

ABSTRACT

Pectin, a high molecular weight, partially methylated polygalacturonic acid occurs in the middle lamella or intercellular wall of plant material. Pectin is widely used in food industry, commonly as a gelling agent in jams and jellies, as stabilisers in dairy products and frozen desserts and as a bulking agent or a fat replacer in dietetic foods. Present commercial sources of pectin are citrus peel and apple pomace.

The objectives of this study were (a) to extract and isolate pectin found in passion peel a waste product in food industry (b) to compare the gel forming properties of the passion peel pectin with citrus pectin and (c) Investigate on methods for increasing the yield of pectin using surfactants.

Pectin was extracted and isolated from passion fruit peel after pre-processing, at pH 1.34 (using 1N HCl) and at 65°C, for 2 hr and filtered. The pectin was isolated by precipitating with 96% ethanol, filtering, washing with acidified ethanol and absolute ethanol and air-drying at 40-45 °C. Four different pre-processing methods used are described as follows:

Method 1 A: Fresh passion peel was blended with water (1:10 W/V).

Method 1B: The passion peel was dried at 50-55 °C and powdered to pass through mesh size 40, using a Wiley Mill. The powder was blended with water (1:20 w/v)

Method 2A: Passion peel was steamed and the endocarp was scooped out and blended with water (1:10 W/V).

Method 2B: Passion peel was steamed and the endocarp was scooped out, dried at 50-55°C, powdered and blended with water (1:20 W/V).

The yield of pectin varied from 14.5 to 29.0 % with different pre-processing methods. Results showed that Method 2B gave significantly higher yield of pectin, compared with other three methods. Passion peel pectin contains high methoxyl rapid set pectins (~ 9% of methoxyl content) with the acetyl value was 1.2 % or less. The purity of pectin was quantified as anhydrogalacturonic acid and was found to be 83%.

The gel-forming properties of pectin at 140-gel grade were of good quality, when compared with citrus pectin. Pectin extracted from Method (2A) and (2B) formed better gels than from method (1A) and (1B).

This may be attributed to the decrease in % Acetyl content on steaming.

The addition of 2.5% of a low molecular alcohol diethylene glycol to the acid extractant resulted in an increase in the pectin yield by 55-90%. It was also shown that the addition of alcohols resulted in a measurable increase in the pectin gel strength.