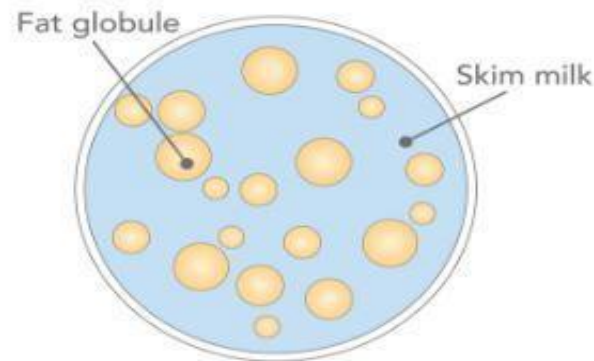




## Know Your Cow Milk

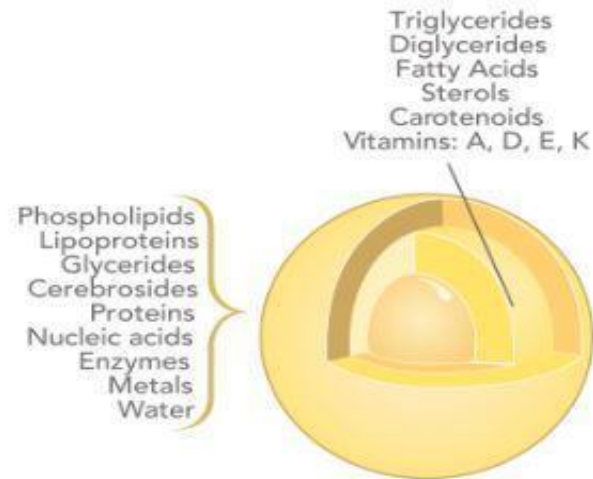
The principal constituents of milk are **water, fat, proteins**, lactose (milk sugar) and **minerals** (salts). Milk also contains trace amounts of other substances such as **pigments**, enzymes, **vitamins**, phospholipids (substances with fatlike **properties**), and gases.

Milk, as we know, is a great source of protein, right? So **there are 2 major milk proteins. Whey and Casein**. Casein makes up to 80% of protein in cow's milk. And  $\beta$  casein is a subtype of casein.



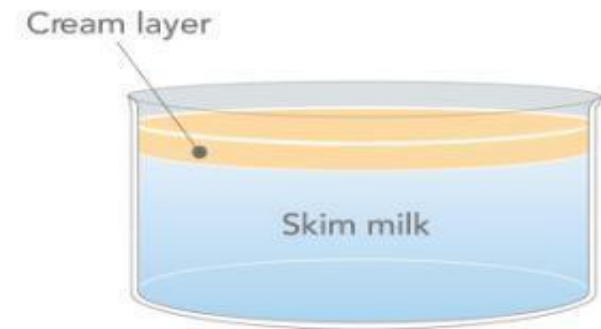
**Fig 2.15**

A look into milk



**Fig 2.16**

The composition of milk fat. Size 0.1 – 20  $\mu\text{m}$ . Average size 3 – 4  $\mu\text{m}$ .



**Fig 2.17**

If milk is left to stand for a while in a vessel, the fat will rise and form a layer of cream on the surface

So when people are saying A1 or A2 milk, they are referring to the type of  $\beta$  casein it contains ( $\beta$  casein A1 or A2). Originally all cows produce A2 type of milk, and then with genetic mutations came in A1!

Because of 1000s of years of genetic mutations, now 12 different variations of  $\beta$  casein exist. Of those 12, 3 are well known and researched. And those 3 are  $\beta$  casein A1,  $\beta$  casein A2, and  $\beta$  casein B.

A1 protein variant is commonly found in milk from European, Australian, and extensive in industrial cross breeds of cattle like HF, Jersey. A2 milk is found basically in all indigenous cows of India, Africa & Brazil

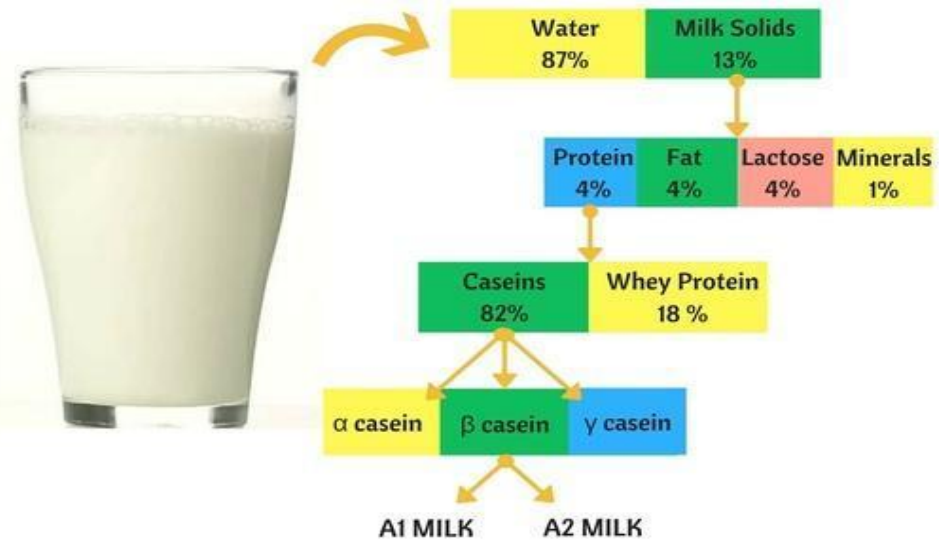
A2 Milk has been declared as the purest form of milk in the world by international scientists across all continents, yet 70 per cent of the milk that finds its way to the market is of A1 type, which is the reason for the increase in diseases like: Diabetes, Autism, Cancer, etc.

Indian cow or Bos Indicus cows with a hump are the ones that gives A2 type milk, the same are nowadays increasingly imported by countries like New Zealand, china, Brazil, UK, etc. as A2 Milk Cows and Bulls

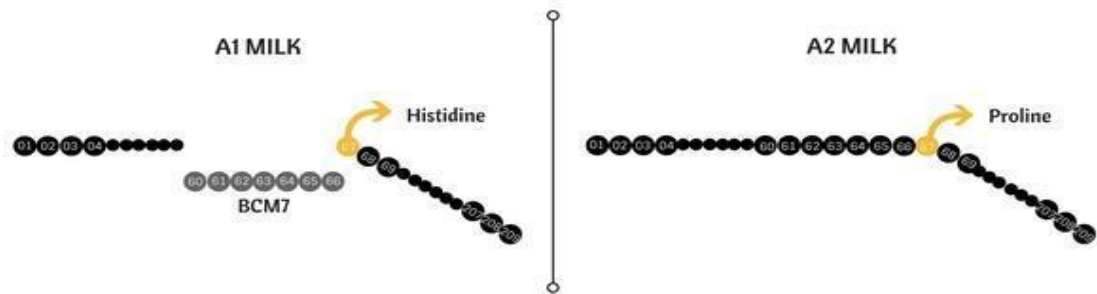
**But we Indians are the ones who are absolutely unaware about it.** It is important to understand that only cow's milk is not sufficient, it has to be from a pure Desi cow that produces A2 type milk.

A2 milk obtained from Indian desi cows like Gir, Sahiwal, Rathi, Dangi, etc has been given the status of *amrit* in our ancient texts; and internationally, has been declared as the purest form of milk in the world by top scientists.

## Understanding of A1 & A2 milk



Beta casein is a chain of 209 amino acids, Milk is A1 or A2 depending on the beta casein structure



Histidine allows formation of BCM7 during digestion  
Proline prevents formation of BCM7 due to strong bond

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## Frequently Asked Questions : FAQs

### What is meant by SNF value and what is Milk made of ?

**Milk SNF means Milk Solids-Not-Fat comprising protein, carbohydrates, vitamins, minerals, etc. in milk other than milk fat.** The substances in milk other than butterfat and water; is abbreviated as **SNF**. Milk has about 86% water, 4.6% lactose sugar, 3.7% triglycerides, 2.8% milk protein, 0.54% minerals and 3.36% other constituents. Milk protein consists of 36%  $\alpha$ -Casein, 27%  $\beta$ -Casein, 9%  $\kappa$ -casein and 27% peptides and amino acids. The protein fraction composition of  $\beta$ -casein has become of special interest recently because of a possible relationship between  $\beta$ -casein genotype and the health of consumers. Milk that contains A1  $\beta$ -Casein and A2  $\beta$ -Casein are known as A1 milk and A2 milk respectively.

### Why is Cow milk Yellowish in colour?

- **Cow milk fat contains a colouring pigment called Beta-carotene (a carotenoid which is precursor of vitamin-A) obtained from the organic green fodder**
- **Whereas buffalo milk lacks the same thus it is not yellowish like cow milk.**

### What is BCM 7 and its impact on health?

In his book, 'Devil in the Milk: Illness, Health and the Politics of A1 and A2 Milk', Dr. Keith Woodford reveals the real milk issue. It is the breed of the cow that matters. European ancestry which produces A1 beta-casein.

A1 beta-casein on digestion releases a peptide (a protein fragment) called beta -casomorphin-7 (BCM7), whereas this does not occur with A2 beta-casein. Even the European Food Safety Report in 2009 conceded that this is correct. There is also no doubt that this peptide has opioid characteristics. It is a well-established scientific fact.

Russian researchers have quite clearly proven that it does pass into the blood of babies fed infant formula. They have also shown that a proportion of these babies are unable to metabolize the BCM7 efficiently between feeds and these particular babies have delayed psycho-motor (brain-to-muscle) development.

Russian workers have also found BCM7 in the urine of all children on normal milk diets. Polish researchers have even found that mothers who are themselves drinking cow milk can pass bovine BCM7 to their babies in breast milk.

### Properties of BCM7

- Produced in the small intestine after consuming A1 milk.
- The A1 and A2 variants of bovine  $\beta$ -casein differ at amino acid position 67 with histidine in A1 and proline in A2 milk.
- Due to the presence of histidine, digestion of A1  $\beta$ -casein milk releases a beta casomorphin 7 (BCM-7) in the small intestine.
- While proline in A2 milk at 67 position prevents the split at this particular site.
- BCM-7 is the major causative factor associated with A1 milk related health disorders.

### What are the key Benefits of A2 Milk ?

- Highly nutritious, it improves the immune system and controls ailing conditions like osteoporosis, parkinson, and alzymers . It contains vitamin B 12, calcium, magnesium, iron and other essential minerals(Recent Study proves presence gold element in indegenious Gir cow Milk
- Prevents obesity in children and also helps adults to lose weight. A2 milk contains high levels of Omega 3 that cleans the cholesterol deposits of blood vessels.
- A2 beta-casein protein is recognized as being the original beta-casein protein in native indian desi cows.
- Human Beta Casein protein chain and A2 Beta casein protein chain are similar in nature that's why it is easier to digest and immensely helps in building overall immune system
- Low Fat content, which is an ideal case for the human body, also works as a lubricant.

### What are the harmful effects of A1 type or non organic milk ?

- Triggers Type 1 Diabetes, Coronary Artery Disease and Autoimmune Disease, Autism and Schizophrenia.
- Inflammation from A1 casein causes Lymphatic Congestion, Metabolic suppression, Weight gain & Childhood Obesity.
- A1 beta-casein on digestion releases beta -casomorphin-7 (BCM- 7), which is a possible irritant chemical to those with autism and other neurological diseases.
- Causes digestive problems because of the massive histamine release from casomorphin. Lactose intolerance is a misconception.

### Why people are increasingly Prefering Cow Milk Over Buffalo Milk ?

- Fat content is high in buffalo milk as compared to cow milk, which is not the ideal case for human consumption.
- Cow milk has various benefits and is popularly known as mother's milk.
- Melting point of cow Ghee is 36.2 degrees Celsius while buffalo Ghee is 40 degrees Celsius. Normal human body temperature is 37 degrees. Hence cow milk, butter and ghee are easily digestible.
- Cow milk strengthens the immune system of our body.



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