

**ANALISIS TEKNIS PROSES PENGERINGAN GABAH PRATANAK  
(PARBOILING) MENGGUNAKAN CABINET DRYER SEBAGAI FUNGSI  
DARI PENGARUH LAMA WAKTU PERENDAMAN DAN  
PENGUKUSAN**

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**ABSTRAK**

Konsumsi beras atau nasi yang tinggi menyebabkan angka penyakit diabetes mellitus (DM) meningkat. Sehingga untuk mengatasi permasalahan tersebut, maka dibutuhkan suatu metode pengolahan beras yang lebih sehat dan berkualitas. Dewasa ini, telah berkembang suatu cara pengolahan beras yaitu *parboiling rice*. Pada proses beras *parboiling* terdapat tiga proses utama yaitu perendaman gabah, pengukusan dan pengeringan. Proses pengeringan mekanis yang baik untuk digunakan dalam pengolahan beras *parboiling* adalah *cabinet dryer*. Proses pengeringan gabah *parboiling* menggunakan *cabinet dryer* harus mampu menurunkan kadar air kembali menjadi 14%. Penelitian ini bertujuan untuk mengkaji pengaruh lama waktu perendaman dan pengukusan bahan terhadap kualitas fisik gabah *parboiling* hasil pengeringan menggunakan *cabinet dryer*. Variasi lama waktu perendaman yang digunakan adalah 2 jam, 3 jam dan 4 jam. Sedangkan untuk variasi lama pengukusan adalah 10 menit, 20 menit dan 30 menit. Proses pengeringan dilakukan menggunakan sampel 1,5 kg dengan kadar air awal 25-35% sampai dengan kadar air 14%. Dalam penelitian ini, dilakukan analisis mutu hasil pengeringan meliputi kadar air akhir bahan dan *whiteness*. Selain itu, dilakukan analisis proses pengeringan meliputi *Specific Energy Utilization*, efisiensi pemanasan, efisiensi pengeringan, *Heat Utilization Factor*, *Coefficient of Performance*, *Effective Heat Efficiency*, kinetik laju pengeringan. Secara umum hasil dari penelitian ini antara lain mutu hasil pengeringan meliputi kadar air akhir berkisar antara 14.1 – 14.99% dan *whiteness* berkisar antara 48 – 55. Analisis proses pengeringan meliputi *Specific Energy Utilization* berkisar antara 11 – 17 Mj/kg, efisiensi pemanasan berkisar antara 64 – 80 %, efisiensi pengeringan berkisar antara 5.4 – 8.4%, *Heat Utilization Factor* berkisar antara 35 – 47%, *Coefficient of Performance* berkisar antara 53 – 65%, *Effective Heat Efficiency* berkisar antara 39 – 47.5%, dan kinetik laju pengeringan berkisar antara  $1.26 \times 10^{-4}$  –  $2.4 \times 10^{-4}$ .

**Kata kunci:** Analisis teknis, *Parboiled Rice*, Waktu Perendaman, Waktu Pengukusan, *Cabinet Dryer*

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## **TECHNICAL ANALYSIS OF PARBOILING DRYING PROCESS USING CABINET DRYER AS A FUNCTION OF EFFECT OF A LONG TIME OF SOAKING AND STEAMING**

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### **ABSTRACT**

Consumption of rice which leads to high rates of disease diabetes mellitus (DM) was increased. So, to overcome these problems, we need a method of processing rice that is healthier and of better quality. Today, the way of processing rice has developed, namely parboiling rice. In the process of parboiling rice there are three main processes namely soaking, steaming and drying grain. A good mechanical drying process for use in parboiling rice processing is a cabinet dryer. The parboiling grain drying process using a cabinet dryer must be able to reduce the water content back to 14%. This study aims to examine the effect of immersion and steaming time on the physical quality of parboiling grain produced by drying using a cabinet dryer. The variation of time immersion used is 2 hours, 3 hours and 4 hours. As for the variation of steaming time is 10 minutes, 20 minutes and 30 minutes. The drying process is carried out using a 1.5 kg sample with an initial moisture content of 25-35% to a moisture content of 14%. In this study, an analysis of the quality of the results of drying includes the final water content of ingredients and whiteness. In addition, an analysis of the drying process includes Specific Energy Utilization, Heating Efficiency, Drying Efficiency, Heat Utilization Factor, Coefficient of Performance, Effective Heat Efficiency, kinetic drying rate. In general, the results of this study include the quality of drying results including the final moisture content ranging from 14.1 - 14.99% and whiteness ranging from 48 - 55. Analysis of the drying process includes the Specific Energy Utilization ranged from 11-17 MJ / kg, heating efficiency ranges from 64 - 80%, drying efficiency ranges from 5.4 - 8.4%, Heat Utilization Factor ranges between 35 - 47%, Coefficient of Performance ranges from 53 - 65%, Effective Heat Efficiency ranges from 39 - 47.5%, and kinetic drying rate ranges from  $1.26 \times 10^{-4}$  -  $2.4 \times 10^{-4}$ .

**Keywords: Technical analysis, Parboiled Rice, Soaking Time, Steaming Time, Cabinet Dryer**

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