

POTENSI ANTIDIABETIK KECAMBAH BERAS PECAH KULIT VARIETAS IR-64 SECARA *IN VIVO* PADA TIKUS WISTAR

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Diabetes melitus (DM) merupakan suatu penyakit gangguan metabolisme kronis. Sebanyak 90% kasus diabetes di dunia merupakan diabetes tipe 2 (T2DM). Prevalensi TD2M di Indonesia menunjukkan peningkatan hingga 5,5% di tahun 2021. Akan tetapi, masyarakat Indonesia masih menjadikan beras putih sebagai sumber karbohidrat utama, dimana beras putih memiliki indeks glikemik (IG) yang tinggi. Konsumsi pangan dengan IG tinggi meningkatkan kadar glukosa dalam darah yang memicu resistensi insulin. Alternatif untuk mengurangi konsumsi beras putih yakni dengan mengganti sumber karbohidrat seperti beras pecah kulit. Beras pecah kulit mengandung lebih banyak serat dan gizi yang bermanfaat bagi kesehatan. Germinasi merupakan proses yang efektif untuk meningkatkan kualitas gizi sereal. Perlakuan germinasi pada beras diketahui dapat menurunkan kadar glukosa darah, mengurangi resistensi insulin, dan meningkatkan sensitivitas insulin. Tujuan dari penelitian ini yakni mengetahui pengaruh pemberian beras pecah kulit germinasi terhadap kadar glukosa darah puasa, kadar insulin, HOMA-IR dan HOMA- β pada tikus induksi DM tipe 2. Proses germinasi dilakukan dengan perendaman 24 jam dan aerasi 24 jam. Beras pecah kulit germinasi dianalisis komposisi kimia dan dievaluasi terhadap penurunan kadar gula darah, kadar insulin, HOMA-IR, HOMA- β pada tikus *wistar* diabetes dengan induksi *High Fat Diet* (HFD) dan *Streptozotocin-Nicotinamide* (STZ-NA). Metode yang digunakan yakni *pretest-posttest control group design* terdiri dari kelompok kontrol, kelompok DM, kelompok perlakuan yang diberikan pakan substitusi beras pecah kulit, kelompok perlakuan yang pakan substitusi beras pecah kulit germinasi dengan pemberian air minum *ad libitum*. Hasil penelitian menunjukkan kadar lemak dan kadar protein total beras pecah kulit germinasi meningkat signifikan, kadar karohidrat menurun signifikan, dan tidak terdapat perubahan pada kadar air dan kadar abu. Uji *bioassay* menunjukkan penurunan kadar glukosa darah puasa dan peningkatan sekresi insulin yang signifikan, penurunan indeks HOMA-IR dan kenaikan indeks HOMA- β secara signifikan. Berdasarkan hasil penelitian dapat disimpulkan bahwa perlakuan germinasi 24 jam dapat meningkatkan potensi antidiabetik pada beras pecah kulit germinasi varietas IR-64.

Kata kunci: diabetes melitus, beras pecah kulit, germinasi, antidiabetik.

ANTIDIABETIC POTENTIAL OF BROWN RICE SPROUTS IR-64 VARIETY *IN VIVO* IN WISTAR RATS

ABSTRACT

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Diabetes mellitus (DM) is a chronic metabolic disorder. As many as 90% of diabetes cases in the world are type 2 diabetes (T2DM). The prevalence of T2DM in Indonesia shows an increase of to 5.5% in 2021. However, Indonesians still make white rice as the main carbohydrate source, where white rice has a high glycaemic index (GI). Consumption of foods with high GI increases blood glucose levels, which triggers insulin resistance. An alternative to reduce white rice consumption by replacing carbohydrate sources such as brown rice. Brown rice contains more fibre and nutrients that are beneficial for health. Germination is an effective process to improve the nutritional quality of cereals. Germination treatment on rice is known to lower blood glucose levels, reduce insulin resistance, and improve insulin sensitivity. The purpose of this study was to determine the effect of germinated brown rice on fasting blood glucose levels, fasting insulin levels, HOMA-IR and HOMA- β in rats with T2DM. induction of type 2 DM. The germination process was carried out with 24-hour soaking and 24-hour aeration. Germinated brown rice was analysed for chemical composition and evaluated on the reduction of blood sugar levels, fasting insulin levels, HOMA-IR, and HOMA- β in diabetic *wistar* rats with High Fat Diet (HFD) and Streptozotocin-Nicotinamide (STZ-NA) induction. The method used was pretest dan posttest consisting of a control group, DM group, treatment group given feed substitution of brown rice, and treatment group that feeds brown rice substitute germination with drinking water ad libitum. The results showed that the fat content and total protein content of germinated brown rice increased significantly, carbohydrate content decreased significantly, and there was no change in water and ash content. Bioassay tests showed a decrease in fasting blood glucose levels and a significant increase in insulin secretion, a decrease in HOMA-IR index and an increase in HOMA- β index significantly. Based on the results of the study, it can be concluded that treatment can increase the antidiabetic potential of brown rice germination of IR-64 variety.

Keywords: diabetes mellitus, brown rice, germination, antidiabetic.