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Utilization of pumpkin waste as a source of pectin

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Sri Lanka is a country whose economy is mainly based on agriculture and fruits and vegetables (F&V) are a main sub sector. Annually the country produces around 800,000 metric tons of F&V. However, there is 35-45% wastage of F&V daily at the Dambulla economic center (DEC), which is the main focal point of F&V transactions. Therefore, this study was designed to assess the daily postharvest loss of F&V at DEC and to utilize generated vegetable waste as a source of pectin. Total loss of F&V was estimated through the personal interview method. Daily waste generated at DEC was estimated as 10.8 tons. The vegetables with maximum postharvest losses at the DEC were cucumber (4.84%), pumpkin (4.64%), leeks (3.06%), brinjal (2.96%), tomato (2.85%) and cabbage (2.14%) where the fruits with highest postharvest losses were watermelon (2.65%) and banana (2.25%).

Vegetables with a higher post-harvest loss were screened out for the extraction of pectin. Pumpkin (*Curcubita maxima)* was selected for the extraction of pectin as it has reported a higher postharvest loss (4.64%). Pectin was extracted by the method of acid hydrolysis. The yield of pectin from pumpkin ranged from 7.30±0.07 – 11.04± 0.01 % on dry weight basis. In addition, physiochemical and functional properties of pectin were evaluated, and the suitability of extracted pectin for the processing of jamwas evaluated. Water holding capacity, oil holding capacity and emulsifying activity index of the extracted pectin were 2.5±0.46 g/g, 1.76 ± 0.10 g/g and 0.29 ± 0.01 respectively. Moreover, the degree of esterification, equivalent weight, methoxy content and galacturonic acid content of the extracted pectin were 67.64±0.89%, 978.4 ± 69.9, 6.55± 0.37% and 66.46 ±1.19%, respectively. Sensory analysis revealed that there is no significant difference in textural properties such as spreadability, surface texture and chewiness of two types of jam prepared using pumpkin and commercial pectin. Pectin extracted from pumpkin can be categorized as high methoxy pectin and there is a great potential to use vegetable waste for value addition.

Keywords: Pectin, postharvest loss, acid hydrolysis

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