

OPTIMASI PRODUKSI TEPUNG PORANG RENDAH KALSIUM OKSALAT MENGGUNAKAN METODE PENCUCIAN ETANOL

INTISARI

Oleh :

EVA CAHYA AULIYA SARI

20/460579/TP/12789

Pencucian etanol pada tepung porang dilakukan untuk memisahkan kandungan pengotor dalam tepung porang seperti kalsium oksalat dan pati. Penelitian terdahulu berhasil meningkatkan kemurnian tepung porang melalui pencucian etanol, namun penelitian itu masih dilakukan dalam skala laboratorium dan belum mengevaluasi pengaruh rasio berat tepung porang dengan volume larutan pencuci. Penelitian ini bertujuan untuk menganalisis pengaruh rasio berat tepung porang dengan volume etanol serta *scaling up* peralatan terhadap karakteristik tepung yang dihasilkan.

Tiga jenis tepung porang (dari chip non sulfit, dari chip sulfit, dan dari chip komersial) dicuci menggunakan etanol 70% dengan 3 variasi rasio berat tepung porang dengan volume etanol yaitu 1:3; 1:5; 1:10 (w/v). Total putaran pengadukan dalam pencucian 15.000 putaran menggunakan mesin pengaduk skala laboratorium (2 Liter) maupun skala industri (60 Liter). Suspensi selanjutnya diendapkan selama 10 – 15 menit untuk memisahkan zat pengotor dari tepung porang. Endapan lapisan terbawah selanjutnya dikeringkan dengan suhu 70°C selama 3-4 jam. Data karakteristik tepung porang meliputi kadar air, kadar abu, densitas, viskositas, warna, kadar glukomanan, dan kadar kalsium oksalat dievaluasi untuk mengkaji pengaruh perlakuan penelitian terhadap karakteristik tepung porang yang dihasilkan. Analisis data dilakukan dengan metode statistik analisis anova menggunakan *software* SPSS. Keberhasilan pencucian dianalisis dengan membandingkan karakteristik tepung porang hasil penelitian dengan karakteristik tepung porang komersial.

Karakteristik tepung porang hasil pencucian meliputi kadar air (7,66-13,05 %), kadar abu (2,06-4,43 %), densitas (0,63-0,78 g/ml), warna (*hue angle* : 36,05-54,09 °H; *chroma*: 12,87-18,93), viskositas (NS : 15.000-29.000 m.Pa; S : 6.300-12.900 m.Pa; SAN : 2.400-5.300 m.Pa), kadar glukomanan (67,89-83,47%), kadar kalsium oksalat (0,15-0,37%). Pengaruh rasio tidak berpengaruh nyata pada parameter densitas, kadar glukomanan dan kadar kalsium oksalat. *Scaling up* peralatan berpengaruh signifikan pada parameter densitas.

Kata kunci : Tepung porang; Etanol; Kalsium Oksalat; Glukomanan

OPTIMIZING THE PRODUCTION OF PORANG FLOUR LOW IN CALCIUM OKXALATE USING THE ETHANOL WASHING METHOD

ABSTRACT

Written by:

EVA CAHYA AULIYA SARI

20/460579/TP/12789

Ethanol washing of porang flour is carried out to separate impurities in porang flour such as calcium oxalate and starch. Previous research succeeded in increasing the purity of porang flour through ethanol washing, but the research was still carried out on a laboratory scale and had not evaluated the effect of the weight ratio of porang flour to the volume of the washing solution. This research aims to analyze the effect of the weight ratio of porang flour to the volume of ethanol and equipment scaling up on the characteristics of the flour produced.

Three types of porang flour (from non-sulfite chips, from sulfite chips, and from commercial chips) were washed using 70% ethanol with 3 variations in the ratio of weight of porang flour to ethanol volume, namely 1:3; 1:5; 1:10 (w/v). The total agitation cycle in washing is 15,000 cycles using a laboratory scale (2 liter) or industrial scale (60 liter) mixing machine. The suspension is then deposited for 10 – 15 minutes to separate impurities from the porang flour. The bottom layer of sediment was then dried at 70°C for 3-4 hours. Data on the characteristics of porang flour including water content, ash content, density, viscosity, color, glucomannan content and calcium oxalate content were evaluated to assess the effect of research treatment on the characteristics of the porang flour produced. Data analysis was carried out using the ANOVA statistical method using SPSS software. The success of washing was analyzed by comparing the characteristics of research porang flour with the characteristics of commercial porang flour.

Characteristics of porang flour resulting from washing include water content (7.66-13.05%), ash content (2.06-4.43%), density (0.63-0.78 g/ml), color (hue angle : 36.05-54.09 °H; chroma: 12.87-18.93), viscosity (NS : 15,000-29,000 m.Pa; S : 6,300-12,900 m.Pa; SAN : 2,400-5,300 m.Pa), glucomannan levels (67.89-83.47%), calcium oxalate levels (0.15-0.37%). The effect of the ratio did not have a significant effect on the parameters of density, glucomannan content and calcium oxalate content. Scaling up equipment has a significant effect on density parameters.

Keywords: Porang flour; Ethanol; Calcium Oxalate; Glucomanan