



## Extraction, physicochemical and structural characterization of pectin from tender king coconut kernel

A. Athukorala <sup>1\*</sup>, L.L.W.C. Yalegama <sup>2</sup> and M. Sithambaresan <sup>1</sup>

<sup>1</sup>Department of Chemistry, Faculty of Science, Eastern University Sri Lanka

<sup>2</sup>Coconut Research Institute, Lunuwila, Sri Lanka

Pectin is a natural polysaccharide, which has gained increasing attention due to its biomaterial properties and biomedical activities. The study was focused on the tender king coconut kernel (KCK) which can be used as a source of pectin. In this study, pectin from king coconut was successfully extracted by a chemical extraction process. The extracted pectin was characterized and evaluated for its physicochemical properties by Fourier transform infrared (FT-IR) spectroscopy, ash content, equivalent weight, methoxyl content, and acetyl content. The antioxidant activity of pectin was evaluated by 2,2-diphenyl-1-picrylhydrazyl (DPPH) method. Pectin was analyzed for mineral composition. In addition, the king coconut kernel was subjected to proximate analysis. Pectin was successfully extracted from dry king coconut kernel with a yield of about  $3.00 \pm 0.36\%$  (dry basis) as a brownish and odorless fine powder. FTIR results showed that pectin from king coconut kernel has similar characteristics with that of commercial pectin. The chemical properties of pectin such as ash content, equivalent weight, methoxyl level and acetyl content were  $3.00 \pm 0.06\%$ ,  $1123.78 \pm 19.39$ ,  $6.82 \pm 0.10\%$ ,  $0.08 \pm 0.00\%$ , respectively. Based on both FT-IR results and the value of methoxyl content, pectin can be categorized as low methoxyl pectin. In addition, extracted pectin showed a moderate antioxidant activity with the  $IC_{50}$  of about  $55.70 \pm 35.24$  ppm. These results suggest that pectin from king coconut kernel has the potential to be used as a biopolymer for biomedical applications with a low-methylated pectin and a moderate antioxidant activity.

**Keywords:** King coconut, polysaccharide, pectin, biopolymer, antioxidant

**Acknowledgement:** Financial assistance by Coconut Research Institute, Lunuwila, Sri Lanka

**E-mail:** ashiniathukorala@gmail.com