Effects of Prebiotic Contained Inulin, Anthocyanin and Dietary Fiber on Fuel Utilization in Overweight or Obese Individuals

Panicha Pongnaratorn (Ph.D)[1,2], Yupaporn Kanpettha (Ph.D) [1,2], Ploypailin Aneknan (MS)[2,3], Juntanee Uriyapongson (Ph.D)[4], Panakaporn Wannanont (MD)[3], Charnchai Panthongviriyakul (MD)[3], Naruemon Leelayuwat[2,3] (Ph.D)*

[1]Graduate School, Khon Kaen University, Khon Kaen, Thailand

[2]Exercise and sport Sciences Development and Research Group, Khon Kaen University, Khon Kaen, Thailand

[3]Faculty of Medicine, Khon Kaen University, Khon Kaen, Thailand

[4]Faculty of Technology, Khon Kaen University, Khon Kaen, Thailand

[5]Department of Thai Traditional Medicine, Faculty of Natural Resources, Rajamangala University of Technology Isan, Sakon Nakhon Campus, Thailand

*Corresponding author: naruemon.leelayuwat@gmail.com

Abstract

Introduction: Prebiotics have been shown to promote gut microbiota for maintaining blood glucose levels, reducing fat accumulation and improving on fat utilization. The objective was to comparison the effect of prebiotics contained inulin, anthocyanin and dietary fiber on fuel utilization between before and after supplementation in overweight or obese subjects.

Methods: This study is randomized, double-blinded, placebo-controlled trial. Sixty volunteers were divided into two groups; 1) treatment group ingested prebiotics capsule (4200 mg. day^{-1}) and 2) placebo group ingested maltodextrin before meal with 350 mg/capsule, 3 capsule for 4 time a day in 30 days. Before and after supplementation, anthropometry was measured. Blood samples were collected to investigate glucose, insulin, and lipid profiles. Moreover, five-minute expired gas was collected to analyze substrate utilization.

Results: After prebiotic supplementation, hip circumference, insulin and lipid profiles significantly decreased ($p<0.05$). In contrast HOMA-IR increased after placebo supplementation, However, fat and carbohydrate oxidation rates were not significantly different between groups ($p>0.05$).

Conclusions: These data suggest that prebiotic for 30 days showed a reduction in hip circumference and insulin. Thus, prebiotic may be associated with beneficial effects on obesity related metabolic disorders.

Keywords: Gut microbiota, Dietary, obesity, Substrate utilization