Abstract


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OBJECTIVE: The aim of this study was to determine whether oral supplementation with l-glutamine (GLN) modifies the gut microbiota composition in overweight and obese adults.

METHODS: Thirty-three overweight and obese adults, ages between 23 and 59 y and body mass index between 25.03 and 47.12 kg/m(2), were randomly assigned to receive either oral supplementation with 30 g of l-alanine (ALA group control) or 30 g of GLN (GLN group) daily for 14 d. We analyzed the gut microbiota composition with new-generation sequencing techniques and bioinformatics analysis.

RESULTS: After 14 d of supplementation, adults in the GLN group exhibited statistically significant differences in the Firmicutes and Actinobacteria phyla compared with those in the ALA group. The ratio of Firmicutes to Bacteroidetes, a good biomarker for obesity, decreased in the GLN group from 0.85 to 0.57, whereas it increased from 0.91 to 1.12 in the ALA group. At the genus level, Dialister, Dorea, Pseudobutyrivibrio, and Veillonella, belonging to the Firmicutes phylum, had statistically significant reduction.

CONCLUSION: Oral supplementation with GLN, for a short time, altered the composition of the gut microbiota in overweight and obese humans reducing the Firmicutes to Bacteroidetes ratio, which resembled weight loss programs already seen in the literature.

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