

# Extraction and Purification of Pectin-like Substace from Thai-fruit Rinds

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## ABSTRACT

Pectin-like substances were extracted from 2 kinds of fruit rinds, Durian (*Durio zibethinus* Linn.) and Pummelo (*Citrus maxima* Merr.) rinds, and from 2 kinds of fruit, Phutsaa (*Zizyphus mauritiana* Lamk.) and Guava (*Psidium guajava* Linn.). Crude extracts were isolated by precipitation of aqueous extracts from tested samples in 60% alcohol. The yield of crude extracts from Durian-rind, Pummelo-rind, Phutsaa and Guava was 0.8%, 0.6%, 1.7% and 0.9%, respectively. Addition of sodium hexametaphosphate in aqueous extraction step gave increasing in percent yield of crude fraction (F I) from Durian rind to 2.18%. Purification of Durian-rind extract was done by 75% alcohol precipitation of the solution of crude extract from acid-alcohol precipitation of aqueous extracts from Durian rind. Partially purify fraction (F II) from Durian-rind of 1.08% yield was obtained.

The extracts were solid and were different in color, odour and taste. The four extracts were swelling in water to give viscous fluid and had acid pH. Crude fraction (F I) of Durian rind extract was solid, light-brown color, swelling in water to give viscous fluid. Partially purify fraction (F II) of durian rind extract was solid,

creamy-white color, and swelling in water to give colorless clear viscous fluid. The 3% solution of F I and F II had pH of 5.8 and 2.8, respectively, and had viscosity of 130.6 cps and 154.8 cps, respectively. F I had 9.04% moisture and 53.93% ash. F II had 11.92% moisture and 38.22% ash. F I and F II were decomposed at 174-176° C.

The four extracts gave positive test with Molisch's test and Anthrone test, which was specific for carbohydrates. No reducing sugar test was observed by Fehling's test. Only solution after acid-hydrolysis of the extracts existed reducing sugar to give positive test with Fehling's test. The four extracts revealed glycuronate sugar with Tollen's naphthoresorcinol reaction. Only Durian rind extracts gave violet color complexes with iodine, while the others had no reaction with iodine. The four extracts showed polyuronide property tested by gelling formation with the solution of salts of heavy-metals such as thoriam nitrate, ferric chloride, and lead acetate, and also forming gel precipitation with 95% alcohol.

The results suggested that the extracts from tested fruits and fruit-rinds were carbohydrate. It could be classified in polysaccharides, composed of glycuronate sugar or polyuronides like pectic substances.