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Effects of probiotic supplementation on markers of renal function and oxidative stress in subjects with metabolic syndrome

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Objectives:

Metabolic syndrome (MetS) is a group of metabolic abnormalities which increases the risk of coronary heart disease, diabetes, stroke, and other significant health issues, including kidney damage. Probiotics are live microorganisms touted for their antidiabetic, anti-inflammatory, and antioxidant qualities. This study examined the impact of probiotic supplementation on renal function and oxidative stress indicators in MetS subjects.

Methods:

In a randomized, double-blind, placebo-controlled clinical trial, 50 Subjects aged 30–60 years were selected from the Health centre, Jiwaji University and assigned into two groups; Subjects in the probiotic group received a daily probiotic capsule containing *Lactobacillus spp* *Bifidobacterium spp* and *Saccharomyces spp* for three months. Physical activity levels and dietary intakes were assessed at the baseline and at the end of the study. Anthropometric parameters, blood glucose, creatinine, Urea, BUN, uric acid malondialdehyde (MDA), superoxide dismutase (SOD), reduced glutathione (GSH), and catalase (CAT) activities were measured. The Institutional Human Ethics Committee duly approved the study protocol. Statistical analysis was carried out using a paired t-test and student t-test.

Results:

Demographic and anthropometric characteristics were found similar between groups at baseline. The mean fasting blood glucose levels were reduced significantly ($p < 0.05$). The probiotic supplementation significantly improved around 15 % in Urea, 14 % BUN, 12% Uric acid and 11% in Creatinine levels. It also observed a significant increase in GSH($p < 0.01$), SOD($p < 0.01$), CAT($p < 0.01$) and a decrease in MDA level ($p < 0.01$). A significant difference was observed between-group for these enzyme activities & other parameters at the end of the study.

Conclusions: The results demonstrate that probiotic supplementation could improve renal function and oxidative stress factors among study subjects. Hence probiotic supplementation could be a unique approach to lowering oxidative stress and improving kidney function in subjects with MetS.