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Nutraceutical study of *Strychnos madagascariensis*

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Aim: This study evaluated the proximate, mineral, anti-nutrients, antioxidant as well as the in vitro antidiabetic efficacy of Strychnos madagascariensis ripe fruit, an indigenous plant consumed traditionally by the people living in the northern coastal region of Kwazulu Natal, South Africa for the management of diabetics and hypertension.

Methodology: Phytochemical tests were conducted using standard qualitative methods. Proximate parameters (moisture, ash, crude fats, crude fibers, proteins and carbohydrates contents) and mineral composition were determined using standard procedures. Anti-nutrients (phytic and oxalic acid) were determined using titration method. The plant material was extracted with methanol, ethyl acetate, hexane and water and the four extracts were screened for their antioxidant activity using ABTS and DPPH assays. The potential antidiabetic activity of the plant extracts was evaluated against some carbohydrates (α-amylase and α-glucosidase) and lipids (pancreatic lipase) digestive enzymes in vitro.

Results: The phytochemical analysis of the seed coat indicated the presence of terpenoids, alkaloids and cardiac glycoside while the fruit pulp showed the presence of terpenoids, alkaloids and saponin. Results from proximate analysis showed that the fruit contained low moisture, protein, ash and fat contents with significant amount of carbohydrates. The mineral analysis showed that the fruit contained high amount of potassium, magnesium, calcium and phosphorus. Anti-nutritional analysis of the seed coat indicated that phytic acid was 1.39±0.01% which is within the tolerable (safe) level and both phytic and oxalic acids were absent in the fruit pulp. The plant extracts exhibited antioxidant activity by efficiently scavenging ABTS and DPPH radicals. The plant extracts further showed in vitro antidiabetic potential by significantly inhibiting α-amylase, pancreatic lipase and α-glucosidase in a concentration dependent manner.

Conclusion: Strychnos madagascariensis ripe fruit could be considered as a fruit with great potential in the nutritional as well as pharmaceutical industries in the management of diabetes mellitus.

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