

**ANALISIS TEKNIS PERUBAHAN KUALITAS FISIK BIJI PETAI (*Parkia  
speciosa*) SELAMA PENGERINGAN DENGAN METODE *FREEZE***

***DRYING***

**INTISARI**

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Petai (*Parkia speciosa*) merupakan bahan pertanian yang mudah rusak apalagi berada di suhu tropis seperti di Indonesia. Agar suplai petai tetap terjaga sepanjang tahun diperlukan pengawetan petai untuk memperpanjang umur simpan petai selama penyimpanan. Salah satu metode pengawetan terbaik saat ini yaitu metode pengeringan dengan pengeringan beku. Tujuan dari penelitian yaitu menganalisis perubahan kualitas petai kering setelah proses pengeringan beku, menganalisis kinetika laju perubahan fisik petai selama pengeringan beku, dan membandingkan hasil pengeringan antara *freeze dryer* dengan *cabinet dryer*. Sampel berupa petai dilakukan dalam dua variasi perlakuan yaitu variasi kondisi polong dan variasi perlakuan awal. Alat utama yang digunakan adalah *freeze dryer* berkapasitas 1 kg dengan suhu pendingin  $-18^{\circ}\text{C}$ , suhu pemanas  $60^{\circ}\text{C}$ , dan bertekanan  $-76\text{ cmHg}$ .

Hasil analisa didapat dari parameter kadar air petai kering paling kecil sebesar 2,068%, susut bobot paling besar sebesar 80,057%, perubahan warna terkecil sebesar 23,517, perubahan dimensi paling kecil sebesar panjang 22,774%, lebar 32,316%, dan tebal 38,129%, nilai kekerasan paling kecil sebesar 0,989 kg, dan perubahan klorofil paling kecil sebesar 2,903 mg/gr bk. Analisis kinetika dilakukan untuk menentukan nilai konstanta perubahan fisik petai. Nilai konstanta perubahan kadar air paling besar sebesar 0,1122, perubahan nilai kekerasan sebesar 0,0394, dan perubahan klorofil sebesar 0,0258. Hasil pengeringan *freeze drying* lebih baik kualitasnya dibandingkan hasil pengeringan dengan *cabinet dryer* dari parameter sifat fisik dan kandungan klorofil petai kering.

Kata kunci : *freeze drying*, kinetika, petai, sifat fisik

**TECHNICAL ANALYSIS OF CHANGES IN THE PHYSICAL QUALITY  
OF PETAI SEEDS (*Parkia speciosa*) DURING DRYING WITH FREEZE  
DRYING METHOD**

**ABSTRACT**

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Petai (*Parkia speciosa*) is an agricultural material that is easily damaged especially in tropical temperatures such as in Indonesia. To maintain the supply of petai throughout the year, it is necessary to preserve petai to extend the shelf life of petai during storage. One of the best preservation methods today is the freeze-drying method. The research aimed to analyze changes in the quality of dried petai after freeze-drying, to analyze the rate kinetics of physical change during freeze-drying, and to compare the drying results between freeze dryer and cabinet dryer. Samples in the form of petai were carried out in two variations of treatment, namely variations in pod conditions and variations in pretreatment. The main tool used is a freeze dryer with a capacity of 1 kg with a cooling temperature of  $-18^{\circ}\text{C}$ , a heating temperature of  $60^{\circ}\text{C}$ , and pressure of  $-76\text{ cmHg}$ .

The analysis results obtained from the parameters of dry petai moisture content at least 2.068%, the largest weight loss of 80.057%, the smallest color change was 23.517, the smallest dimensional change was 22.774% in length, 32, 316%, and 38.129% thick. the smallest hardness was 0.989 kg, and the smallest chlorophyll change was 2.903 mg / gr bk. Kinetics analysis was performed to determine the constant value of petai physical changes. The constant value of the change in water content is 0.1122, the change in the hardness value is 0.0394, and the change in chlorophyll is 0.0258. The result of freeze drying has better quality than the result of drying with cabinet dryer based on the physical properties and chlorophyll content of dried petai.

Keywords : freeze-drying, kinetics, petai, physical properties,