

Extraction and physicochemical characterization of Krueo Ma Noy pectin

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Abstract

A new pectin was extracted from the leaves of Krueo Ma Noy (*Cissampelos pareira*), a woody climbing plant grown in Thailand. Optimized condition for the extraction of pectin was using the solid:solvent ratio=1:50 in distilled water at 25–28 °C and natural pH (3.8–4.0). A crude pectin extract was obtained after alcohol precipitation and drying; the crude extract was dialyzed and lyophilization produced a dialyzed pectin fraction. The extracted Krueo Ma Noy pectin is a low methoxyl pectin which consisted mainly of uronic (galacturonic) acid (~70–75%) and small amounts of neutral sugars. Krueo Ma Noy pectin exhibited shear thinning flow behavior and the extent of shear thinning was concentration dependent. Gelation was observed when Krueo Ma Noy pectin (both crude extract and dialyzed fractions) concentration exceeded 0.5% (w/v); gel strength of the dialyzed fraction was much higher than that of the crude extract. The addition of NaCl significantly increased the Krueo Ma Noy pectin gel strength when salt concentration was below 0.4 M. Krueo Ma Noy pectin was also found to be sensitive to Ca²⁺ ions: the addition of 1 mM calcium chloride significantly increased the gel strength and excessive amount of Ca²⁺ (> 3 mM) resulted in aggregation/precipitation of the pectin, possibly due to the calcium binding properties of the carboxyl group. It was also observed that addition of sugar increased the gel strength of Krueo Ma Noy pectin.

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