

Are probiotics actually essential in a 'normal' GI tract?

The more I understand about normal GI flora, the more I suspect probiotics are the wrong answer to a wide variety of medical questions.

We have a complex bacterial flora in and on us. We carry with us 10–100 times more bacteria than there are cells that make us up. We may think we are the pinnacle of evolution, but we are just sentient transport and feeding machines for bacteria.

The human GI tract is predominantly a bacterial ecosystem. Cell densities in the colon (10^{11} – 10^{12} /ml contents) are the highest recorded for any known ecosystem. The vast majority belong to two divisions (superkingdoms) of Bacteria – the Bacteroidetes (48 percent) and the Firmicutes (51 percent).

There are over a 1,000 species in the GI tract with over 5 million genes. Most of these bacteria cannot be cultured but only identified by molecular techniques.

While they are often called “good” bacteria, the constituents of probiotics are not part of the normal GI tract in significant numbers if at all. The Lactobacilli, Bifidobacteria and Saccharomyces (a yeast) found in most of the products are better-classified as “less pathogenic organisms” rather than good.

As a treatment for *C. difficile*, probiotics have marginal benefits and the clinical trials have had difficulty definitively demonstrating efficacy although for prevention, the most recent meta-analysis suggests benefit:

Pooled analyses revealed significant reductions in the risks of AAD [antibiotic-associated diarrhea] and CDI [Clostridium difficile infection] among patients randomly assigned to co-administration of probiotics. The number needed to treat for benefit was 11 (95 percent CI 8 to 20) for AAD and 14 (95 percent CI 9 to 50) for CDI.

Even though well-conducted studies suggest otherwise:

We found no evidence that probiotic administration was effective in preventing AAD. Although there was a trend towards reduced [Clostridium difficile diarrhea] in the probiotic arm, on balance, the administration of this probiotic seems unlikely to benefit older patients exposed to antibiotics.

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