Purification, characterization and antioxidant activity of polysaccharides extracted from the fibrous pulp of Mangifera pajang fruits.

ABSTRACT

Polysaccharides were isolated from the fibrous pulp of bambangan (Mangifera pajang Kort.). Neutral and acidic polysaccharides were separated using DEAE-Cellulose. Size exclusion chromatography analyses showed that the average molecular weight (MW) of the neutral M. pajang polysaccharides (F1) was approximately 7 kDa, and those of three acidic polysaccharides (F2, F3 and F4) were approximately 13, 24 and 9 kDa, respectively. The monosaccharide compositions of these polysaccharides were determined using high performance liquid chromatography. F1 contained erythrose, rhamnose, arabinose, mannose, fructose and glucose (5, 7, 21, 42, 4 and 21 mg/100 mg fraction respectively), F2 consisted of rhamnose, xylose and arabinose (33, 7 and 51 mg/100 mg fraction respectively), F3 consisted of fructose (14 mg/100 mg fraction) and glucose (72 mg/100 mg fraction), and F4 comprised arabinose, mannose, fructose and glucose (32, 36, 2 and 10 mg/100 mg fraction respectively). Results of Fourier transform infrared spectroscopy and the monosaccharide compositions suggested that the fibrous pulp of M. pajang fruit consisted of heteropolysaccharide and belonged to α and β–type of the pyran group. Additionally, crude polysaccharide and its fractions showed strong antioxidant activities. The acidic polysaccharides had the highest antioxidant activity and should be considered as a prospective antioxidant.

Keyword: Mangifera pajang Kort.; Polysaccharides; Purification; Characterization; Antioxidant activity.