ANALISIS GULA PEREDUKSI PADA NASI PUTIH DAN NASI MERAH DENGAN VARIASI PENGOLAHAN MENGGUNAKAN PEREAKSI SOMOGYI-NELSON

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ABSTRAK

Nasi merupakan sumber utama karbohidrat dalam pola makan masyarakat Indonesia, namun konsumsi berlebih berisiko meningkatkan kadar glukosa darah. Penelitian ini bertujuan untuk menganalisis gula pereduksi pada nasi putih dan nasi merah yang diolah menggunakan tiga metode berbeda: metode tradisional, *rice cooker* biasa, dan *rice cooker* rendah gula. Penetapan kadar gula pereduksi dilakukan dengan menggunakan metode kolorimetri dengan pereaksi Somogyi-Nelson dan diukur dengan spektrofotometer sinar tampak. Penelitian dimulai dengan pengumpulan bahan, pembuatan sampel, identifikasi, validasi metode dan penetapan kadar. Hasil validasi metode menunjukkan hasil yang baik dan memenuhi parameter, hasil uji linearitas didapatkan persamaan regresi y = 0,2595x + 0,1269 dan nilai r = 0,9986 dan nilai Vx0 = 2,24%, selektivitas dari metode juga menunjukkan selektif terhadap gula pereduksi, % akurasi (*recovery* 80 – 120%), presisi (RSD < 2%), serta sensitivitas BD= 0,097 µg/mL dan BK= 0,325 µg/mL. Hasil penelitian menunjukkan bahwa kadar gula pereduksi tertinggi terdapat pada nasi yang diolah dengan *rice cooker* biasa, sedangkan kadar terendah terdapat pada nasi yang diolah dengan *rice cooker* rendah gula. Variasi kadar glukosa dipengaruhi oleh jenis beras dan metode pengolahan, di mana metode *rice cooker* rendah gula terbukti paling efektif dalam menurunkan kadar gula pereduksi melalui pembuangan air rebusan. Penelitian ini menunjukkan bahwa pemilihan jenis beras dan metode pengolahan yang tepat berperan penting dalam pengendalian asupan gula melalui makanan pokok.

Kata kunci: glukosa, *rice cooker* biasa, tradisional, *rice cooker* rendah gula nasi putih, nasi merah, Somogyi-Nelson, spektrofotometri UV-Vis

ANALYSIS OF REDUCING SUGAR IN WHITE RICE AND RED RICE WITH PROCESSING VARIATIONS USING THE SOMOGYI-NELSON REAGENT

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ABSTRACT

Rice is a primary source of carbohydrates in the Indonesian diet; however, excessive consumption may increase blood glucose levels. This study aims to analyze reducing sugars in white rice and red rice processed using the traditional method, a regular rice cooker, and a low-sugar rice cooker. Reducing sugar content was determined using a colorimetric method with the Somogyi-Nelson reagent and measured using a visible light spectrophotometer. The research began with sample collection, rice preparation, identification, method validation, and sugar determination. Method validation showed good results and met the required parameters. The linearity test yielded a regression equation of $y = 0.2595x + 0.1269$ with an r value of 0.9986. The method also showed good selectivity for reducing sugars, with an accuracy (recovery) of 80–120%, precision (RSD < 5%), and sensitivity with LOD = 0.097 µg/mL and LOQ = 0.325 µg/mL. The results showed that the highest reducing sugar content was found in rice cooked with a regular rice cooker, while the lowest was found in rice cooked with a low-sugar rice cooker. Variations in glucose levels were influenced by the type of rice and processing method, with the low-sugar rice cooker method proving most effective in reducing sugar content through the removal of starchy water. This study highlights that selecting the right type of rice and cooking method plays a crucial role in controlling glucose intake through staple foods.

Keywords: glucose, traditional steaming, conventional rice cooker, and low-sugar rice cooker, white rice, red rice, Somogyi-Nelson, UV-Vis spectrophotometry