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Extraction, Characterisation and Application of Pectin from Indian Mango (*Mangifera indica*) Peels

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Abstract

A valuable by-product that can be obtained from fruit wastes is pectin. This study focuses on the extraction, isolation and characterisation of pectin from Indian mango (*Mangifera indica* L.) peels based on their degree of ripening. Dried peels from Indian mangoes were obtained by drying the fresh peels at 60°C for a couple of hours depending on the volume being dried. To extract pectin, dried peels were cooked in acidified water (pH 2) for 1h, filtered using satin cloth to obtain pectic liquor, and precipitated in 95 % ethyl alcohol for 12h. The extracted pectin was dried for 1h at 105°C and pulverised using mortar and pestle. Physical properties (colour, pH, % moisture content, viscosity and total soluble solids) and chemical characteristics (% methoxyl content, % degree of esterification, % galacturonic acid, setting time and temperature and gel grade) of produced pectin were analyzed. The resulting Indian mango peel pectin was applied in a yogurt for sensory evaluation in comparison to Carabao mango peels (control).

Results showed that half-ripe Indian mango peel pectin contained relatively higher amounts of galacturonic acid, methoxyl content, degree of esterification and pectin yield ($p < 0.05$) in comparison with full-ripe mango peel pectin. These physicochemical characteristics of mango peel pectin were within the accepted limit of good quality pectin.

Consumer acceptability testing (n=50) of yoghurt mixed with Indian mango peel pectin showed no significant difference ($p > 0.05$) in acceptability level with the control in terms of aroma, taste, mouthfeel, thickness and overall acceptability except for colour. Penalty analysis showed no significant drop in overall acceptability since majority of the respondents (>70 %) perceived that the sensory attributes of the yoghurt mixed with Indian mango peel pectin and the control was 'just about right'. Indian mango peels can be a rich source of pectin with good physicochemical characteristics with potential application to various food products.

Keywords: Galacturonic acid, indian mango peels, methoxyl content, pectin extraction

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