

KINETIKA SIFAT FISIK DAN KARAKTERISASI KUALITAS TEPUNG LABU KUNING (*Cucurbita moschata* Duch) SELAMA PENGERINGAN DENGAN VARIASI SUHU DEHIDRATOR

INTISARI

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Labu kuning (*Cucurbita moschata* Duch) merupakan labu yang mengandung betakaroten, vitamin E, dan zinc. Kadar air dan gula pada labu kuning cukup tinggi, sehingga untuk memperpanjang umur simpan produk diperlukan proses pengeringan. Tujuan penelitian adalah menganalisis kinetika perubahan kadar air dan warna irisan labu kuning selama pengeringan dengan variasi suhu dehidrator dan karakterisasi kualitas tepung labu kuning.

Labu kuning sebanyak 1000 g diris dengan ketebalan 2 mm, kemudian dikeringkan menggunakan dehidrator dengan variasi suhu 50, 60, dan 70 °C. Dehidrator terdiri dari lima rak, masing-masing berisi 200 g. Selama pengeringan dilakukan pengukuran kadar air dan warna chip labu dengan interval waktu 1 jam selama 12 jam. Perubahan kadar air dan warna dianalisis menggunakan model laju pengeringan konstan dan menurun, serta kinetika orde. Chip kering digiling menjadi tepung dan dikarakterisasi kualitas kimiawi yang meliputi vitamin E, betakaroten dan zinc. Hasil pengujian kualitas chip dan tepung labu kuning diadalisis statistik dan dilakukan analisis TOPSIS untuk menentukan kualitas produk terbaik berdasarkan kondisi pengeringan.

Pengeringan irisan labu kuning pada variasi suhu 50, 60, dan 70 °C menunjukkan hasil konstanta laju pengeringan konstan 2,2209/jam - 3,6307/jam, sedangkan laju menurun 0,3210/jam - 0,4743/jam. Perubahan warna memberikan hasil konstanta 0,0335/jam - 0,0461/jam (laju naik) dan 0,0010/jam - 0,0183/jam (laju menurun). Hasil karakterisasi kualitas tepung labu kuning diperoleh nilai kandungan vitamin E sebesar 15,99 – 23,34 mg/100g, betakaroten 52.065,05 – 92.387,29 µg/100g, dan zinc 16,78 – 18,28 ppm. Kondisi pengeringan irisan labu kuning yang terbaik adalah suhu 60 °C dan waktu pengeringan 12 jam. Suhu dehidrator berpengaruh nyata terhadap kualitas fisik chip dan kualitas kimiawi tepung labu, sedangkan posisi rak tidak berpengaruh nyata.

Kata kunci: kinetika, labu kuning, dehidrator, suhu, kadar air

KINETICS OF PHYSICAL AND QUALITY CHARACTERISATION OF YELLOW PUMPKIN FLOUR (*Cucurbita moschata* Duch) DURING DRYING USING DEHYDRATOR IN VARIOUS TEMPERATURE

ABSTRACT

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Pumpkin (*Cucurbita moschata* Duch) is a pumpkin that contains beta-carotene, vitamin E, and zinc. The moisture and sugar content in pumpkin is quite high, so to extend the shelf life of the product, a drying process is required. The objectives of the study were to analyse the kinetics of changes in moisture content and colour of pumpkin slices during drying with varying dehydrator temperatures and to characterise the quality of pumpkin flour.

1000 g pumpkin was sliced with a thickness of 2 mm, then dried using a dehydrator with temperature variations of 50, 60, and 70 °C. The dehydrator consisted of five racks, each containing 200g. During drying, the moisture content and colour of the flask chips were measured at 1 hour intervals for 12 hours. Changes in moisture content and colour were analysed using constant and decreasing drying rate models, as well as order kinetics. The dried chips were ground into flour and characterised for chemical quality including vitamin E, beta-carotene and zinc. The quality test results of pumpkin chips and flour were statistically analysed and TOPSIS analysis was conducted to determine the best product quality based on drying conditions.

Drying of pumpkin slices at temperature variations of 50, 60, and 70 °C showed constant drying rate of 2.2209/hour - 3.6307/hour, while the decreasing rate was 0.3210/hour - 0.4743/hour. Colour change gave constant results of 0.0335/hour - 0.0461/hour (increasing rate) and 0.0010/hour - 0.0183/hour (decreasing rate). The quality characterisation results of pumpkin flour obtained vitamin E content values of 15.99 - 23.34 mg/100g, beta-carotene 52,065.05 - 92,387.29 µg/100g, and zinc 16.78 - 18.28 ppm. The best drying condition for pumpkin slices was 60°C and 12 hours drying time. Dehydrator temperature had a significant effect on the physical quality of chips and chemical quality of pumpkin flour, while rack position had no significant effect.

Keywords: kinetics, pumpkin, dehydrator, temperature, moisture content