

PENGARUH PERENDAMAN SORGUM PUTIH VARIETAS LOKAL GUNUNGKIDUL TERHADAP KANDUNGAN LOGAM ESENSIAL (Fe, Zn, Cu, Mn, Se, Co, Mo) MENGGUNAKAN *RESPONSE SURFACE METHODOLOGY* (RSM).

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INTISARI

Telah dilakukan pengujian pengaruh perendaman sorgum putih varietas lokal Gunungkidul terhadap kandungan logam esensial. Penelitian ini bertujuan untuk mengetahui pengaruh dari variasi waktu dan temperatur perendaman terhadap kadar logam esensial Fe, Zn, Cu, Mn, Se, Co, dan Mo. Pengujian ini juga bertujuan untuk mengetahui pengaruh perbedaan kecepatan pengadukan selama proses terhadap penurunan kadar logam esensial Fe, Zn, Cu, Mn, Se, Co, dan Mo di dalam sorgum dan mengetahui kondisi optimum yang terjadi selama proses pengolahan sorgum berlangsung.

Biji sorgum diberikan perendaman dengan tiga variabel perlakuan berbeda yaitu waktu, temperatur, dan kecepatan pengadukan. Penelitian ini meliputi uji kadar logam esensial dalam sorgum yang dilakukan sebelum dan sesudah masing-masing proses pengolahan. Selain dilakukan di biji sorgum, uji kadar logam esensial juga dilakukan terhadap air hasil perendaman. Pengujian kadar logam esensial menggunakan instrumen *Inductively Coupled Plasma-Mass Spectrometry* (ICP-MS). Analisis data statistik parameter waktu, temperatur, dan kecepatan pengadukan terhadap kadar logam esensial disajikan menggunakan *software Design Expert 13* untuk membuat *plot* grafik dan mengevaluasi perbedaan signifikan.

Berdasarkan penelitian dan analisis yang telah dilakukan, didapatkan bahwa waktu, temperatur, dan kecepatan pengadukan mempengaruhi naik turunnya kadar logam esensial Fe, Zn, Cu, Mn, Se, Co, dan Mo dalam sorgum di mana pengaruh variabel waktu adalah yang paling signifikan. Kombinasi antara variabel waktu dan temperatur mempengaruhi kadar logam esensial Fe, Zn, Cu, Mn, Se, Co, dan Mo secara signifikan. Kondisi optimum diperoleh pada waktu 24 jam, kecepatan pengadukan 250 rpm, dan temperatur 45 °C.

Kata kunci: logam, perendaman, sorgum, temperatur, waktu.

THE EFFECT OF SOAKING WHITE SORGHUM OF LOCAL GUNUNGKIDUL VARIETIES ON ESSENTIAL METALS (Fe, Zn, Cu, Mn, Se, Co, Mo) CONTENT USING RESPONSE SURFACE METHODOLOGY (RSM).

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ABSTRACT

A study on the effect of soaking white sorghum from the local Gunungkidul variety on essential metals was conducted. The purpose of this research was to determine the influence of variations in soaking time and temperature on the concentrations of essential metals Fe, Zn, Cu, Mn, Se, Co, and Mo. This study also aimed to identify the effect of different stirring speeds on the reduction of essential metal concentrations and to determine the optimal conditions that occur during the sorghum processing.

Sorghum grains were soaked with three different treatment variables, time, temperature, and stirring speed. This study included tests for essential metal concentrations in sorghum, conducted before and after each processing step. The essential metal concentration tests were also carried out on the soaking water. The concentration of essential metals was measured using an Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) instrument. Statistical analysis of the data, including parameters such as time, temperature, and stirring speed on essential metal concentrations, was presented using Design Expert 13 software to create graphical plots and evaluate significant differences.

Based on the research and analysis conducted, it was found that time, temperature, and stirring speed influence the fluctuations in the levels of essential metals (Fe, Zn, Cu, Mn, Se, Co, and Mo) in sorghum, with time being the most significant factor. The combination of time and temperature variables significantly affected the levels of these essential metals. The optimal conditions were achieved at 24 hours, a stirring speed of 250 rpm, and a temperature of 45 °C.

Keywords: metals, soaking, sorghum, temperature, time.