* and *Staphylococcus aureus*). Ethanol and the aqueous extracts of bitter ginger were prepared using a conventional solvent extraction method and were evaluated for their phytochemistry using HPLC, qualitatively and quantitatively. Moreover, the antibiotic susceptibility of the pathogenic isolates was determined. A disc diffusion assay was used to obtain the antimicrobial potential of the extracts alone and with antibiotics. Eight components were identified from the separation of the bitter ginger extract by HPLC. For AMR bacteria, the combination of the antibiotic solution with the bitter ginger crude extracts could improve its susceptibility of these antibiotics. This study indicates that the combination of an antibiotic solution with the bitter ginger crude extract exhibits potent antibacterial activities against MDR bacterial strains. Therefore, they can be used for the treatment of various diseases against the microbial pathogen and can be incorporated into medication for antibacterial therapy.