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Bioactivity-guided isolation of polyphenols from Citrullus Colocynthis for antihypertensive effect in spontaneous hypertensive rat model**Neelam Iftikhar**

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The aim of the present study was to investigate the antihypertensive effect of polyphenol-rich Citrullus colocynthis (CC) fractions against spontaneous hypertensive rats (SHR) model. Crude CC extract was fractionated in hexane, chloroform, ethyl acetate, butanol and aqueous ethanol to get HEF, CHF, EAF, BUF and AEF fractions, respectively. The AEF represented the maximum yield (58.6 g/100g) followed by BUF (16.5 g/100g), HEF (3.7 g/100g), EAF (2.9 g/100g) and CHF (2.3 g/100g). The EAF contained the highest total phenolic contents (289.4 mg/g), total flavonoid contents (7.60 mg/g) and flavonol contents (35.7 mg/g). Among all the CC fractions, EAF showed highest DPPH radical scavenging activity (SC50, 6.2 µg/mL) followed by CHF (SC50, 17.3 µg/mL), BUF (SC50, 22.4 µg/mL), AEF (SC50, 53.7 µg/mL) and HEF (SC50, 115.9 µg/mL). Among all the CC fractions, best reducing potential was also observed from EAF. The RP-HPLC analysis of CC fraction revealed the presence of ferulic acid, vanillic acid, p-coumaric acid, gallic acid, p-hydroxy benzoic acid and chlorogenic acid, catechin, rutin, quercetin, myricetin and kaempferol. CC fraction dose of 250 and 500 mg kg⁻¹ body weight were given to male SHR and WKY rats daily for 21 days through oral gavage. Rats body weight, heart rate, blood pressure were monitored twice a week. The oxidative status of the animals was determined by conducting a series of tests from collected plasma including measurements of malondialdehyde (MDA), superoxide dismutase (SOD), reduced glutathione (GSH), nitric oxide (NO) and total antioxidant capacity (TAC) levels. Best antihypertensive effect was observed in EA-500 group that significantly decreased ($p \leq 0.05$) the systolic blood, diastolic and mean arterial pressure. Surgery was performed at the end of the study and blood pressure, pulse wave velocity (PWV) and echocardiogram (ECG) were recorded. It was concluded that EAF of CC possessed significant antihypertensive and antioxidant activity in the SHR group.

Biography

Neelam Iftikhar is a distinguished researcher at Government College University Faisalabad, Pakistan, specializing in natural product chemistry and pharmacology. Her research focuses on the bioactivity-guided isolation of polyphenols from Citrullus colocynthis to investigate their potential antihypertensive effects, particularly in the Spontaneous Hypertensive Rat Model. With a deep commitment to advancing natural therapies, Neelam's work explores plant-based solutions for managing hypertension, aiming to contribute safer and more accessible treatments. Her innovative research bridges traditional medicinal knowledge and modern pharmacological applications, offering promising insights into the therapeutic potential of polyphenols for cardiovascular health.