

## INTISARI

### **Pengaruh Laju Aliran Bahan dan Udara Peninger Terhadap Kualitas Fisik Sukun (*Artocarpus altilis*) Hasil Pengerinan Menggunakan *Flash Dryer* dengan *Horizontal Disintegrator***

Tanaman sukun tumbuh tersebar di hampir seluruh daerah Indonesia sehingga sangat mudah ditemui. Sukun segar memiliki kandungan air yang tinggi serta memiliki enzim polifenol sehingga umur simpannya pendek dan daging buah akan mengalami perubahan warna menjadi coklat apabila bersinggungan dengan udara. Untuk itu pengeringan sukun harus dilakukan dengan cepat untuk menghentikan reaksi oksidasi serta menghentikan aktivitas enzim sehingga dihasilkan produk dengan kualitas baik. Penelitian ini bertujuan untuk mengkaji pengaruh laju aliran bahan dan laju aliran udara penering terhadap kinerja penering *flash dryer* dan sifat fisik sukun hasil pengeringan.

Penelitian ini dilakukan dengan tiga variasi laju aliran udara penering yaitu 0,057 m<sup>3</sup>/s, 0,067 m<sup>3</sup>/s, dan 0,078 m<sup>3</sup>/s, serta variasi laju aliran umpan bahan (*feed rate*) 24 kg/jam dan 32 kg/jam. Dalam penelitian ini buah sukun yang telah disawut dikeringkan dengan *flash dryer* dari kadar air 50%-60% menjadi 12%-13% dalam 10-18 siklus pengeringan. Waktu dari siklus pengeringan digunakan sebagai dasar perhitungan laju pengeringan. Selama pengeringan, suhu udara lingkungan, kelembaban udara lingkungan, suhu inlet, suhu chamber, dan suhu outlet diukur sebagai dasar perhitungan efisiensi pemanasan dan efisiensi pengeringan. Disetiap akhir proses pengeringan, sifat fisik produk seperti diameter, densitas, dan karakteristik warna bahan dianalisis untuk mengetahui kualitas produk yang dihasilkan pada setiap perlakuan yang dilakukan.

Hasil penelitian menunjukkan bahwa semakin tinggi debit udara pemanas dan semakin rendah laju pengumpan yang digunakan menghasilkan kondisi terbaik untuk pengeringan dengan *flash dryer*. Secara umum nilai efisiensi pemanasan 70-90%, efisiensi pengeringan 17-25%. Hasil diameter bahan 1-1,25 mm dengan massa hilang 27-45%. Tingkat kecerahan (L\*) hasil sawutan berkisar 45-75 dengan derajat keputihan (W) 30-70.

**Kata kunci :** pengeringan, *flash dryer*, laju pengumpan bahan, laju aliran udara penering, sifat fisik sukun kering.

## ABSTRACT

### **Effect of Variation Feed Rate and Volumetric Flow Rate to the Physical Properties of Product of Breadfruit (*Artocarpus altilis*) Drying Using Flash Dryer with Horizontal Disintegrator**

Breadfruit grown in almost all regions of Indonesia so it is very easy to find. Breadfruit has a high water content and has a polyphenol enzyme, its make short shelf life and fruit flesh will change the color to brown when in contact with air. Therefore, breadfruit drying must be done quickly to stop the oxidation reaction and stop the enzyme activity so that the product is produced with good quality. The purpose of this research is to learn the affect of feedrate and volumetric flow rate variation to the physical properties of Breadfruit drying process using flash dryer.

In this research drying process had variation of volumetric flow rate is  $0.057 \text{ m}^3/\text{s}$ ,  $0.067 \text{ m}^3/\text{s}$ , and  $0.078 \text{ m}^3/\text{s}$ , also two variation of feed rate, 24 kg/h and 32 kg/h. In this research the shredded breadfruit was dried using flash dryer was carried out from the initial moisture content of 50-60% to about 12-13% in 10-18 drying cycles. The time of the drying cycle is used as the basis for calculating the drying rate. During drying, ambient air temperature, environmental air humidity, inlet temperature, chamber temperature, and outlet temperature are measured as the basis for calculating heating efficiency and drying efficiency. At each end of the drying process, the physical properties of the product such as diameter, density, and color characteristics of the material are analyzed to determine the quality of the product produced in each treatment performed.

The research resulted on conclusion that volumetric flow rate and feed rate affect the drying process of breadfruit. Higher volumetric flow rate, and lower feed rate, results on the best breadfruit drying process. In general, Efficiency of heating ranged between 70 – 90%, and Efficiency of drying ranged between 17 – 25%, Breadfruit in diameter ranged from 1-1.25 mm, with mass losses ranged between 27-45%. Brightness level ( $L^*$ ) of Breadfruit ranged between 45-75, and whiteness level ( $W$ ) of breadfruit ranged between 30-70.

**Key words:** drying, flash dryer, air flow rate, feed rate, physical properties of breadfruit drying.