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Research article

Comparison of Antioxidant and α -Glucosidase Inhibitory Activities in Different Cultivars of Five Mango (*Mangifera Indica* L.) Leaf Extracts

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Abstract The objectives of study were to evaluate and compare the antioxidant, total phenolic, total flavonoid, mangiferin content and antidiabetic activities of five young mango cultivars leaf extract, namely, 'Apple', 'Nam Dok Mai', 'Bao', 'Ok-Rong' and 'Kiew Savoey'. Antioxidant effect was investigated by DPPH, ABTS radical scavenging activity, and ferric reducing power (FRAP) assays. Inhibitory on α -glucosidase activity and type of enzyme inhibition were evaluated by using Lineweaver Burk plot analysis. Mangiferin, major active compound, was quantified by HPTLC method. Furthermore, the hypoglycemic effect was determined using streptozotocin (STZ) –nicotinamide (NA) -induced type 2 diabetic mice. Young mango cv. 'Apple' leaf extract demonstrated the strongest antioxidant activity in all assays. Moreover, it contains highest amounts of total phenolic and mangiferin to the values of 311 mg GAE/g extract and 197 mg/g extract, respectively. It possessed potent α -glucosidase inhibitory activity with IC₅₀ value of 0.50 μ g/mL. Lineweaver-Burk plot analysis demonstrated a non-competitive inhibition of α -glucosidase activity with the inhibition constant (K_i) of 2.98 μ g/mL. Co-administration of young mango cv. 'Apple' leaf extract at dose of 1,000 mg/kg significantly reduced the total blood glucose level by 13.43% in STZ-NA-induced type 2 diabetic mice when compared with control diabetic mice in oral glucose tolerance test (OGTT) model. Inhibition of glucose absorption may be one of the possible mechanism of its hypoglycemic effect. In conclusion, young mango cv. 'Apple' leaf extract possesses the strongest antioxidant and antidiabetic activities which has a potential to develop as nutraceutical products.

Keywords: Antioxidant, α -Glucosidase, Diabetes, *Mangifera indica*, Mangiferin

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