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Phytoconstituents, nutritional, antioxidant and toxicological study on *Cissus multistriata* plant extracts

Omale James

Kogi State University, Nigeria

The proximate composition; nutritional potential; bioactive phytochemical components; antioxidant capacity; and toxic potential of different parts of grape plant *Cissus multistriata* were investigated using chemical, biochemical and toxicological methods, water, methanol, and chloroform as the extraction solvents. Phytochemical screening and proximate analysis revealed the presence of carbohydrate, protein, vitamins, fats, tannins, flavonoids, Saponins, steroids, cardiac glycosides, minerals as well as glyconutrients such as xylose, galactose, fucose, mannose and glucose were also detected. Assessment of the nutritional potential of the plant's leaf by administering doses of 100, 200, 300, 400, 500 and 600 mg/kg body weight to albino rats for 21 days resulted in statistically significant ($P < 0.05$) increase in body weight. The lipoprotein profiles decreased with increase in the dosage of the extract, except for high-density lipoprotein -cholesterol (HDL-cholesterol) which increased with increasing dosage of the extract. The protein profiles and glucose level were also increased when compared with the control. The determination of the antioxidant capacity of the methanol extract using 2,2-diphenyl-1-picrylhydrazyl (DPPH) as well as nitric oxide radical scavenging activities and activities of antioxidant enzymes (Glutathione peroxidase and superoxide dismutase) showed the unripe fruit as exhibiting the highest DPPH scavenging effect with IC_{50} 0.69 $\mu\text{g/ml}$ in comparison with the standard quercetin used (IC_{50} = 166.50 $\mu\text{g/ml}$). Administration of the plant extract together with carbon tetrachloride toxicant resulted in an increase in activities of the antioxidant enzymes glutathione peroxidase and superoxide dismutase. Cytotoxicity to brine shrimps (*Artemia salina*) of the aqueous and chloroform extracts of the leaf, stem, ripe and unripe fruit caused low toxic effect on brine shrimps (*Artemia salina*). The study indicates that *Cissus multistriata* could be a safe dietary source of natural antioxidant and nutrients. These results are discussed from the anti-oxidant, nutritional and toxicological view points.

Biography

James Omale completed his PhD at the age of 38 years from Michael Okpara University of Agriculture, Umudike, Nigeria. He is currently the Deputy Dean, Postgraduate School, Kogi State University, Anyigba, Nigeria. He has published over 50 papers in reputed journals and serving as editorial board member for five (5) international journals.

james.omale123@yahoo.com