

**PERUBAHAN SIFAT FISIK DAN PENURUNAN KANDUNGAN
KALSIMUM OKSALAT PADA TEPUNG PORANG (*Amorphophallus
oncophyllus*) DENGAN VARIASI PENYOSOHAN DAN PENGHEMBUSAN
UDARA**

INTI SARI

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Umbi porang (*Amorphophallus oncophyllus*) kaya akan kandungan glukomanan. Glukomanan diekstrak dari tepung porang bebas *impurities* dimana kalsium oksalat adalah salah satu *impurities* yang sulit dikurangi karena keberadaannya terikat kuat pada sel mannan. Penelitian ini bertujuan untuk menurunkan kalsium oksalat pada tepung porang dengan metode mekanis berupa kombinasi penyosohan-penggilingan- pengayakan dan pemisahan menggunakan *cyclone separator*. Umbi porang diiris dengan ketebalan 5 mm kemudian dikeringkan dalam *cabinet dryer* dengan suhu 50 °C selama 21-22 jam hingga diperoleh *chips* porang dengan kadar air 10-12 %. *Chips* porang ditumbuk sehingga diperoleh partikel kecil yang dapat disosoh menggunakan mesin penyosoh. Hasil penyosohan berupa berasan dan bekatul. Berasan digiling menggunakan mesin penepung sehingga diperoleh tepung porang berasan, kemudian tepung tersebut diayak menghasilkan tepung lolos berbagai mesh. Demikian pula dengan bekatul juga diayak menggunakan mesin pengayak. Tepung hasil pengayakan yang tertampung pada mesh 100 selanjutnya mendapat perlakuan penghembusan untuk mengurangi kalsium oksalat menggunakan *cyclone separator*. Tepung porang hasil penyosohan, pengayakan dan pemisahan dengan penghembusan menggunakan *cyclone separator* dianalisis sifat fisiknya meliputi derajat keputihan, distribusi ukuran dan densitasnya. Neraca massa selama proses penurunan kalsium oksalat juga dianalisis. Tepung porang yang telah diturunkan kadar kalsium oksalatnya dianalisis kimiawi meliputi uji kalsium dan proksimat. Hasil penelitian menunjukkan ukuran rata-rata partikel yang masuk mesin penyosoh 4,24 mm, ukuran rata-rata tepung porang tanpa perlakuan penyosohan 0,29 mm, tepung berasan 0,27 mm dan tepung bekatul 0,33 mm. Rendemen yang dihasilkan 17,6-22 %. Penyosohan berpengaruh terhadap penurunan kalsium oksalat sebesar 31,8% sedangkan pemisahan menggunakan *cyclone separator* dapat menurunkan kalsium oksalat sebesar 34,5 %. Perlakuan penghembusan dengan variasi kecepatan 10,5- 11,2 m/s tidak berbeda nyata. Perlakuan terbaik untuk menurunkan kadar kalsium oksalat adalah penyosohan-pengayakan dan penghembusan udara dengan kecepatan 11,2 m/s .

Kata kunci : tepung porang, kalsium oksalat, penyosohan, *cyclone separator*

CHANGE OF PHYSICAL PROPERTIES AND REDUCTION OF CALCIUM OXALATE CONTENT IN PORANG FLOUR (*Amorphophallus oncophyllus*) BY VARIATION OF RUBBING AND AIR-BLOWING

ABSTRACT

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*Porang (*Amorphophallus oncophyllus*) is rich of glucomannan content. Glucomannan extracted from porang flour is free of impurities in which calcium oxalate is one of the impurities that are difficult to be reduced because of its strongly bound through mannan cell. This research aims to decrease calcium oxalate content in porang flour by mechanical methods that combine rubbing-milling-sieving treatment and air-blowing by the cyclone separator. Porang tuber was sliced into pieces of 5 mm in thickness and then dried in a cabinet dryer at 50° C for 21-22 hours until 10-12% of moisture content was obtained. Porang chips was then pounded into small particles so that milling treatment using rubbing machine could be done, yield berasan and bekatul. Berasan was milled using the disk mill to obtain berasan porang flour. This flour was then sifted to get kind of flour that could sieved in various mesh. Similarly, bekatul was also sieved using a sieving machine. Flour obtained from 100 mesh of sieving was air-flowed using the cyclone separator to reduce calcium oxalate content. Porang flour obtained from milling, sieving and separation by air-blowing using a cyclone separator was then analyzed its physical properties, include degree of whiteness, size distribution, and density. Mass balance during reduction process of calcium oxalate were also analyzed. Porang flour that had been lowered its calcium oxalate content underwent chemically analysis, include calcium and proximate test. The results showed that average size of the particles entering the polisher was 4.24 mm, average size of untreated porang flour (without milling treatment) was 0.29 mm, berasan flour was 0.27 mm, and bekatul flour was 0.33 mm. Yield of rendement was 17.6 to 22%. Milling process/treatment had effect in decreasing calcium oxalate content in the amount of 31.8%, while separation using a cyclone separato could reduce calcium oxalate content in the amount of 34.5%. Blowing treatments with speed variation of 10.5- 11.2 m/s were not significantly different. The best treatment for lowering/reducing the level of calcium oxalate content was milling-sieving and air-blowing 11.2 m/s in speed.*

Keywords: porang flour, oxalate calcium, rubbing, cyclone separator