



**Thesis Title** Isolation of Hemicellulose from Raw Papaya Fruit (*Carica papaya*) and Determination of Its Constituent Sugars

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### Abstract

Drying of the peel and fresh of papaya at 55°C yielded the dry weight of 8.84 and 8.58%, respectively. Dried papaya peel and fresh contained 83.43 and 84.37% weight of carbohydrate respectively. Extraction of hemicelluloses from papaya peel and fresh by 1 and 4 M KOH produced the total yield of 17.27 and 16.72% by weight, respectively whereas the 0.05 M HCl pretreated papaya peel and fresh to eliminate pectin yielded only 2.44 and 2.42% (by weight) of hemicellulose, respectively. Hemicelluloses from all samples from papaya peel and fresh contained about 8.5-15% of moisture. Bleaching of papaya peel with sodium chlorite increased the whiteness of hemicellulose. FT-IR spectra showed that 4 M KOH extraction of hemicellulose from papaya peel and fruit completely cleaved the ester bonds from hemicelluloses, and the bleaching of papaya peel with sodium chlorite also affected the elimination of lignin.

Hemicelluloses from papaya peel composed of 25.36, 9.88, 5.34, 0.66, 2.31 and 7.76% galactose, glucose, xylose, rhamnose, arabinose and uronic acid, respectively, while the hemicellulose from papaya fresh composed of 23.84, 22.30, 20.00, 14.22 and 7.29% of galactose, glucose, xylose, arabinose and uronic acid, respectively. The pectin extraction from papaya peel and fresh before hemicellulose extraction decreased 13.20 and 16.49% of galactose contents in hemicellulose, respectively which decreased more than xylose and arabinose contents. In the opposite, hemicellulose from pectin pre-extraction from papaya peel and fresh increased 13.72 and 2.01% of glucose contents, respectively.