

A Monthly e Magazine  
ISSN:2583-2212

May, 2026 Vol.6(5), 1455-1458

Popular Article

## Donkey Milk: A Unique Dairy Product with Functional Health Benefits

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[doi.org/10.5281/ScienceWorld.20454290](https://doi.org/10.5281/ScienceWorld.20454290)

### Abstract

Donkey milk has attracted increasing scientific attention because of its unique nutritional composition and potential health-related benefits. Historically, it was consumed in several traditional cultures for nourishment and medicinal purposes. Modern research indicates that donkey milk shares certain compositional similarities with human breast milk, particularly in its protein profile and digestibility. It is naturally rich in bioactive compounds such as lysozyme and lactoferrin, which may contribute to immune protection and intestinal health. Due to its relatively low allergenic characteristics, donkey milk is also being studied as a possible dietary option for some children affected by Cow's Milk Protein Allergy. This article discusses the nutritional composition, digestibility, antimicrobial properties, and possible health applications of donkey milk using simplified scientific language.

### Introduction

The demand for foods that provide additional health benefits beyond basic nutrition has increased significantly in recent years. These products are commonly known as functional foods. Among alternative dairy products, donkey milk has emerged as a subject of growing interest because of its nutritional quality and potential physiological benefits.

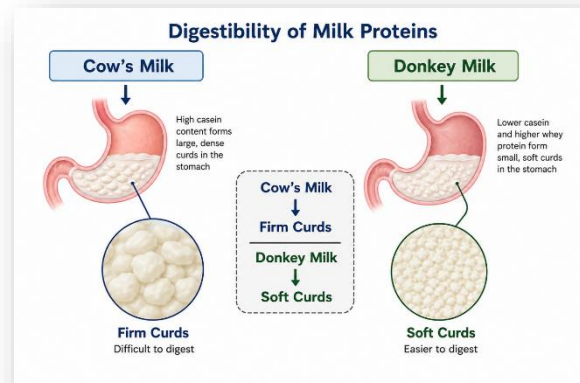
Scientific studies have shown that donkey milk differs considerably from cow's milk in protein composition. It contains comparatively lower casein levels and a greater proportion of whey proteins, which may improve digestibility (Guo *et al.*, 2007). Researchers have also identified several biologically active compounds in donkey milk that may support immunity and gastrointestinal health (Vincenzetti *et al.*, 2017). Owing to these characteristics, donkey milk is now being explored for use in pediatric and clinical nutrition.



Although its production remains limited and costly, continued scientific investigation suggests that donkey milk may become an important specialty dairy product in the future (Martini *et al.*, 2021).

### 1. Digestibility and Similarity to Human Milk

One of the notable nutritional features of donkey milk is its digestibility. In cow's milk, higher concentrations of casein proteins tend to form compact curds during stomach digestion, which can sometimes be difficult for infants or sensitive individuals to process. Donkey milk contains a lower proportion of casein and a relatively higher amount of whey proteins. As a result, softer curds are formed



during digestion, allowing easier gastrointestinal processing (Guo *et al.*, 2007).

Its nutritional composition is therefore considered closer to human breast milk compared with many conventional animal milks (Martini *et al.*, 2018).

### 2. Potential Role in Cow's Milk Protein Allergy

Cow's Milk Protein Allergy is a common food-related allergy in early childhood and may cause digestive disturbances, skin reactions, and respiratory symptoms.

Research findings suggest that some children with CMPA may tolerate donkey milk better than cow's milk because the protein structure of donkey milk differs from bovine milk proteins. These structural differences may reduce the likelihood of triggering allergic responses in certain individuals.

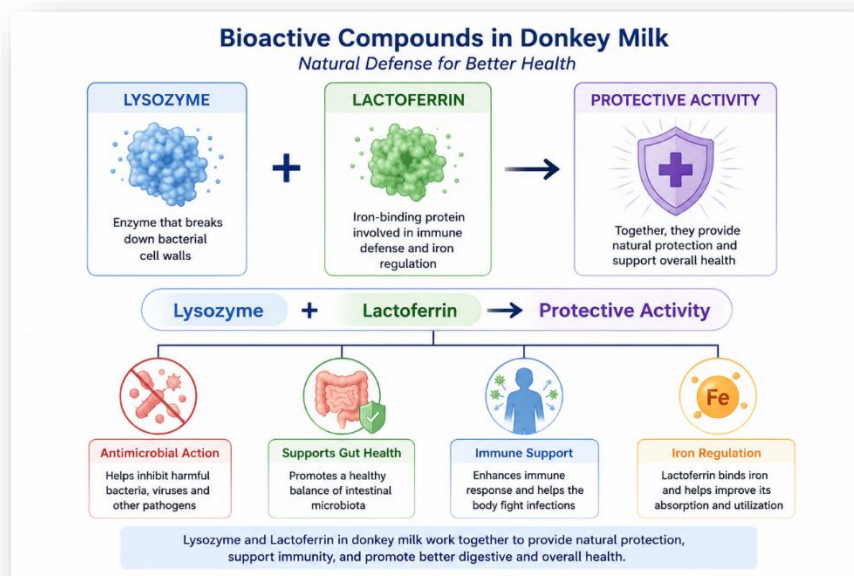
Nevertheless, donkey milk cannot be considered completely hypoallergenic. Therefore, its inclusion in the diet of allergic children should only occur under professional medical supervision.

### 3. Bioactive and Antimicrobial Components

Donkey milk naturally contains several biologically active compounds that may contribute to protective health functions. Among these, lysozyme and lactoferrin are considered particularly important.

- **Lysozyme** helps break down bacterial cell walls.
- **Lactoferrin** plays a role in iron metabolism and immune regulation.

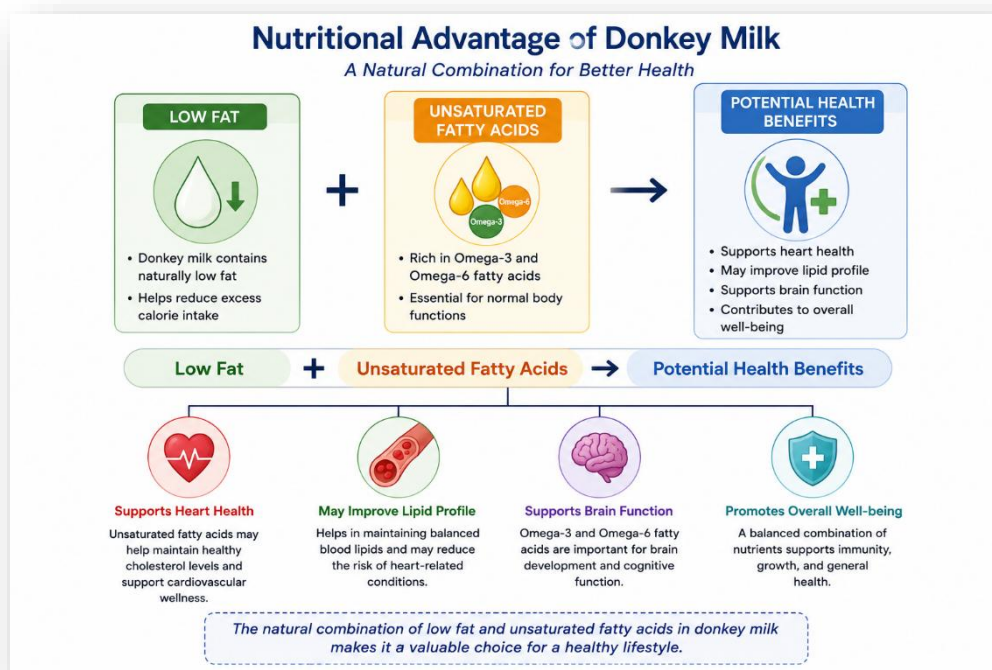




These compounds may assist in controlling harmful microorganisms and supporting a healthier intestinal environment. Current research continues to evaluate their broader effects on human health.

#### 4. Low Fat Content and Nutritional Advantages

Compared with whole cow’s milk, donkey milk contains relatively low-fat levels. Despite this, it provides nutritionally important unsaturated fatty acids, including Omega-3 and Omega-6 fatty acids. The lactose concentration in donkey milk is comparatively high,



contributing to its mild sweet taste and potentially improving calcium absorption (Guo *et al.*, 2007).

Because of these nutritional features, donkey milk is being studied for possible roles in metabolic health and cardiovascular wellness.

### Nutritional Comparison of Human, Donkey, and Cow's Milk

Component (per 100 g)	Human Milk	Donkey Milk	Cow's Milk
Protein (g)	0.9 – 1.7	1.3 – 1.8	3.1 – 3.8
Fat (g)	3.5 – 4.5	0.3 – 1.8	3.5 – 3.9
Lactose (g)	6.3 – 7.0	5.8 – 7.4	4.4 – 4.9
Vitamin C (mg)	4.0 – 5.0	5.5 – 5.7	1.0 – 2.0

### Conclusion

Donkey milk has emerged as an important topic in nutrition and functional food research because of its digestibility, bioactive compounds, and nutritional similarity to human milk. Scientific evidence indicates that it may have applications in digestive health, pediatric nutrition, and immune support.

Although present findings are encouraging, additional clinical studies are necessary before broader dietary recommendations can be made. With continued research and improved production systems, donkey milk may gain greater importance as a specialized nutritional product in the future.

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