Probiotic Bacteria Could the Solution to Antibiotic-Resistant Bacteria

The National Institutes of Health (NIH) has released a new study that confirms the awesome powers of a bacteria commonly found in probiotic supplements: Bacillus. Testing a variety of Bacillus microbes against *Staphylococcus aureus*, a common cause of antibiotic-resistant infections, scientists found that the beneficial bacteria stopped the S. aureus bacteria from colonizing the gut. Dr. Anthony S. Fauci, M.D. leads the National Institute of Allergy and Infectious Diseases (NIAID), the NIH division responsible for the study.

> *Probiotics frequently are recommended as dietary supplements to improve digestive health…This is one of the first studies to describe precisely how they may work to provide health benefits. The possibility that oral Bacillus might be an effective alternative to antibiotic treatment for some conditions is scientifically intriguing and definitely worthy of further exploration."*

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Drawing Conclusions

This study came in two parts. The first part examined the behavior of S. aureus in healthy subjects and the second used a mouse model to explain bacillus' influence on the harmful bacteria. In both cases, researchers found that more bacillus equals less S. aureus. In the initial section of the study, scientists found 200 volunteers in rural Thailand. They first tested them for Bacillus, and then tested for S. aureus. Of the 101 subjects who tested positive for Bacillus, none of

them tested positive for S. aureus.

The second portion of the experiment was a mouse study, based on the volunteer findings. The guts of the mice were deliberately colonized with S. aureus. These mice were then fed probiotics every two days, which eliminated the S. aureus colonization. Researchers identified fengycins, a lipopeptide (a molecule that's part peptide and part lipid), as the reason S. aureus was no longer able to colonize. The lipopeptide shuts down the sensing system the potentially harmful bacteria need to proliferate.

How to Use This News

This information makes a fantastic case for probiotics and more specifically bacillus. Even potentially dangerous bacteria like Methicillin-resistant Staphylococcus aureus (MRSA) are susceptible to those supplements. Bacillus is a widespread bacteria, with more than 200 species found in the air and water. More than half of the rural Thai volunteers from the first portion of the study had bacillus in their guts, and the likelihood that they have an every other day probiotic regimen is very low. People can get bacillus from eating raw, vegetable foods.

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If you want a probiotic though, there are a few things to look for. First, the probiotic does you no good if it doesn't make it past the stomach acid and bile to make it to the intestinal tract. There are a couple of ways around that. The American Nutrition Association found that Lactobacillus, Bifidobacterium, and Streptococcus are the bacteria most likely to make it past the stomach acid. Another strategy is to find a probiotic with an acid resistant-capsule. That can increase the chances the probiotic will be able to balance the gut and do some good.

Beneath the Surface

We often talk about bacteria in terms of “good” and “bad.” Bacillus, found in most probiotics, is considered a good bacteria. E. coli and S. aureus are considered bad bacteria. Yet E. coli produce vitamin K2 and is a crucial part of a healthy digestive system. Meanwhile, two strains of Bacillus (B. anthracis and B. cereus) cause anthrax and food poisoning, respectively. Scientists have barely discovered what bacteria are capable individually, much less how they work holistically. This study suggests that thinking about how our microbes work together could be a positive, necessary shift…especially with the threat antibiotic-resistant bacteria pose. Antibiotics have been easy and lucrative. But those drugs might not be viable much longer. Are probiotics the best solution?

Sources:

- *NIH Study Finds Probiotic Bacillus Eliminates Staphylococcus Bacteria* – National Institute of Allergy and Infectious Diseases
- *Pathogen elimination by probiotic Bacillus via signalling interference* – Nature.com
- *Bacillus* – Encyclopedia Britannica
- *Probiotics, Bacteria, and Our Health* – Organic Lifestyle Magazine