



AGRI MAGAZINE

(International E-Magazine for Agricultural Articles)

Volume: 03, Issue: 10 (October, 2026)

Available online at <http://www.agrimagazine.in>

©Agri Magazine, ISSN: 3048-8656

A1 and A2 Milk: What Is the Difference and Does It Really Matter?

*Dr. Subhash Shamrao Raut¹ and Dr. Arabati Shivaji²

¹Associate Professor, Appollo College of Veterinary Medicine, Jaipur, Rajasthan, India

²Ph.D. Scholar, ICAR-Indian Veterinary Research Institute (IVRI), Izatnagar, Uttar Pradesh, India

*Corresponding Author's email: drsubhashraut@gmail.com

Milk has always been a symbol of nutrition and good health. But today, consumers are faced with a new question at the dairy counter: A1 or A2? With A2 milk gaining popularity, many people wonder whether it is actually healthier—or simply another dairy marketing trend.

What makes A1 and A2 different?

The main difference lies in β -casein, an important protein in milk. Genetic differences among cattle determine whether their milk contains A1 β -casein, A2 β -casein, or both. During digestion, A1 β -casein can potentially release a peptide known as β -casomorphin-7 (BCM-7). A2 β -casein has a different structure and is much less likely to release this peptide. The fundamental difference between A1 and A2 milk is the type of β -casein protein they contain. At position 67, A1 β -casein has histidine, whereas A2 β -casein has proline. This single amino-acid change affects how the protein is digested and influences the potential release of BCM-7.

Does A2 milk digest better?

This is where the debate becomes interesting. Some human studies have reported less bloating, abdominal discomfort and digestive disturbance after consuming A2 milk compared with milk containing A1 β -casein. However, the response is not the same for everyone. More research is still needed to establish the long-term health significance of these differences. One important point is often misunderstood: A2 milk is not lactose-free. Therefore, people with lactose intolerance may still experience problems after drinking A2 milk.

Is A2 milk really healthier?

A2 milk provides the same major nutrients expected from cow's milk, including protein, calcium and other essential nutrients. Although several claims associate A1 β -casein and BCM-7 with various diseases, current evidence is not sufficient to conclude that A1 milk is harmful or that A2 milk prevents diseases. Similarly, A2 milk is not a solution for people with cow's milk allergy, because it still contains milk proteins.

What about Indian cows?

India's indigenous cattle population includes many animals carrying the A2 β -casein variant. This has contributed significantly to the popularity of A2 milk in India. However, breed alone cannot always tell us whether a particular animal produces A1 or A2 milk. The β -casein type depends on the animal's genetic makeup and can be confirmed through appropriate testing.

Did You Know?

- A1 and A2 refer mainly to different forms of β -casein.
- A2 milk still contains lactose.

- A2 milk is not proven to prevent diseases.
- Individual digestive responses can vary.
- A1/A2 status is influenced by cattle genetics.
- Scientific research on the long-term health effects is still ongoing.

What Should We Really Believe About A1 and A2 Milk?

A1 and A2 milk should not be viewed as two completely different foods. Both provide important nutrients such as high-quality protein, calcium, phosphorus, vitamins and energy. The fundamental difference is the form of β -casein they contain—A1 β -casein has histidine at position 67, whereas A2 β -casein has proline at the same position. This small structural difference influences the digestion of the protein and its potential to release β -casomorphin-7 (BCM-7).

Some studies suggest that certain individuals may experience less digestive discomfort after consuming A2 milk compared with conventional milk containing A1 β -casein. However, these findings should not be interpreted as evidence that A2 milk is universally healthier. Claims that A1 milk causes major diseases or that A2 milk can prevent or treat diseases require much stronger scientific evidence.

It is also important to distinguish A2 milk from lactose-free milk. A2 milk still contains lactose and therefore may not be suitable for individuals with lactose intolerance. Similarly, people with cow's milk allergy should not assume that A2 milk is a safe alternative simply because it contains A2 β -casein.

For consumers, the focus should therefore remain on overall milk quality, hygienic production, nutritional requirements, individual tolerance and scientifically supported information, rather than relying solely on the A1 or A2 label.

A2 milk is an important and interesting development in dairy science, but it should neither be promoted as a miracle food nor portrayed as a cure for health problems. The real message is simple: understand the science, question exaggerated claims and make informed choices. As research continues, good science—not marketing—should remain the ultimate guide.