"PENGARUH pH EKSTRAKSI TERHADAP KARAKTERISTIK PEKTIN KULIT PISANG KEPOK *(Musa paradasiaca L)* MENGGUNAKAN METODE *MICROWAVE ASSISTED EXTRACTION* (MAE)"

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ABSTRAK

Kulit pisang kepok (*Musa paradisiaca L.*) merupakan limbah agroindustri yang masih mengandung pektin dan berpotensi dimanfaatkan sebagai bahan baku pembuatan pektin. Salah satu metode ekstraksi yang efisien adalah *Microwave Assisted Extraction* (MAE). Penelitian ini bertujuan untuk mengetahui pengaruh pH pelarut asam sitrat terhadap rendemen dan karakteristik pektin yang dihasilkan serta menentukan perlakuan terbaik. Penelitian menggunakan Rancangan Acak Lengkap (RAL) dengan lima perlakuan pH, yaitu pH 3 (P1), pH 3,5 (P2), pH 4 (P3), pH 4,5 (P4), dan pH 5 (P5), masing-masing diulang sebanyak tiga kali. Parameter yang dianalisis meliputi rendemen, kadar air, kadar abu, berat ekivalen, kandungan metoksil, kadar asam galakturonat, derajat esterifikasi, serta analisis ekonomi. Data dianalisis menggunakan analisis ragam (ANOVA) dan dilanjutkan dengan uji *Duncan's Multiple Range Test* (DNMRT) pada taraf nyata 5%. Hasil penelitian menunjukkan bahwa variasi pH berpengaruh nyata terhadap rendemen, kadar abu, berat ekivalen, kandungan metoksil, dan kadar asam galakturonat, namun tidak berpengaruh nyata terhadap kadar air dan derajat esterifikasi. Perlakuan terbaik diperoleh pada pH 3 (P1) dengan rendemen sebesar 2,28 ± 0,01%, kadar air 11,20 ± 0,75%, kadar abu 8,87 ± 0,41%, berat ekivalen 669,83 ± 13,79 mg, kandungan metoksil 4,67 ± 0,19%, kadar asam galakturonat 52,80 ± 1,53%, dan derajat esterifikasi 50,21 ± 0,69%. Seluruh perlakuan memenuhi persyaratan mutu pektin berdasarkan SNI 01-2238-1991 untuk parameter kadar air, kadar abu, berat ekivalen, dan kadar asam galakturonat. Analisis *Break Event Point* (BEP) dapat dicapai dengan penjualan produk sebanyak 336 unit produk. Dengan nilai rupiah sebesar Rp. 33.545.177

Kata kunci : kulit pisang kepok, pektin, *Microwave Assisted Extraction* (MAE), pH, asam sitrat.

EFFECT OF EXTRACTION pH ON THE CHARACTERISTICS OF KEPOK BANANA PEEL (MUSA PARADISIACA L.) PECTIN USING THE MICROWAVE-ASSISTED EXTRACTION (MAE) METHOD

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ABSTRACT

Kepok banana peel (Musa paradisiaca L.) is an agro-industrial waste containing pectin that has the potential to be utilized as a raw material for pectin production. One of the efficient extraction methods is Microwave-Assisted Extraction (MAE). This study aimed to evaluate the effect of citric acid solution pH on the yield and characteristics of pectin extracted from kepok banana peel and to determine the optimum extraction condition. A Completely Randomized Design (CRD) was employed with five pH treatments, namely pH 3 (P1), pH 3.5 (P2), pH 4 (P3), pH 4.5 (P4), and pH 5 (P5), each with three replications. The observed parameters included pectin yield, moisture content, ash content, equivalent weight, methoxyl content, galacturonic acid content, degree of esterification, and economic analysis. Data were analyzed using analysis of variance (ANOVA), followed by Duncan's Multiple Range Test (DNMRT) at a 5% significance level. The results showed that extraction pH significantly affected pectin yield, ash content, equivalent weight, methoxyl content, and galacturonic acid content, but had no significant effect on moisture content and degree of esterification. The best treatment was obtained at pH 3 (P1), producing a pectin yield of 2.28 ± 0.01%, moisture content of 11.20 ± 0.75%, ash content of 8.87 ± 0.41%, equivalent weight of 669.83 ± 13.79 mg, methoxyl content of 4.67 ± 0.19%, galacturonic acid content of 52.80 ± 1.53%, and degree of esterification of 50.21 ± 0.69%. All treatments met the quality requirements of SNI 01-2238-1991 for moisture content, ash content, equivalent weight, and galacturonic acid content. Break Even Point (BEP) analysis can be reached with the sale of 336 units of the product, amounting to Rp. 33,545,177.

Keywords : kepok banana peel, pectin, Microwave-Assisted Extraction (MAE), pH, citric acid.