PROSES PENGERINGAN *CHIP* PORANG *(Amorphophallus muelleri* Blume*)* MENGGUNAKAN METODE PENJEMURAN DENGAN VARIASI PENAMBAHAN SULFUR SERTA KARAKTERISASI KUALITAS PRODUK

INTISARI

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Chip porang merupakan produk olahan dari umbi porang yang dapat dijadikan bahan baku produk lainnya seperti tepung porang dan glukomanan. Pengolahan *chip* porang terdiri pencucian, perajangan, dan pengeringan. Pengeringan dengan metode penjemuran mudah diaplikasikan serta memerlukan sumber energi terjangkau berupa sinar matahari. Selama proses penjemuran akan terjadi perubahan kualitas fisik maupun kimia dari *chips* porang. Penambahan sulfur dilakukan guna mencegah pencoklatan (*browning*) untuk mempertahankan kualitas *chip* porang. Umbi porang yang digunakan diperoleh dari Kecamatan Girimarto, Kabupaten Wonogiri, Provinsi Jawa Tengah dengan waktu panen bulan Oktober tahun 2023.

Umbi porang yang dikeringkan memiliki kadar air awal 73–80%$_{wb}$ dengan ketebalan irisan ± 5 mm. Penjemuran dilakukan menggunakan rak jemur dengan ketinggian 80–100 cm dari tanah selama 2 hari pada pukul 07.00–17.00 WIB agar diperoleh *chip* porang dengan kadar air ≤ 12%$_{wb}$. Penelitian ini bertujuan untuk menentukan konstanta laju pengeringan dan koefisien perpindahan panas konveksi, karakterisasi kualitas fisik dan kimia produk, serta penentuan perlakuan terbaik pada proses pengeringan. Laju pengeringan *chip* porang tanpa perlakuan berkisar 4,1–14,6 %$_{db}$/jam sedangkan dengan perlakuan sulfur dioksida (SO_2) berkisar 3,9–19,6 %$_{db}$/jam. Koefisien perpindahan panas konveksi *chip* porang tanpa perlakuan berkisar 6,5–14,4 W/m^2.^{o}C sedangkan dengan perlakuan sulfur dioksida (SO_2) berkisar 4,8–14,5 W/m^2.^{o}C.

Karakterisasi kualitas *chip* porang berdasarkan SNI 7939:2020 tanpa SO_2 memiliki kadar air 10–11 %$_{wb}$ (kualitas mutu I), kadar abu 3,2–3,9% (kualitas mutu I), *whiteness index* 33,2–36,9, kadar kalsium oksalat 1,1–1,2% (tidak sesuai SNI), dan kadar glukomanan 38,9–49,8% (kualitas mutu I). *Chip* dengan sulfur dioksida (SO_2) memiliki kadar air 9–11 %$_{wb}$ (kualitas mutu I), kadar abu 3,8–3,9% (kualitas mutu I), *whiteness index* 41,8–46,2, kadar kalsium oksalat 1% (tidak sesuai SNI), kadar glukomanan 48,8–58,6% (kualitas mutu I). kadar residu SO_2 117–130 ppm (sesuai *Food Safety Law of the People's Republic of China*).

Kata kunci: *chip* porang, laju pengeringan, penjemuran, perpindahan panas, sulfur dioksida.

DRYING PROCESS OF PORANG (*Amorphophallus muelleri* Blume) CHIP USING SUN DRYING METHOD WITH VARIATION OF SULPHUR ADDITION AND PRODUCT QUALITY CHARACTERIZATION

ABSTRACT

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Sun drying is a method that is easy to apply and requires affordable energy in the form of sunlight. During the drying process, there will be changes in the physical and chemical quality of the porang chips. The addition of sulphur is done to prevent browning and maintain the quality of porang chips. This research aims to determine the drying rate, convection heat transfer coefficient, characterize the physical and chemical quality of the product, and determine the best treatment in the drying process.

Porang tubers from Girimarto District, Wonogiri Regency, Central Java Province, were harvested in October 2023. The processing of porang chips begins with washing and slicing. The pre-treatment prior to drying is the application of 0.5 g/kg of sulfur using the fumigation method in a closed chamber. Drying is carried out using a drying rack with aheight of 80–100 cm. Porang tubers initially have a moisture content of 73–80%$_{wb}$ with a slice thickness of approximately ± 5 millimeters. Sun drying is conducted for 2 days from 7 am to 5 pm to achieve a moisture content of <12%$_{wb}$.

The drying rate of porang chips without treatment ranged from 4.1–14.6 %$_{db}$ /hour, while with sulfur dioxide treatment, it ranged from 3.9–19.6%$_{db}$/hour. The convection heat transfer coefficient of porang chips without treatment ranges from 6.5–14.4 W/m²·°C, while with sulfur dioxide treatment, it ranges from 4.8–14.5 W/m²·°C. The characterization of the quality of porang chips is based on SNI 7939:2020. Chips without treatment have a moisture content of 10–11%$_{wb}$ (quality I), ash content of 3.2–3.9% (quality I), a whiteness index of 33.2–36.9, calcium oxalate levels of 1.1–1.2% (not compliant with SNI), and glucomannan levels of 38.9–46.8% (quality I). Chips treated with sulfur dioxide (SO2) have a moisture content of 9–11%$_{wb}$ (quality I), ash content of 3.8–3.9% (quality I), a whiteness index of 41.8–46.2, calcium oxalate content of 1% (not in accordance with SNI), glucomannan content of 48.8–58.6% (quality I), and residual sulfur dioxide content of 117–130 ppm (compliant with the Food Safety Law of the People's Republic of China).

Keywords: drying rate, heat transfer, sulphur dioxide, sun drying, porang chip.