Effects of Lactobacillus Plantarum TWK10 on Improving Endurance Performance in Humans

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Abstract

Introduction: The microbiota is one of a hot topic on disease prevention and health promotion issues and many studies revealed the important roles to physiological homeostasis and health promotion. The **Lactobacillus plantarum** (**L. plantarum**), endemic isolation from Taiwan pickled vegetables, is a well-known probiotic microorganism, i.e., ingested microorganism associated with beneficial effects in the host. A recent animal study demonstrated that **L. plantarum** TWK10 (TWK10) supplementation could increase muscle mass, improve exercise performance, and exert anti-fatigue effects. Therefore, we conducted a human double-blind exercise clinical trial to examine the ergogenic effect of TWK10 supplementation on endurance performance in humans.

Methods: Sixteen adult subjects aged > 20 years were recruited with 8 subjects each randomly allocated to placebo and TWK10 groups, followed by 6 weeks of supplementation with 10^9 CFU TWK10/day dose. The exhaustive treadmill and related biochemical parameters were conducted and analyzed for their physiological assessments.

Results: The results showed that the TWK10 group exhibited significantly higher endurance performance at a maximal treadmill running test and could be beneficial to energy harvest as compared to Placebo group ($p < 0.05$). In the current study, we demonstrated that TWK10 can be used for aerobic exercise for better physiological adaptation.

Conclusions: TWK10 could be also a potential ergogenic supplement for amateur runners as an alternative option with health benefits.

Keywords: Exercise performance, Lactic acid bacteria, Microbiota, Energy harvest