

**MECHANICAL PURIFICATION AND PHYSICOCHEMICAL
CHARACTERIZATION OF PORANG FLOUR (*Amorphophallus mulleri*
Blume) DERIVED FROM PORANG STICK**

ABSTRACT

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Porang flour is a derivative product of the porang tuber (*Amorphophallus mulleri* Blume), notable for its glucomannan content, which is valuable for industrial and food applications. Glucomannan is extracted from porang flour produced from porang chips; however, the quality of these chips is often suboptimal due to slow and uneven drying processes. Therefore, the development of faster drying methods that yield market-acceptable quality is necessary. One approach involves modifying the drying process by reducing chip size to sticks and varying drying temperatures. This study aims to evaluate the quality of porang flour produced mechanically from stick-shaped porang dried at different temperature settings.

Porang flour was produced from four types of stick-shaped porang dried with various temperature profiles and two types of commercial porang sticks. The sticks were milled using a hammer mill, sieved with a Tyler sieve, and separated using a cyclone separator. The flour quality was assessed based on moisture content, whiteness index, viscosity, solubility, transparency, particle size distribution, fineness modulus, geometric mean diameter and standard deviation (D_{gw} and S_{gw}), ash content, glucomannan content, and calcium oxalate content, and compared to commercial porang flour.

The results indicate that variations in drying temperature significantly affect flour quality. The temperature profile of 50 °C for 2 hours, followed by 60 °C for 1,5 hours and 75 °C for 45 minutes (50V) produced flour with favorable moisture content, viscosity, solubility, transparency, ash content, glucomannan content, and calcium oxalate content. However, the whiteness index of the resulting flour was lower than that of the sulfite-treated commercial flour. The optimal porang flour exhibited a moisture content of 10.02%, viscosity 5733.33 mPa.s, solubility of 99.65%, transparency of 3.30, pH of 6.19, particle size distribution of 0.33=0.41, density of 0.65g/ml, ash content of 4.15%, glucomannan content of 63.75% and calcium oxalate content of 0.39%.

Keywords: porang flour, porang sticks, drying temperature regulation, quality, mechanical purification

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PEMURNIAN MEKANIS DAN KARAKTERISASI SIFAT FISIK-KIMIA TEPUNG PORANG (*Amorphophallus mulleri* Blume) DARI BAHAN BAKU STIK PORANG

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INTISARI

Tepung porang adalah produk turunan dari umbi porang (*Amorphophallus mulleri* Blume). Tepung porang memiliki kandungan glukomanan yang bermanfaat di berbagai bidang termasuk industri dan pangan. Glukomanan diekstrak dari tepung porang yang berasal dari *chips* porang. Kualitas *chips* porang seringkali kurang bagus karena lambat dalam proses pengeringan dan hasilnya tidak kering secara merata. Untuk itu, perlu dikembangkan metode pengeringan porang yang lebih cepat dan menghasilkan kualitas yang dapat memenuhi permintaan pasar. Salah satu upaya yang dapat dilakukan adalah modifikasi proses pengeringan *chips* dengan pengecilan ukuran menjadi stik dan variasi pengaturan suhu pengeringan. Penelitian ini bertujuan untuk mengevaluasi kualitas tepung porang yang diproduksi dengan metode mekanis dari bahan baku stik porang yang dikeringkan dengan variasi pengaturan suhu.

Tepung porang dibuat dari 4 jenis stik porang yang dikeringkan dengan variasi pengaturan suhu dan 2 jenis stik porang komersial. Stik porang dihaluskan dengan mesin *hammer mill*, diayak dengan ayakan *Tyler* dan dihembuskan dengan *cyclone separator*. Kualitas tepung yang terdiri dari kadar air, *whiteness index*, viskositas, kelarutan, transparansi, distribusi ukuran partikel, *fineness modulus*, diameter rerata geometris dan standar deviasi geometris (Dgw dan Sgw), kadar abu, kadar glukomanan dan kadar kalsium oksalat diuji dan dibandingkan kualitasnya dengan tepung porang komersial.

Hasil penelitian ini menunjukkan bahwa variasi pengaturan suhu pengeringan stik porang berpengaruh terhadap kualitas tepung. Variasi pengaturan suhu pengeringan stik porang 50°C selama 2 jam diikuti dengan suhu 60°C selama 1,5 jam dan 75°C selama 45 menit (50V) memberi hasil yang baik pada kadar air, viskositas, kelarutan, transparansi, kadar abu, kadar glukomanan dan kadar kalsium oksalat. Namun demikian, nilai *whiteness index* tepung porang hasil penelitian lebih rendah daripada tepung porang yang ditambah dengan sulfit (S). Tepung porang terbaik memiliki karakteristik kadar air 10,02%, viskositas 5733,33, kelarutan 99,65%, transparansi 3,30, pH 6,19, distribusi ukuran partikel $0,33 \pm 0,41$, densitas 0,65 g/ml, kadar abu 4,15%, kadar glukomanan 63,75%, dan kadar kalsium oksalat 0,39%.

Kata kunci: kualitas, pemurnian mekanis, pengaturan suhu pengeringan, stik porang, tepung porang

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