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Studies on the health related functional characteristics and antioxidant potential of mucilage (dietary fibre) from *Zizyphus mauritiana* fruit

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The metabolic and therapeutic effects of dietary fiber in fruits and vegetables have prompted debate and the current research relating to its health beneficial role in the prevention and treatment of disease are in concern. The crude mucilage polysaccharides isolated from *Z. mauritiana* fruits of under-utilized species have potential health benefits. The illustrated three mechanisms of *Z. mauritiana* mucilage define the capability in controlling the postprandial serum glucose level. First, the results of *Z. mauritiana* mucilage with good water holding and swelling power, increases the viscosity of small intestine content and hinders the diffusion of glucose; second, glucose binds with the mucilage and decrease the available concentration of glucose in the small intestine with high glucose retardation index; third, it retard the α -amylase and α -glucosidase enzyme action and postpone release of glucose due to the presence of fibre associated total polyphenols. Interestingly, the morphological characteristics of SEM images with porosity, available surface and the regiochemistry of the surface layer might play a role in some physicochemical properties (adsorption or binding of glucose molecules) accounting for physiological effects in controlling the serum glucose. The broad OH stretching of FT-IR spectra appeared at 3495 cm⁻¹ reveals that high water holding capacity of mucilage may be due to the presence of hydroxyl groups. Besides, promising acetylcholine esterase and tyrosinase inhibitory action reveals that mucilage also have a capability to control the Alzheimer's disease and skin health, respectively. In conclusion, the novel crude mucilaginous fraction isolated from *Z. mauritiana* fruit is an excellent source toward its development as a potential nutraceutical/functional food. Therefore, it is also important to study the detailed structure and conformation of the above said polysaccharides associated with bioactive constituents and their impacts on health effects through in vivo experiments are needed.

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