

A2 milk: The Healthier Choice but Unaware

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Abstract: Milk is an outstanding source of Nutrients and we can say that it is a complete diet Accept Iron and Vitamin C. Milk is a very good source of Calcium and Protein. We all know about the present vitamins and other important nutrients in milk but the unknown truth about the milk that we wanted to put light on A1 and A2 milk in this review paper. The A2 is a type of protein that is present in the Indian breed cow. This research done by Keith Wood ford a scientist who first declared the study on A2 milk The main purpose behind this article is to make people aware about the A2 milk and their benefits.

Keywords: A2 milk, Digestive system, Gastrointestinal facts, Type 1 diabetes, Heart disease, Death of Infants.

1. INTRODUCTION

Milk is about 80% of water. The remaining 15% is the milk sugar lactose, protein, fat and minerals. The Protein is 80% casein and 20% Whey. Beta casein is 30% of the total protein content in the milk, or about 30% of the total protein content. Milk from breeds of cows that originated in Northern Europe is generally high in A1 beta casein that breeds like the Holstein, Ayrshire and British shorthorn [1]. The beta casein from cows milk called as A2 beta casein. Mainly A2 beta casein comes from the breeds like Guernsey, Jersey, Charolais and Limousin. A2 beta casein have produced since before they were first domesticated.

Milk From dairy cows has long provided a high quality source of protein and selected micro-nutrients such as calcium to most populations [2]. Recently a relationship between diseases risk and consumption of a specific bovine ss casein fraction either A1 or A2 genetic variants has been identified. It is considered safe and nutritious and has no known negative effects on human health. In the past few years, a natural mutation occurred in some European dairy herds that changed the beta casein they produced. The gene encoding beta casein was changed such that the 67th amino acid in the 209 amino acid chain that is the beta casein protein was switched from Proline to Histidine.

This new kind of beta casein that was created is known as A1 beta casein and is generally more common in many of the big black- and - white cow breeds of European decent such as the Holstein and Friesian, Due to their size milk production and demeanor. These Breeds of cow are used to produce the vast majority of Northern Europe and America's milk. Now, we will discuss the difference and the benefits of using A2 milk [3,4].

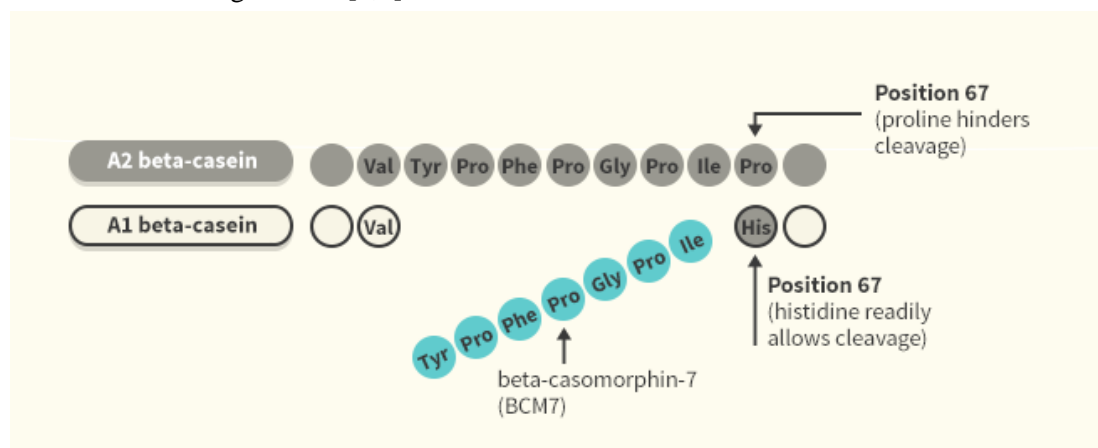


Fig 1. Structure of A1 and A2 beta casein Protein

2. WHY A2 IS BETTER?

A2 milk have beta casein. The ordinary milk have BCM 7 that is Beta Casomorphin-7. BCM 7 is the peptide release by digestion of casein. Researches show that A1 milk is may be harmful. BCM 7 may effect the digestion system and BCM 7 at what extent it is absorbed is also not clear. The possibility of a very small release of BCM 7 from A2 cows cannot be totally excluded but if it occurs. The A1 cows that are found amongst herds of European origin. In following we discuss how it effects on type 1 diabetes , Heart disease, Infant death and Digestive problems.[5]

A2 milk affects digestive function:

Now a days mostly 25-30% of people are lactose intolerant. But The indigestion of milk in the stomach occur not only by the Lactose but also by the A1 type protein. Lactose intolerant arise due to sugar in milk and A1 protein intolerance is due to specific A1 type protein the confusion arises because the symptoms are pretty alike. The symptoms are stomach pain, bloating, digestive issue and respiratory problems.

How A2 affect on digestive function?

Opioid receptors are the major regulators of gastrointestinal function including motility, mucus secretion and hormone secretion. First of all we discuss what is opioid receptors. In the Gut, there are three receptors: met-enkephalin, leu-enkephalin and dynorphin. They occur in both neurons and endocrine cells. Casein and its derivatives include BCM 7 slow gastro intestinal mucus secretion via opioid pathways, which may influences bacteria and drug absorption.

The effect after drinking A1 milk is:

- The milk we are drinking slows down the digestive system that is A1 milk. A1 beta casein slows down the transit of food through the digestive system relative to A2 beta casein and this is an opioid effect.
- A1 beta casein affects a pro inflammatory effect in the colon which is also an opioid effect.
- A1 beta casein relative to A2 beta casein causes up regulations of the enzymes DPP4 in the small intestine and this is apparently a non opioid effect.
- In contrast to the A1 beta casein, there is no evidence of opioid effects from the A2 beta casein in relation to either food transit times or pro inflammation effects.[6]

The above all parameters are proven in relation to rats.

A2 effects on Gastrointestinal Facts:

In regards to digestive transit, it has indeed now been shown that A1 beta casein does indeed slow down transit in rats and it will understood that the same opioid receptors exist in the human digestive system. Indeed we already knew that other opioids have this effects in humans. This findings food transit provides strong support for the existing observational evidence that A1 is association with digestive discomfort, Bloating and constipation relative to A2. Slower the transit naturally means more opportunity for food fermentation.[7]

The statistically significant increase in the inflammatory marker MPO has now been evidenced in two different trials with rats and mice. It is extremely unlikely that both could be by chance. So we can say with great Confidence that at least in both rats and mice A1 beta casein is pro inflammatory. This has important implications for both sub clinical inflammation in humans and potentially for both sub clinical inflammation and potentially for inflammatory bowel syndrome and once again complements observational evidence in humans.[8]

It would be better to do this with humans but there are some very real constraints are there. However rats have same fundamental digestive system as humans and also the same range of enzyme and comparable immune system.[9]

Risk of Type 1 diabetes by A1 milk:

Type 1 diabetes occurs due to less Insulin in the body. Type 1 diabetes is typically diagnosed in children and it is due to the lack of insulin in the body. The studies says that drinking of A1 milk during childhood increase the risk of type 1 diabetes.[10]

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There is a consensus that type 1 diabetes is caused by one or more environmental trigger which in generally susceptible people, promotes and destroy the insulin secreting Beta cells. The strength of the co-relation between countries of their A1 beta casein consumption and their incidence rate of DM 1 is extremely high. Although such co-relation cannot establish causes and effect and are subjected to bias. The animal study shows that the very little effect of a diet high in A1 beta casein on the development of diabetes. It is known that A1 beta casein 4 is cleaved enzymatically in the gut to produce a molecule which has some morphine-like actions in the body and it is postulated that this may influence the immune surveillance. Beta casomorphin-7 has opioid properties including immunosuppression which could account for the specificity of the relation between the consumption of some but not all beta casein variants and diabetes incidence.[11,12]

Risk of heart Disease by A1 milk::

Studies shows that A1 beta casein promoted the fat build up in injured blood vessels. This build up was much lower when consumed beta casein.

Fat accumulation may potentially clog blood vessels and cause heart disease. However, the human relevance of the results has been debated. Ischaemic heart disease and stroke represent the clinical outcome of pathogenic processes that occur over decades and these process are multi-factorial and several risk factors have been well established. The evidence that a high intake of A1 Beta casein is also a risk factor for IHD rests mainly on the same type of ecological data that the DM 1 case rest on. The correlations, while not as high as for DM 1 are still impressive for such a multi-factorial disease.

One study shows that the direct effect of consumption of A1 and A2 milk - atherosclerosis development was examined in a rabbit model. The study did not find any significant adverse effect on risk factors for heart diseases. Compared with A2 beta casein the A1 type had some effect on blood vessel function, blood pressure and inflammatory. It is concluded that beta casien A1 is atherogenic compared to A2 beta casien.[13]The study is not performed on human so more research is needed.

Death of Infants by A1 milk::

Sudden infant death Syndromes (SIDS) is the most common cause of death in infants less than one year of age. In developed country it is the biggest case of death in apparently healthy babies. Analysis of the healthy babies showed that variation of BCM 7 within this group was positively associated with more DPP4(Dipeptidyl peptidase 4) activity. In other words, in healthy children the body naturally increase DPP4 activity when BCM 7 is high. But the DPP4 higher level is not good. This demonstrates that the risk babies are deficient in their ability to quickly respond to high BCM 7 by producing sufficient quantities of the only enzyme that can break it out.[14]

The babies were fed on three types of diet, determined by their mothers. Those fed milk formula that were high in casein had much higher in casein, in BCM levels than those fed infants formula that were predominantly whey.[15] This was to be expected that BCM 7 can only come from casein and not from whey. However, babies aged 1- 4 months who were apparently having exclusively breast milk also have been investigating for quite some time. How protein fragments, such as but not only bovine BCM can get from the mothers stomach into breast milk. It could be that the BCM7 is being transferred through the blood.[16]But it is looking increasingly likely that it might also be via other mechanism perhaps including the lymph system. Regardless of how it is occurring, there seems little doubt that bovine BCM7 can get into human breast milk and that it can cause life threatening event in babies. So the evidence indicates that it is not only the babies but also the lactating mothers, who need to be on cows milk that is free of A1 beta casein. These results show that some children may be sensitive to the A1 beta casein found in cows milk. However, further studies are needed before any firm conclusion can be reached.[17] There are some option for reducing the risk of these. It seems that the mothers herself drink the A2 milk so that can reduce the risk of producing A1 type casein and when babies are weaned also drink the A2 milk. So, we can reduce death of infants.

3. CONCLUSION

People are not aware about A1 and A2 milk. Indian breeds like Guernsey, Jersey, Charolais and Limousin that contain A2 type beta casein. The availability of these type of cows are present in India. If we start drinking A2 milk many diseases can be cured before they generate. In this review article we have shown the benefits of A2 milk and the risk factors of A1 type milk like heart disease, Diabetes, Infant death etc.

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