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Effects of probiotics, prebiotics, and synbiotics on hemodialysis patients

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Objectives: The aim of this systematic review and meta-analysis was to assess the effects of probiotics, prebiotics and synbiotics in patient receiving hemodialysis.

Methods: We searched on EMBASE, MEDLINE, Web of Science and Cochrane Library electronic databases up to April 2nd 2021. Randomized controlled trials (RCTs) evaluating circulatory uremic toxins, inflammation, oxidative stress, blood lipids and gastrointestinal symptoms in adult patients receiving hemodialysis were included.

Results:

The pooled results from 25 studies with 949 hemodialysis patients indicated that interventions significantly decreased the circulating level of p-cresyl sulfate (p-CS) (-0.38; 95% CI: -0.61, -0.15; p = 0.001), endotoxin (-0.58; 95%CI: -0.99, -0.18; p = 0.005), malondialdehyde (MDA) (-1.16; 95%CI: -1.81, -0.52; p = 0.0004), C-reactive protein (CRP) (-0.61; 95%CI: -0.99, -0.23; p = 0.002), interleukin 6 (IL-6) (-0.92; 95%CI: -1.51, -0.33; p = 0.002) and gastrointestinal symptoms (-0.54; 95%CI: -0.89, -0.20; p = 0.002); also improve total antioxidant capacity (TAC) (0.89; 95%CI: 0.49, 1.30; p < 0.0001), glutathione (GSH) (0.40; 95%CI: 0.14, 0.66; p = 0.003) and high-density lipoprotein (HDL) cholesterol (0.35; 95%CI: 0.03, 0.66; p = 0.03) when compared to placebo group.

Conclusions: We suggested that probiotics, prebiotics and synbiotics may improve oxidative stress status and reduce circulating toxins in hemodialysis patients.