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### **Effect of D- $\beta$ -Hydroxybutyric Acid on Body Fat in Japanese Adults: A Randomized, Double-Blind, Placebo-Controlled Study**

Ketone metabolism is currently being spotlighted for its health benefits. Strict dietary carbohydrate restriction is required to increase plasma ketone levels, which can be achieved with D- $\beta$ -hydroxybutyric acid (D-BHB) supplementation as well. Although 2.9 g/day of D-BHB may reduce body fat without dieting or exercise interventions, the lower effective intake limit of exogenous D-BHB remains unknown. In this randomized, double-blind, placebo-controlled study (UMIN000054231), we aimed to assess the safety and fat-reduction effects of a 12-week intake of D-BHB in healthy Japanese adults (low-dose [1.5 g/day, n = 33], normal-dose [2.9 g/day, n = 33], and placebo [n = 34] groups). Blood samples were collected pre- and post-intervention. Participants' blood chemistry, anthropometric, and body composition parameters were investigated. The low-dose group had a lower visceral fat area and body mass index (BMI) and higher plasma ketone levels than the placebo group. The normal-dose group had a significantly lower visceral fat area than the placebo group. Significant between-group (normal-dose vs. placebo) differences were observed in body weight, BMI, body fat percentage, fat mass, and plasma ketone levels. Participants reported no D-BHB-related adverse effects or discomfort. In conclusion, 1.5 or 2.9 g/day of D-BHB may reduce body fat without dieting or exercise interventions.

**Keywords:** D- $\beta$ -hydroxybutyric acid, ketogenic diet, ketone body, obesity, overweight

#### **Biography**

Shohei Katsuya is a researcher specializing in fermentation production technology and physiological functions of beta-hydroxybutyrate (BHB). Since 2021, he has been engaged in research and development using Halomonas bacteria to produce BHB through fermentation. His work focuses on advancing sustainable production methods and understanding the health benefits of BHB. Shohei holds a master's degree in agriculture and is dedicated to contributing to metabolic health research. He actively participates in scientific discussions and aims to promote innovative solutions in biotechnology and nutrition.