Impact of probiotics on gut microbiome bifidobacterium relative abundance: First do no harm

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Background: Several reports have raised safety concerns regarding the use of probiotics. To address these concerns, this study examined the relative abundance (proportion of the microbiome made up of a particular taxa) and normalized read counts (number of times a particular microbe was identified) of Bifidobacteria in the gut microbiome of healthy subjects participating in an ongoing study on the microbiome. Bifidobacteria is a critically important constituent of the human microbiome and plays roles in digestion, gut immunity, and cancer prevention.

Methods: Fecal samples were analyzed using next-generation sequencing to evaluate composition and relative abundance of bacterial phyla through species level in each subject`s microbiome. The primary outcomes of this subgroup analysis were relative abundance and normalized read count of genus Bifidobacteria in subjects who took unregulated probiotics, high-quality probiotics, or no probiotics.

Results: The relative abundance and normalized read count of Bifidobacteria were significantly lower in the microbiome of subjects who took unregulated probiotics (n=15) than in the microbiomes of both those who took high-quality probiotics (n=12, P=0.0002) and no probiotics (n=13, P=0.0483) (0.18 vs 9.59 vs 5.66 relative abundance).

Discussion: Subjects taking unregulated probiotics had a significantly lower relative abundance of Bifidobacteria, which could potentially have a detrimental impact on health. Next-generation sequencing could be a useful tool to guide decisions on the appropriate use of probiotics based on dysbiosis.

Biography

Jordan Daniels completed her Bachelor's degree from MacMurray College in 2008 and her Master's degree from California State Univeristy Channel Islands. While studying as an undergraduate, she designed and conducted research on the impact of ammonium hydroxide on aquatic ecosystems. During her graduate career she designed a research proposal entitled "Research and Development Proposal for the Investigation of a Hemopexin-based Protein Fragment for Potential Treatment of Sepsis". She currently works at ProgenaBiome as a Medical Writer and Regulatory specialist, designing clinical trials.

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