

Abstract

Yacon Concentrate NZFOS+, Its Phytochemical Contents, Health-Related Properties and Potential Applications [†]

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Abstract: Yacon (*Smallanthus sonchifolius*), a sustainable foodstuff, is perceived as a functional food because it contains biologically active components, e.g., fructooligosaccharides (FOS), inulin, and phenolic compounds that may provide physiological benefits beyond basic nutrition to reduce the risk of chronic diseases. There is a growing public interest in why and how to use yacon. Yacon, originally from South America, has been grown in New Zealand (NZ) since the 1980's. NZ-produced yacon concentrate NZFOS+ contains the purest natural prebiotic FOS. Our study aimed to examine the phytochemical contents of NZFOS+ and its health-related properties. The glycemic index of yacon concentrate was measured by ISO 26642:2010(E) ($n = 10$). Total phenolic and flavonoid contents were measured by the spectrometric method. The chlorogenic acid content and phenolic profiling were measured using the liquid chromatography coupled with mass spectrometry (LC-MS). The antioxidant activity of the yacon concentrate and Manuka honey were compared using the cupric reducing antioxidant capacity (CUPRAC), ferric ion reducing antioxidant power (FRAP), and 2,2-diphenyl-1-picrylhydrazyl (DPPH) assays. The results indicated that compared to Manuka honey, yacon concentrate has a lower glycemic index (40 vs. 52); a higher content of total phenolic (5430 mg vs. 744 mg GAE/100 g), total flavonoid (329 mg vs. 22 mg QE/100 g), and chlorogenic acid (11.88 μ g vs. 0.08 μ g CA/g); and across all assays observed, a significantly higher antioxidant capacity (CUPRAC assay, 892 mg vs. 52.6 mg TE/100 g; FRAP assay, 633 mg vs. 47 mg TE/100 g; DPPH assay, 383 mg vs. 22 mg TE/100 g, respectively). Yacon concentrate has proven potential health benefits and applications associated with the maintenance of health and wellbeing and prevention of chronic diseases. Further investigations are needed for human studies and new applications and use of yacon concentrate. Yacon concentrate (NZFOS+) has potential markets in the development of new food products and new diet therapy applications, e.g., in the form of syrup, and functional prebiotic drinks.

Keywords: yacon concentrate; fructo-oligosaccharides; phenolic compounds; antioxidant activity

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