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Impact of Glucomannan, Inulin, and Psyllium Supplementation on Weight Loss in Adults with FTO, LEP, LEPR, and MC4R Polymorphisms: A Randomized, Double-blind, Placebo-controlled Trial

Abstract:

This study aims to determine the impact of a fiber supplement on body weight and composition in individuals with obesity with specific genetic polymorphisms. It involved 112 adults with obesity, each with at least one minor allele in the FTO, LEP, LEPR, or MC4R polymorphisms. Participants were randomized to receive either a fiber supplement (glucomannan, inulin, and psyllium) or a placebo for 180 days. The experimental group showed significant reductions in body weight (treatment difference: -4.9%; 95% CI: -6.9% to -2.9%; $p < 0.01$) and BMI (treatment difference: -1.4 kg/m²; 95% CI: -1.7 to -1.2; $p < 0.01$) compared to placebo. Further significant decreases in fat mass (treatment difference: -13.0%; 95% CI: -14.4 to -11.7; $p < 0.01$) and visceral fat rating (treatment difference: -1.3; 95% CI: -1.6 to -1.0; $p < 0.01$) were noted. Homozygous minor allele carriers experienced greater decreases in body weight (treatment difference: -3.2%; 95% CI: -4.9% to -1.6%; $p < 0.01$) and BMI (treatment difference: -1.2 kg/m²; 95% CI: -2.0 to -0.4; $p < 0.01$), compared to heterozygous allele carriers. These carriers also had a more significant reduction in fat mass (treatment difference: -9.8%; 95% CI: -10.6 to -9.1; $p < 0.01$) and visceral fat rating (treatment difference: -0.9; 95% CI: -1.3 to -0.5; $p < 0.01$). A high incidence of gastrointestinal events was reported in the experimental group (74.6%), unlike the placebo group, which reported no side effects. Dietary supplementation with glucomannan, inulin, and psyllium effectively promotes weight loss and improves body composition in individuals with obesity, particularly those with specific genetic polymorphisms.

Biography

Evgeny A. Pokushalov, MD (E-1 077979; University of Russia, 2002), PhD, and Professor of Medicine, currently serves as the R&D Director at the Center of New Medical Technologies (CNMT) in Novosibirsk, Russia since 2020, while also holding the position of Medical Advisor to the Chairman of the Siberian Branch of the Russian Academy of Sciences since the same year. Additionally, since 2022, he has been associated with the Scientific Research Laboratory at Triangel Scientific in San Francisco, USA. Dr. Pokushalov has been an active member of various professional associations and colleges, including the Russian Society of Pacing and Electrophysiology, European Society of Cardiology, American Heart Association, and others, holding fellowships and memberships in prestigious organizations such as the European Society of Cardiology (FESC), American College of Cardiology (FACC), Heart Rhythm Society (FHRS), and European Heart Rhythm Association (FEHRA).