

KARAKTERISASI KUALITAS SIFAT FISIK DAN KIMIA SERTA ANALISIS LAJU PENGERINGAN PADA PENGERINGAN KUNYIT PUTIH (*Curcuma mngga Val.*) DENGAN VARIASI METODE PENGERINGAN

INTISARI

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Kunyit putih (*Curcuma mangga Val.*) merupakan obat tradisional yang mengandung fenolik sebagai antioksidan. Saat ini metode pengeringan yang digunakan yaitu sinar matahari dapat menurunkan kualitas kunyit putih. Tujuan penelitian adalah menganalisis kualitas fisik dan kimia, laju pengeringan, dan menentukan metode pengeringan yang paling optimal.

Bahan yang digunakan yaitu kunyit putih dari Pasar Godean, Sleman dengan kadar air rerata 90,516-92,259%. Alat yang digunakan yaitu *cabinet dryer* dan *freeze dryer*. Rancangan percobaan menggunakan 7 variasi yaitu pengeringan menggunakan *sun drying*, *cabinet dryer* pada suhu 50°C, 60°C, dan 70°C, dan *freeze dryer* pada suhu 30°C, 40°C, dan 50°C. Parameter yang diukur yaitu suhu, kadar air, susut bobot, warna, dimensi, *particle density*, fenolik total, dan struktur mikro. Analisis yang dilakukan yaitu penentuan laju pengeringan, analisis statistik untuk mengetahui pengaruh metode pengeringan terhadap kualitas fisik dan kimia kunyit putih kering, dan analisis TOPSIS untuk menentukan variasi pengeringan yang paling optimal.

Hasil penelitian menunjukkan konstanta laju pengeringan menggunakan *sun drying*, *cabinet dryer*, dan *freeze dryer* berturut adalah 0,5883%/jam, 0,6403-0,9954%/jam, dan 0,2184%/jam. Kualitas produk kunyit putih yang dikeringkan menggunakan *sun drying*, *cabinet dryer*, dan *freeze dryer* secara berurutan adalah kadar air 8,944%, 3,344-5,742%, 3,113-7,557%., susut bobot 90,59%, 91,55-92,45%, 89,965-92,24%., *chroma* 25,440, 44,937-49,046, 48,494-51,037., penyusutan volume 93,090%, 90,024-93,372%, 69,369-81,024%., *particle density* 0,918g/cm³, 0,721-0,823g/cm³, 0,440-0,648g/cm³, dan total fenolik 13,055 mgGAE/g_{padatan}, 10,303-14,214 mgGAE/g_{padatan}, 8,437-11,030 mgGAE/g_{padatan}. Struktur mikro *freeze drying* lebih besar dibanding *cabinet drying*. Metode pengeringan berpengaruh nyata terhadap kualitas sifat fisik dan kimia kunyit putih kering. Berdasarkan analisis TOPSIS metode pengeringan yang paling optimal adalah *freeze drying*.

Kata kunci : kunyit putih, pengeringan, kualitas fisik dan kimia

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CHARACTERIZATION OF THE QUALITY OF PHYSICAL AND CHEMICAL PROPERTIES AND ANALYSIS OF DRYING RATE ON DRYING WHITE TURMERIC (*Curcuma mangga Val.*) WITH VARIATIONS OF DRYING METHODS

ABSTRACT

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White turmeric (*Curcuma mangga Val.*) is a traditional medicine that contains high antioxidants. The drying method used is sun drying right now, that can reduce the quality of white turmeric. The purposes of the research are analyze the physical and chemical quality, the drying rate, and to determine the best method.

The material used is white turmeric from The Godean Market, Sleman with moisture content was 90.516-92.259%. The tools used are cabinet dryer and freeze dryer. The experimental design used 7 variations, namely drying using sun drying, cabinet dryer at temperatures of 50°C, 60°C, and 70°C, and freeze dryer at temperatures of 30°C, 40°C, and 50°C. Parameters measured were temperature, moisture content, weight loss, color, dimensions, particle density, total phenolic, and microstructure. The analyzes carried out were determining the drying rate, statistical analysis to determine the effect of the drying method on the physical and chemical quality of dried white turmeric, and TOPSIS analysis to determine the most optimal drying variation.

The results showed that the drying rate constants using sun drying, cabinet dryer, and freeze dryer were 0.5883%/hour, 0.6403-0.9954%/hour, and 0.2184%/hour. The quality of white turmeric products that were dried using sun drying, cabinet dryer, and freeze dryer, respectively, were moisture content 8.944%, 3.344-5.742%, 3.113-7.557%., weight loss 90.59%, 91.55-92.45%., 89.96-92.24%., chroma 25.440, 44.937-49.046, 48.494-51.037., volume shrinkage 93.090%, 90.024-93.372%, 69.369-81.024%., particle density 0.918g/cm³, 0.721-0.823g/cm³, 0.440-0.648g/cm³, and total phenolic 13.055mgGAE/g_{solid}, 10.303-14.214mgGAE/g_{solid}, 8.437-11.030 mgGAE/g_{solid}. The microstructure of freeze drying is larger than that of cabinet drying. The drying method significantly affects the quality of the physical and chemical properties of dry white turmeric. Based on TOPSIS analysis, the most optimal drying method is freeze drying.

Keywords: white turmeric, drying, physical and chemical quality

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