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The ability of winter melon (*benincasa hispida*) in improving nutritive values and controlling glycaemic parameters

Abstract:

A high intake of refined carbohydrates combined with a low intake of dietary fibres (DFs), notably from vegetables, has elevated the risk of cardiovascular disease, diabetes, and other disorders. The incidence of chronic diseases is increasing, with the number of diabetics anticipated to climb from 180 million in 2010 to 368 million by 2030. This is the leading cause of morbidity and mortality worldwide since it can create health issues and lower quality of life. The aim of this study is to investigate whether the dietary fibres from winter melon able to improve glycaemic profiles for diabetic control. Our research reveals that the aqueous extract of winter melon exhibits a significant hypoglycaemic and protective effects of streptozotocin-induced diabetic rats. Winter melon-treated rat's liver and kidney show improvement of hepatic cells which resembles normal structure of hepatic cells. Besides, the incorporation of winter melon in granola bars proven in improving nutritional composition and DF content while improving the regularity of defecation behaviour and well accepted by consumers. In the intervention study, the group presented a significant reduction in diastolic blood pressure (Δ 7.0 mmHg, 95% CI: 11.4, 2.5). Mean fasting plasma glucose (Δ 0.8 mmol/L, 95% CI: 1.8, 0.2) showed a greater reduction in the intervention group compared to the control group (Δ 0.4 mmol/L, 95% CI: 1.2, 0.4). Mean lean body mass showed favourable trend of increment at Week 6 (Δ 0.05 kg, 95% CI: -0.40, 0.49) and Week 12 (Δ 0.16 kg, 95% CI: -0.33, 0.64) as compared to baseline in the intervention group but not in the control group which manifested decreasing lean body mass. In short, the use of *B. hispida* extract may potentially improve blood pressure and glycaemic control in patients with type 2 diabetes and it may be an attractive candidate for the development of functional food products. Being physically active and eating a sufficient amount of DF from fruits and vegetables are vital in reducing the risks of having diabetes, maintaining the health status and sustaining quality of life and societal well-being.

Biography

Wan Rosli Wan Ishak is a professor of Nutrition Program at the School of Health Sciences (SHS), Universiti Sains Malaysia (USM), Health Campus, Kota Bharu, Kelantan, Malaysia. Currently, he is a Dean of SHS of USM. His research theme emphasizes more on the utilization of natural agricultural by-products into popularly consumed processed foods. Various low glycemic index (GI) based on these agricultural by-products have been developed. He was selected among Top 10 Innovators for SYMBIOSIS project funded by Malaysian Technology Development of Malaysia (MTDC) to facilitate the commercialization of functional and health cookies from oyster mushroom (Nutri-Mush® Cookies). He has published more than 130 articles in various indexed journals.