

**Effects of Prebiotic Capsule Containing Anthocyanins, Inulin, and Rice Bran Dietary Fiber  
on Blood Glucose and Lipid Profiles and Aerobic Capacity in Type 2 Diabetes Patients**

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**ABSTRACT**

Type 2 diabetes mellitus (T2DM), a disease with fasting blood glucose (FBG) concentration equal or greater than 126 mg/dL, results in intestinal microbiota reduction. This condition affected insulin sensitivity, glucose and lipid metabolism, causing diminished physical performance. Hence, consumption of prebiotics that increase intestinal microbiota number is essential. This study aimed to investigate effects of prebiotic capsule containing anthocyanins from black rice bran (Riceberry rice) and dietary fibers from inulin (Jerusalem artichoke) and from RD6 rice bran (*Oryza sativa* L.) on FBG, lipid profiles, and aerobic capacity in T2DM patients. A randomized, placebo-controlled, double-blinded, parallel trial was performed. Sixty subjects aged 30-60 years were randomly assigned into 2 groups (n=30/ group) to examine effects of prebiotic and placebo capsules (maltodextrin) (350 mg/capsule), 4 times/day, 2 capsules/time after breakfast, lunch, dinner, and before sleeping. Before and after 60-day supplementation, FBG, lipid profiles, and a six-minute walk test were assessed. FBG, glycated hemoglobin A1c (HbA1c), and low-density lipoprotein cholesterol (LDL-c) concentrations in the prebiotic group were significantly lower (p=0.028, 0.002, and 0.018, respectively) when compared to the placebo group. Comparing within group, after consuming the capsule, only the prebiotic group showed significant reductions in FBG, plasma HbA1c, total cholesterol (TC), and LDL-c concentrations (p=0.008, p=0.004, p=0.002, and p=0.006, respectively). However, aerobic capacity did not differ in both groups. This study shows that the prebiotic capsule can decrease FBG, HbA1c, and LDL-c levels in patients with T2DM. A further study in a higher dosage of the supplementation for a longer duration should be performed to evaluate the beneficial effect on aerobic capacity.

**Keywords:** Gut microbiota; Glycemic control; Blood lipid regulation; 6MWT; Type 2 diabetes mellitus

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