

26th World Nutrition Congress

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15th Euro Obesity and Endocrinology Congress

June 17-18, 2019 London, UK

Effects of probiotics and synbiotic on lipid profiles in adults at risk of type 2 diabetes: A double-blind randomized controlled clinical trial

Nazila Kassaian¹, Awat Feizi¹, Ashraf Aminorroaya¹, Maryam Tajabadi Ebrahimi², Atsa Norouzi¹ and Masoud Amini¹

¹Isfahan University of Medical Sciences, Iran

²Islamic Azad University, Iran

Background: The use of probiotics and/or prebiotics as the effective means of regulating gut microbiota may have a beneficial effect on metabolic disorders.

Aims: This study was designed to assess the ability of probiotics and symbiotic to modify lipid profiles in subjects with prediabetes who are at risk of diabetes and cardiovascular diseases.

Methods: In a randomized double-blind placebo-controlled clinical trial, 120 pre-diabetic adults aged 35-70 years from the first degree family of type 2 diabetic patients were recruited and randomly equally assigned to consume 6 g/d either probiotics, or symbiotic or placebo supplements for 6 months. Food record, physical activity, anthropometric measures and lipid profiles were assessed repeatedly at baseline, and 3 and 6 month supplementation.

Results: Probiotics and symbiotic were effective in reduction of serum triglycerides after 6 months of intervention (SMD=-10.6 and -9.4 respectively). Compared with the placebo, symbiotic resulted in a significant reduction in serum triglyceride levels (mean±SD: -9.4±6.6 mg/dl vs. +13.2±6.8 mg/dl, p=0.02). Serum total-, LDL-, and HDL-cholesterol were unaffected by probiotic or symbiotic.

Conclusion: The results of this study demonstrated that supplementation with probiotic and especially symbiotic could decrease the concentration of triglyceride in pre-diabetic adults. This finding could warrant future studies to determine the therapeutic and preventive effects of these supplements in individuals at risk of diabetes and cardiovascular diseases.

nkassaian@gmail.com