

**PHYTOCHEMICAL AND BIOLOGICAL STUDIES OF THE COMPOUNDS FROM  
THE ROOT BARK OF *VERNONIA AURICULIFERA*; HIERN (ASTERACEAE)**

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### ABSTRACT

In the present study, the root bark of *V. auriculifera* was sequentially extracted with *n*-hexane, dichloromethane (DCM) and methanol respectively. The activities of crude extracts of *n*-hexane, DCM and methanol against brine shrimp larvae were compared. As larvicides, the DCM crude extract was most active (LD<sub>50</sub> = 318 ppm), followed by *n*-hexane (LD<sub>50</sub> = 788 ppm), and lastly by methanol extract (LD<sub>50</sub> = 931 ppm). The anti-bacterial assay showed that crude extracts were generally more active on *E. coli* than *S. aureus*. *n*-hexane and methanol extracts were found to be active against *E. coli* (Inhibition diameter > 10 mm) at 1000 ppm.

Fractionation of DCM extracts appears to have yielded compounds whose activity against *S. aureus* seems to be enhanced. Fractionation is thought to concentrate active ingredients.

The *n*-hexane extract, methanol extract and compounds **3**, **4**, **5**, **10** and **11** with activities (inhibition diameters  $\geq$  10 mm) against *E. coli* can be used to control this bacterium. For *S. aureus* only compounds **5**, **7**, **9** and **10** which had activities  $\geq$  10 mm that could be used to control it.

The fungal assay using *Candida albicans* showed significant activity (Inhibition diameter > 10 mm) with *n*-hexane and DCM extracts. For compounds only **1** and **11** had good results (inhibition diameters  $\geq$  10) with this fungus. Thus *n*-hexane, DCM extracts and compounds **1** and **11** could suitable candidates for control of *Candida albicans*.

Column chromatography of the *n*-hexane extracts followed by re-crystallization in methanol yielded two triterpenoids which were characterized as lupeol (**6**) and an ester of a long chain fatty acid and taraxerol (**7**) whose suggested name is  $\alpha$ -taraxerol octanoate and is a possible novel compound. The structures of these compounds were elucidated and using  $^1\text{H-NMR}$  and  $^{13}\text{C-NMR}$  experiments and also matching their spectra with those found in the literature. Melting points, ultra-violet (UV) and infra-red (IR) absorptions of these compounds are reported.