

GC-MS Analysis of *Vernonia thomsoniana* Extracts and Antibacterial Potentiating Effects on standard Antibiotics

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Abstract

The search for plant derived therapeutic agents against drug resistant bacteria has been intensified in recent years. *Vernonia thomsoniana* chloroform and ethanol crude extracts were subjected to phytochemical screening and subsequently tested for antibacterial activity, alone and in combination with standard antibiotics (Sparfloxacin and Ciprofloxacin). GC-MS analysis was carried out on chloroform extract to determine the chemical composition. The antibacterial activity ranged from 20-23 mm for the crude extracts. The chloroform extract exhibited highest zone of inhibition against *S. aureus* and *E. coli* (23 mm). The MIC of the extracts ranged from 2.5-5 mg/mL. The antibacterial effect of combining standard antibiotics with extracts showed that Ciprofloxacin was potentiated by chloroform extract against *E. coli* (34 mm) as the most effective antibacterial inhibition. The MIC of the combination of extracts with the antibiotics ranged between 2.5-0.313 mg/mL. GC-MS analysis on chloroform extract resulted to identification of compounds, with n-hexadecanoic acid (18.8 %), 9, 12-octadecadienoic acid (Z,Z) (8.8 %), 9,17-octadecadienal, (Z) (5.5%) and nonane (5.1 %) as most abundant components. Thus, fatty acid esters could be responsible for the potent activity of chloroform extract. Our study showed that the combination of standard antibiotics such as Ciprofloxacin with the extracts could provide notable treatment properties for developing effective antibacterial agents.

Keywords: *Vernonia thomsoniana*, antibacterial activity, drug combination, GC-MS