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Effects of symbiotic supplementation on metabolic parameters and apelin in women with polycystic ovary syndrome: a randomized, double-blind, placebo-controlled trial

Elham Karimi, Ashraf Moieni, Mehdi Yaseri, Nooshin Shirzad, Mahdi Sepidarkish, Mojgan Hossein-Boroujerdi and **Mohammad Javad Hosseinzadeh Attar**

Women's Specialized Hospital, Iran

Polycystic ovary syndrome (PCOS) is one of the most common causes of infertility in women of reproductive age. Insulin resistance is a main pathophysiologic feature in these patients. According to some studies, the intake of probiotic bacteria may improve glucose homeostasis. The aim of this study was to investigate the effect of symbiotic on metabolic parameters and apelin in PCOS patients. This randomized, double-blind, placebo-controlled trial was conducted on 88 PCOS women aged 19–37 years old. The participants were randomly assigned to two groups receiving (1) symbiotic supplement (n=44) and (2) placebo (n=44) for 12 weeks. Fasting blood samples were taken at baseline and after 12 weeks. The two groups showed no difference in Fasting Blood Sugar (FBS) (adjusted mean difference: 0.60, 95% CI: -3.80 to 5.00, P=0.727), plasma glucose fasting 2-h (PGF-2h) (adjusted mean difference: 2.09, 95% CI: -9.96 to 14.15, P=0.134), Hemoglobin A1c (HbA1c) (adjusted mean difference: 0.06, 95% CI: -0.09 to 0.22, P=0.959), Homeostatic Model Assessment-Insulin Resistance (HOMA-IR) (adjusted mean difference: 0.02, 95% CI: -0.99 to 1.03, P=0.837), Quantitative Insulin Sensitivity Check Index (QUICKI) (adjusted mean difference: -0.02, 95% CI: -0.33 to 0.29, P=0.940), and C-Reactive Protein (CRP) (adjusted mean difference: 0.24, 95% CI: -1.61 to 2.08, P=0.141) by the end of the intervention. A significant difference was observed in the mean apelin-36 before and after the intervention between symbiotic and placebo groups (adjusted mean difference: -4.05, 95% CI: -7.15 to -0.96, P=0.004). A 12-week symbiotic supplementation has no significant beneficial effects on HOMA-IR and CRP in PCOS patients while the level of apelin-36 significantly decreased.

karimi_7997@yahoo.com