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Lihat Sebelah

THE EXTRACTION OF PECTIN FROM RIDGE GOURD (*Luffa acutangula*)

By

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DECLARATION

I hereby declare that the thesis is based on my original work expert for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any degree at UMT or other institutions.

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ABSTRACT

The objectives of this study were to determine the yield of pectin from ridge gourd skin, pulp and seed using different extraction method and to study the effect of pH on the extraction of pectin from ridge gourd. The extracted pectin was used to analyze the degree of esterification and gel strength. Extraction of pectin was done using Shkodina *et al.*, (1998), Mesbahi *et al.*, (2005) and Gnanasambandam and Proctor, (1999) for the skin pulp and seed of the ridge gourd. The highest yield of pectin is obtained from the pulp by using Shkodina *et al.*, (1998) method which is 3.52 $\pm$ 0.28%. pH 2.0 has the highest percentage of pectin that is 5.21 $\pm$ 0.14 % followed by pH 1.5 and pH 1.0 which shows the lowest percentage of pectin. It shows that the amount of pectin proportional with the pH. The degree of esterification (DE) of apple and ridge gourd pectin obtained from FTIR spectra was calculated by the formulation proposed by Manrique and Lajolo (2002). DE for the apple pectin is 73.84 $\pm$ 0.84% while for ridge gourd pectin without pH treatment and ridge gourd pectin with the pH 2.0 treatment are 56.45 ± 0.78% and 58.46 ± 0.92% respectively. All the three pectin are high methoxyl pectin. The gel strength for the apple pectin is the highest followed by the mixture of apple pectin and ridge gourd pectin and the lowest gel strength is the ridge gourd pectin without mixture.

PENGEKSTRAKAN PEKTIN DARI PETOLA (*Luffa acutangula*)

ABSTRAK

Tujuan kajian ini adalah untuk menentukan kuantiti pektin yang dihasilkan daripada kulit, isi dan biji petola dengan menggunakan kaedah eskstrak yang berlainan dan seterusnya mengkaji kesan pH terhadap pengekstrakan pada petola. Pektin yang telah diekstrak akan digunakan untuk analisis darjah pengesteran dan kekuatan gel. Pengekstrakan pektin dijalankan menggunakan kaedah Shkodina *et al*., (1998), Mesbahi *et al*., (2005) dan Gnanasambandam and Proctor pada kulit, isi dan biji petola. Hasil pectin yang tertinggi didapati pada isi petola dengan menggunakan kaedah Shkodina *et al*., (1998) iaitu 3.52 $\pm$ 0.28%. Pengeskstrakan menggunakan pH 2.0 mempunyai peratus pektin yang tertinggi iaitu 5.21 $\pm$ 0.14 % diikuti dengan pH 1.5 dan pH 1.0 yang menunjukkan peratus pektin yang terendah. Ini menunjukkan bahawa kuantiti pectin berkadar terus dengan pH. Darjah pengesteran (DE) bagi epal dan petola diperolehi daripada spektra FTIR dan DE dikira berdasarkan formulasi yang disyorkan oleh Manrique and Lajolo (2002). DE bagi epal adalah 73.84 $\pm$ 0.84% manakala bagi pektin petola yang tiada rawatan pH dan pektin petola yang dirawat dengan pH 2.0 masing-masing adalah 56.45 $\pm$ 0.78% dan 58.46 $\pm$ 0.92%. Ketiga-tiga pektin adalah pektin yang bermetoksil tinggi. Kekuatan gel bagi epal adalah paling tinggi diikuti dengan campuran pektin epal dan pektin petola dan yang paling rendah adalah pektin petola tanpa campuran.