

**PERBANDINGAN EFEKTIVITAS ANTIOKSIDAN ANTOSIANIN UBI  
JALAR UNGU (*Ipomoea batatas* L), BERAS HITAM (*Oryza sativa* L) DAN  
BERAS KETAN HITAM (*Oryza sativa* V) TERHADAP PERBAIKAN  
GLUKOSA DARAH, STATUS ANTIOKSIDAN, SERTA  
PROFIL LIPID PADA TIKUS HIPERGLIKEMIA**

**INTISARI**

Kondisi hiperglikemia pada DM tipe 2 menyebabkan sel-sel di jaringan otot tidak mendapatkan asupan glukosa sebagai sumber energi sehingga tubuh mengoksidasi dari simpanan lemak tubuh. Selain itu keadaan hiperglikemia diikuti peningkatan radikal bebas mengakibatkan buruknya profil lipid darah. Senyawa antosianin diketahui memiliki efek kesehatan, terutama dalam penanganan hiperglikemia, berkaitan dengan komponen aktifnya yakni antosianidin. Penelitian ini bertujuan mengevaluasi pengaruh pemberian antioksidan antosianin dari sumber bahan yang berbeda, yaitu: ubi jalar ungu, beras hitam, dan beras ketan hitam serta membandingkan efektivitas terhadap perbaikan kadar glukosa darah, status antioksidan, dan profil lipid pada tikus hiperglikemia yang diinduksi *Nicotinamide* (NA) dan *Streptozotocin* (STZ). Dua puluh lima ekor tikus *Sprague Dawley* Jantan umur  $\pm 2$  bulan dibagi menjadi lima kelompok: kelompok sehat, kelompok hiperglikemia, dan tiga kelompok hiperglikemia yang disonde 12 mg/kg berat badan antosianin dari ubi jalar ungu, beras hitam, serta beras ketan hitam selama enam minggu intervensi.

Hasil penelitian menunjukkan bahwa antosianidin dari ekstrak antosianin ubi jalar ungu yang teridentifikasi adalah delphinidin, sianidin, dan malvidin dengan konsentrasi masing-masing 0.12 mg, 0.12 mg, dan 1.20mg/ 100g bahan. Sedangkan antosianidin dari ekstrak antosianin beras hitam dan beras ketan hitam teridentifikasi sianidin dan malvidin dengan konsentrasi masing-masing 0.73 mg dan 13.17 mg/ 100g bahan serta 1.07 mg dan 17.6 mg/ 100g bahan. Hasil pengujian *bioassay* menunjukkan bahwa konsumsi ekstrak antosianin efektif menurunkan glukosa darah pada kisaran 42.9%–48.0%, meningkatkan kapasitas total antioksidan darah 9.3%–18.5%, dan menurunkan MDA darah 51.1%–60.9% serta menurunkan total kolesterol 24.2%–31.7%, trigliserida 7.2%–11.4%, LDL 9.2%–15.5%, dan meningkatkan HDL 28.9%–45.3%. Berdasarkan perbandingan efektivitas antar perlakuan ekstrak antosianin terhadap perbaikan kadar glukosa darah, kapasitas total antioksidan, MDA, total kolesterol, LDL, dan HDL kolesterol darah tertinggi pada kelompok yang diberi ekstrak antosianin beras ketan hitam, sedangkan perbaikan kadar trigliserida darah tertinggi pada kelompok yang diberi ekstrak antosianin beras hitam.

**Kata Kunci:** Antosianin, Antosianidin, Ubi jalar ungu, Beras hitam, Beras ketan hitam, Hiperglikemia, Status antioksidan, Profil lipid

**COMPARISON OF EFFECTIVENESS OF ANTHOCYANIN AS  
ANTIOXIDANT IN PURPLE SWEET POTATO (*Ipomoea batatas* L),  
BLACK RICE (*Oryza sativa* L), AND BLACK GLUTINOUS RICE (*Oryza  
sativa* V) ON THE IMPROVEMENT OF BLOOD GLUCOSE,  
ANTIOXIDANT STATUS, AND LIPID PROFILE  
IN HYPERGLYCEMIC RATS**

**ABSTRACT**

The hyperglycemia condition in type 2 diabetes causes the cells in the muscle tissue does not get the glucose intake as a source of energy so that the body metabolizes the body fat deposits. In addition the hyperglycemia state followed by an increase in free radicals results in the poor of the blood lipid profile. Anthocyanin compounds are known to have health effects, especially in the prevention of hyperglycemia, which is associated with the active components, anthocyanidins. This study aimed to evaluate the effect of giving the antioxidant anthocyanin from a source of different materials, namely: the purple sweet potato, black rice and black glutinous rice and compare the effectiveness of the improvement in blood glucose levels, antioxidant status and lipid profile in the hyperglycemia rats-induced *Nicotinamide* (NA ) and *Streptozotocin* (STZ). Twenty-five rats of *Sprague Dawley* males aged  $\pm$  2 months were divided into five groups: healthy group, hyperglycemic group, and three hyperglycemic groups orally administered with daily dose of 12 mg/kg body weight of anthocyanin extract from purple sweet potato, black rice, and black glutinous rice for 6 weeks of intervention.

The results showed that anthocyanidins of anthocyanin extract from purple sweet potato was identified as delphinidin, cyanidin, and malvidin with each concentration 0.12 mg, 0.12 mg and 1.20 mg/ 100g of material. While anthocyanidins of anthocyanin extracts of black rice and black glutinous rice were identified as cyanidin and malvidin with each concentration of 0.73 mg and 13.17 mg/ 100g of material and 1.07 mg and 17.6 mg/ 100g of material. The bioassay testing results showed that the consumption of anthocyanin extracts effectively decreases blood glucose levels in the range of 42.9%–48.0%, increases the antioxidant total capacity of the blood of 9.3%–18.5%, lowers MDA of blood 51.1%–60.9%, lowers 24.2%–31.7% total cholesterol, 7.2%–11.4% triglycerides, 9.2%–15.5% LDL and increase 28.9%–45.3% cholesterol-HDL. Based on the effectiveness of anthocyanin extract on improving blood glucose levels, antioxidant total capacity, MDA, total cholesterol, LDL, and cholesterol-HDL was highest in the group is given the anthocyanin extract of black glutinous rice. Meanwhile, the group given anthocyanin extracts of black rice was more effective in reducing the blood triglyceride content of 11.4% compared with the group given other anthocyanin extracts.

**Keywords:** Anthocyanin, Anthocyanidins, Purple sweet potato, Black rice, Black glutinous rice, Hyperglycemia, Antioxidant status, Lipid profile