

Bioactive compounds and biological activities of *Jatropha curcas* L. Kernel Meal Extract.

ABSTRACT

Defatted *Jatropha curcas* L. (*J. curcas*) seed kernels contained a high percentage of crude protein (61.8%) and relatively little acid detergent fiber (4.8%) and neutral detergent fiber (9.7%). Spectrophotometric analysis of the methanolic extract showed the presence of phenolics, flavonoids and saponins with values of 3.9, 0.4 and 19.0 mg/g DM, respectively. High performance liquid chromatography (HPLC) analyses showed the presence of gallic acid and pyrogallol (phenolics), rutin and myricetin (flavonoids) and daidzein (isoflavonoid). The amount of phorbol esters in the methanolic extract estimated by HPLC was 3.0 ± 0.1 mg/g DM. Other metabolites detected by GC-MS include: 2-(hydroxymethyl)-2-nitro-1,3-propanediol, β -sitosterol, 2-furancarboxaldehyde, 5-(hydroxymethyl) and acetic acid in the methanolic extract; 2-furancarboxaldehyde, 5-(hydroxymethyl), acetic acid and furfural (2-furancarboxaldehyde) in the hot water extract. Methanolic and hot water extracts of kernel meal showed antimicrobial activity against both Gram positive and Gram negative pathogenic bacteria (inhibition range: 0-1.63 cm) at the concentrations of 1 and 1.5 mg/disc. Methanolic extract exhibited antioxidant activities that are higher than hot water extract and comparable to β -carotene. The extracts tended to scavenge the free radicals in the reduction of ferric ion (Fe(3+)) to ferrous ion (Fe(2+)). Cytotoxicity assay results indicated the potential of methanolic extract as a source of anticancer therapeutic agents toward breast cancer cells.

Keyword: *Jatropha curcas* L; Bioactive compounds; Antibacterial; Antioxidant; Cytotoxicity.