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Effects of a Multi-Strain Probiotic on Depression, Anxiety, and Stress in College-Aged Individuals

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Intestinal microbiota is a variety of bacterial species important in preventing pathogenic factors into the body. Microbiota impact the use of ingested nutrients and affect the development and performance of the immune system. Probiotics are a live bacterial diet supplementation that when ingested settle amongst microbiota and carryout similar activities and functions. Research studies have shown that probiotic supplementation can improve immune, digestive, and respiratory functions. Studies have even found that probiotic supplementation improves neural function due to the bidirectional communication between the intestinal tract and central nervous system. However, there is little research on the neurological effects of an acute ingestion of a multi-strain probiotic (PRO). **PURPOSE:** To assess how a multi-strain PRO supplement effected symptoms of depression, anxiety, and stress in college-aged individuals.

METHODS: 32 subjects (PRO=16, placebo [PLA]=16, age 20.4 ± 1.2 yrs, weight 101.5 ± 57.2 kg) ingested either a multi-strain PRO or PLA supplement two times a day for six-weeks. A single PRO dose consisted of 2 grams (containing 2.5×10^9 colony-forming units) of bacteria per gram and was composed of the main bacterial strains Bifidobacterium, Lactobacillus, and Lactococcus lactis. The PLA included 2 grams of freeze-dried maize starch and maltodextrin. At baseline, three weeks, and six weeks subjects completed the depression, anxiety, and stress test. **RESULTS:** There was a main effect of time ($P < .05$) for symptoms of depression, anxiety, and stress. Symptoms of depression significantly ($P < .05$) improved from baseline (9.9 ± 1.5), three weeks (5.2 ± 1.2), and six weeks (4.1 ± 1.0) of taking a supplement. Symptoms of anxiety significantly ($P < .05$) improved from baseline (11.5 ± 1.2), three weeks (6.8 ± 1.2), and six weeks ($5.3 \pm .98$) of taking a supplement. Symptoms of stress significantly ($P < .05$) improved from baseline (17.2 ± 1.5), three weeks (10.5 ± 1.1), and six weeks (9.7 ± 1.1) of taking a supplement. There was no significant difference ($P > .05$) in symptoms of depression, anxiety, or stress between ingestion of PRO or PLA supplement. **CONCLUSION:** Acute ingestion of a PRO supplement did not improve symptoms of depression, anxiety, and stress in college-aged individuals.

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