How do animal and plant-based milks affect gut health?



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While both animal and plant-based milks benefit gut health, animal milk shows superior support for beneficial bacteria, raising important questions for dietary choices.



Review: <u>Substitutive Effects of Milk vs. Vegetable Milk on the Human Gut</u> <u>Microbiota and Implications for Human Health</u>

In a recent review published in the journal <u>Nutrients</u>, researchers explored how both animal milk and plant-based milk alternatives affect gut microbiota.

Their findings suggest that while both types of milk can promote gut health,

animal milk generally supports a richer and more diverse microbiota, with specific components offering targeted benefits, while plant-based substitutes also contribute positively but may sometimes encourage the growth of harmful bacteria in certain contexts.

Milk and Gut Health

Milk is a vital source of nutrition for mammals, especially during infancy. It provides essential energy and nutrients needed for growth and development. Humans are unique in continuing to consume milk into adulthood.

Milk is known for being high in calcium, vitamins, and proteins, which offer antiinflammatory benefits. These components have been linked to the prevention of diseases such as cardiovascular issues, osteoporosis, and diabetes.

Despite its many benefits, milk consumption has declined in some regions. This trend is driven by factors such as lactose intolerance, allergies, ethical concerns, and the popularity of plant-based milk alternatives.

These substitutes, made from ingredients like soy, almonds, and oats, are marketed as healthier and more sustainable. However, the research on their impact on gut microbiota remains limited, and the results vary depending on the type of milk and individual factors.

Gut microbiota plays a critical role in overall health, affecting immunity, metabolism, and even brain function. While specific components in animal milk, such as proteins and fats, have been shown to support gut health, plant-based alternatives have also been found to promote the growth of beneficial bacteria. However, some evidence suggests that certain plant-based milk alternatives might, in some cases, foster the growth of less beneficial bacteria, though this typically occurs in low proportions.

Animal-Based Milk

Animal-based milk, particularly from cows, is considered a functional food due to its bioactive molecules, including proteins, fats, and oligosaccharides. These compounds have been shown to have positive effects on gut health.

For example, studies have found that

animal milk promotes the growth of beneficial bacteria like *Lactobacillus* and *Bifidobacterium*. Additionally, components such as whey proteins and lactose support gut health by acting as prebiotics, fostering the growth of beneficial bacteria while potentially offering antimicrobial effects. Mare milk, with its similarities to human milk, is particularly beneficial for individuals with allergies, supporting the growth of beneficial gut microbes while being gentle on the digestive system.

Cow milk has been particularly noted for

its ability to promote beneficial microbes and reduce harmful bacteria such as *Clostridium*. Its oligosaccharides, in combination with whey proteins, have been found to increase the production of short-chain fatty acids (SCFAs), which improve gut health by boosting satiety and immune function.

Mare milk, which shares some similarities with human milk, has also been found to support the growth of beneficial gut bacteria. This makes it particularly useful for individuals with allergies or hyperlipidemia.

Goat milk, another animal-based option, contains oligosaccharides that act as prebiotics, increasing SCFA production and improving gut barrier function. It also promotes beneficial bacteria, although in some cases, it has been linked to promoting the growth of *Helicobacter*, a bacterium associated with gastric issues.

Camel milk, known for its rich immunomodulatory proteins and antibodies, has also shown benefits for gut health. It increases beneficial bacteria while reducing harmful bacteria like *Shigella* and *Escherichia*. Its ability to boost SCFA production further enhances its positive impact on gut health and immune responses.

Plant-Based Dairy Alternatives

Plant-based milk alternatives have become increasingly popular due to their perceived health and environmental benefits. These beverages, made from ingredients like soy, almonds, and oats, have distinct nutritional profiles compared to dairy milk.

Generally lower in protein and fat, plant-based alternatives are often rich in



unsaturated fats and carbohydrates. They are also free from lactose and cholesterol, making them suitable for those with lactose intolerance or milk protein allergies. In addition, these beverages contain antioxidants and phytosterols, which help reduce oxidative stress in the body.

While plant-based milk can positively impact gut health, promoting the growth of beneficial bacteria, there are some concerns. Soy milk, for instance, has been found to increase beneficial bacteria while reducing harmful ones like *Proteobacteria*.

However, some studies have shown that certain plant-based milk alternatives might encourage the growth of bacteria such as *Fusobacterium* and *Salmonella*, albeit typically in low and manageable levels.

Conclusions

The consumption of plant-based milk substitutes is on the rise globally, particularly in regions like Europe. Although these beverages can replicate some nutrients found in animal milk, significant differences remain in their protein and fat content.

Plant-based milk is also lactose- and cholesterol-free, which makes it suitable for individuals with specific dietary restrictions. While research on their impact on gut microbiota is still emerging, most findings suggest that both animal and plant-based milk can contribute positively to gut health, though with different effects and implications.

The study noted the importance of milk for gut health while highlighting certain points of concern. While animal milk appears to offer greater overall benefits for gut health, plant-based alternatives still provide some positive effects.

It is essential, however, to consider individual nutritional needs and preferences when recommending one type of milk over another, particularly given the variability in gut microbiota responses. Future studies will help clarify how both types of milk impact gut microbiota, ultimately guiding dietary choices based on personal health needs.

Journal reference:



 Substitutive Effects of Milk vs. Vegetable Milk on the Human Gut Microbiota and Implications for Human Health. Portocarrero, A. C. M., Lopez-Santamarina, A., Lopez, P. R., Ortega, I. S. I., Duman, H., Karav, S., Miranda, J. M. *Nutrients* (2024). DOI: 10.3390/nu16183108, https://ww w.mdpi.com/2072-6643/16/18/3108



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