

Probiotics for Total Health : Better Today and Tomorrow

Miljana Z. Jovandarić¹

¹Clinic for Gynecology and Obstetrics, Department of Neonatology, Clinical Center of Serbia

*Corresponding author: Miljana Z. Jovandarić. Clinic for Gynecology and Obstetrics, Clinical Center of Serbia, Department Neonatology, Visegradska 26, 11000 Belgrade, Serbia, E-mail: rrebecca080@gmail.com

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Abstract

Probiotics are live bacteria and yeasts that are good for your health, especially your digestive system. We usually think of bacteria as something that causes diseases. But your body is full of bacteria, both good and bad. Probiotics are often called “good” or “helpful” bacteria because they help keep your gut healthy. Probiotics are naturally found in your body. You can also find them in some foods and supplements.

Keywords Probiotics; Health; Safety

Introduction

Many types of bacteria are classified as probiotics. They all have different benefits, but most come from two groups [1].

Lactobacillus

This may be the most common probiotic. This bacterium is usually found in yogurt and other fermented foods. Different strains can help with diarrhea and may help with people who can't digest lactose, the sugar in milk [2].

Bifidobacterium

This bacterium is found in some dairy products. It may help to ease the symptoms of irritable bowel syndrome [3,4]. Probiotics have received renewed attention recently from product manufacturers, research studies, and consumers. The history of probiotics can be traced to the first use of cheese and fermented products, that were well known to the Greeks and Romans who recommended their consumption [5]. The fermentation of dairy foods represents one of the oldest techniques for food preservation [6].

The original modern hypothesis of the positive role played by certain bacteria was first introduced by Russian scientist and Nobel laureate Élie Metchnikoff, who in 1907 suggested that it would be possible to modify the gut flora and to replace harmful microbes with useful microbes [7]. Metchnikoff, at that time a professor at the Pasteur Institute in Paris, proposed the hypothesis that the aging process results from the activity of

putrefactive (proteolytic) microbes producing toxic substances in the large bowel. Proteolytic bacteria such as clostridia, which are part of the normal gut flora, produce toxic substances including phenols, indols, and ammonia from the digestion of proteins. According to Metchnikoff, these compounds were responsible for what he called “intestinal autointoxication”, which would cause the physical changes associated with old age [8].

Probiotics are under considerable research, as the concept holds promise for human health and well-being, and corresponding commercial opportunities. Protection of consumers requires health claims to be confirmed with sufficient scientific evidence. Overall scientific demonstration of probiotic effects requires defining a healthy microbiota and interactions between microbiota and host, and the difficulty to characterize probiotic effectiveness in health and disease. Recent developments of high-throughput sequencing technology and the consequent progresses of metagenomics represent a new approach for the future of probiotics research [9].

There is preliminary evidence that some probiotics are helpful in preventing diarrhea caused by infections and antibiotics and in improving symptoms of irritable bowel syndrome, but more needs to be learned. We still do not know which probiotics are helpful and which are not. We also do not know how much of the probiotic people would have to take or who would most

likely benefit from taking probiotics. Even for the conditions that have been studied the most, researchers are still working toward finding the answers to these questions [1].

Probiotics are not alike. For example, if a specific kind of *Lactobacillus* helps prevent an illness, that does not necessarily mean that another kind of *Lactobacillus* would have the same effect or that any of the *Bifidobacterium* probiotics would do the same thing [4].

Even for healthy people, there are uncertainties about the safety of probiotics. Because many research studies on probiotics have not looked closely at safety, there is not enough information right now to answer some safety questions. Most of our knowledge about safety comes from studies of *Lactobacillus* and *Bifidobacterium*; less is known about other probiotics. Information on the long-term safety of probiotics is limited, and safety may differ from one type of probiotic to another. For example, even though a National Center for Complementary and Integrative Health (NCCIH)-funded study showed that a particular kind of *Lactobacillus* appears safe in healthy adults age 65 and older, this does not mean that all probiotics would necessarily be safe for people in this age group [10].

Conclusion

Probiotics are under considerable research, as the concept holds promise for human health and well-being, and corresponding commercial opportunities. Protection of consumers requires health claims to be confirmed with sufficient scientific evidence. Overall scientific demonstration of probiotic effects requires defining a healthy microbiota and interactions between microbiota and host, and the difficulty to characterize probiotic effectiveness in health and disease.

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