

Aqueous extraction, purification and characterization of galactomannans from aren sugar palm (*Arenga pinnata*) fruits

ABSTRACT

The effect of different aqueous extraction conditions on the crude gum extraction yield of Aren sugar palm (*Arenga pinnata*) fruit was evaluated. A water-soluble polysaccharide was extracted from the endosperm of *A. pinnata* fruit with water at different extraction conditions. The results indicated that water to seed ratio, alkaline pH and temperature were significantly ($p < 0.05$) effect the extraction yield of the crude gum. The ideal extraction conditions (W/S ratio: 20:1, pH: 10 and temperature: 80°C) led to the highest yield (5.50%) of the *A. pinnata* fruit gum. The purified gum was characterized as white, thread-like precipitate and become a powder-like substance after being freeze dried. It had relatively low protein content (1.15%) and partially solubilised at ambient (50.93%) and at elevated temperature (71.00%). The gum had a high water holding capacity but lower oil-holding capacity which was 150.00 g water/100 g and 103.33 g oil/100 g of gum respectively. The viscosity of the purified gums increased with the increase of solution concentration. This revealed that *A. pinnata* gum is suitable for applications as stabilizer for oil-in-water emulsion or as food additives due to its capability to hold water molecules and form a viscous solution at low concentration.

Keyword: *Arenga pinnata*; Galactomannans; Aqueous extraction; Purification; Characterization