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Chemical, physicochemical, rheological characterization and antioxidant properties of Malabar Spinach (*Basella alba L.*) seed mucilage

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Spinach (*Basella alba*) is a green leafy vegetable widely grown in Sri Lanka and the spinach seed has a non-exudate gum. Plant gums are used as gelling agents, thickeners, stabilizers and emulsifiers in the food industry. The current study evaluates the physiochemical and rheological characterizations of the extract of the spinach seeds. A water-based extraction procedure was adopted to extract mucilage from spinach seeds. Extracted gummy mucilage was analyzed for its proximate composition and physicochemical, rheological and functional properties. Extractable plant mucilage content was 5.0 % from the dried basis. The presence of the mucilage was observed using Ruthenium red reagent. Mucilage comprised of reducing sugars and starch. Water holding capacity, Oil holding capacity and Solubility of the gum were 100.0%, 6.8% and 20.51%, respectively. It was shown that the solubility of the extracted gum increased with elevated temperatures. Isolated spinach seed gum exhibit DPPH radical scavenging capacity, similar to commercially available Xanthan gum, suggesting it can enhance antioxidant capacity in the food matrix. The swelling index of mucilage is also determined. In conclusion, the study suggests that spinach seed gum can be used potentially in the food industry as a cheap and environmental friendly hydrocolloid.

Keywords: *Spinach, seed mucilage, physico-chemical properties, functional properties*

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