

Popular Article

Impacts of A1 milk and A2 milk on human health

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Abstract

In the last decade there was much discussion related to the consumption of A1 and A2 milk. There was much discussion about the health issues related to it. A2 milk is the milk that contains only the A2 type of beta-casein protein whereas A1 milk contains only A1 beta casein or A1A2 type variant. A1 and A2 α -casein are genetic variants of the beta-casein milk protein with different chemical structures. A1 protein variant is commonly found in milk from crossbred and European breeds of cattle. A2 milk is found basically in indigenous cows and buffaloes of India (Asia as a whole). Studies suggest that A1 milk consumption may lead to type -1 diabetes among children, cardiovascular disease (IHD), delayed psychomotor development among children, autism, schizophrenia, sudden infant death syndrome (SIDS) auto-immune diseases, intolerances and allergies but all these differ individually. This article summarizes the reality related to A1 and A2 milk.

Introduction

Milk is the sole source of nutrition for infants. It provides the critical micronutrients required for the growth and development of human and newborn animal health. People used to take milk according to their needs and utilise milk such as A2 milk, since A2 milk is harmless for health while A1 milk is detrimental. Therefore, our future breeding programmes for dairy animals should be conducted methodically, with a focus on generating A2 Milk, which is clean and healthy milk. Milk is approximately 85 percent water. The remaining 15% of milk is composed of lactose, protein, fat, and minerals. Approximately 30% of the total protein content in milk is beta-casein. According to the kind of -casein contained, milk can be divided into two groups: A1 AND A2. A2 milk includes just the A2 beta-casein protein type, whereas A1 milk contains only the A1 beta-casein protein type or the A1A2 variant. A1 and A2 -casein are genetic variations with distinct chemical structures of the beta-casein milk protein. A1 protein variation is typically seen in the milk of hybrid and European cow breeds. A2 milk is mostly produced by India's indigenous cows and buffaloes (Asia as a whole). The A2 Milk Company primarily sells A2 milk in Australia, New Zealand, the United Kingdom, and other developed nations under the A2 Corporation brand. There is no unanimity about the benefits of A2 milk versus A1 milk.



Composition and functional properties

A genetic test created by the A2 Corporation determines whether a cow's milk contains A2 or A1 protein. This is determined using hair from the cow's tail. The test enables the A2 Corporation to provide licences to milk producers who can demonstrate their cows generate A2 -casein in their milk. A2 beta-casein is the beta-casein generated by cows since before they were domesticated more than 10,000 years ago. There are no documented negative health effects. In the last several thousand years, a spontaneous mutation has caused a part of European breed cows to produce a casein variety known as A1 beta-casein. Gradually, this protein variation dominated milk, resulting in A1 milk. The 67th amino acid of the 209-amino-acid beta-casein proteins was altered from proline to histidine by modifying the gene producing the protein. This newly developed beta-casein is known as A1 beta-casein and is found in the milk of numerous crossbred cows, including Holstein, jersey, and Friesian.

Normal milk contains A1 beta-casein, which is partially broken down in the stomach into beta-casomorphin-7 (BCM-7). BCM-7 has been associated with a variety of undesirable health consequences. At amino acid position 67, the A1 and A2 versions of bovine -casein differ, having histidine in A1 and proline in A2 Milk. This polymorphism causes significant conformational changes in the secondary structure of -casein protein when it is produced. Due to the presence of histidine at position 67, digestion of A1 -casein milk releases a 7 amino acid bioactive peptide called beta-casomorphin 7 (BCM-7), but proline at position 67 in A2 milk prevents the split at this location and creates peptide BCM-9. The production of BCM-7 is the primary factor responsible for A1 milk-related health conditions. However, A2 -casein has not been associated with any of these health problems.

The essential to human evolution is change, but messing with nature can produce unanticipated outcomes. The same holds true for our meals, such as milk and dairy. Cross-breeding has resulted from industrialization and increased milk demand, causing genetic polymorphisms. On the basis of their DNA, there are two types of cows: the high-yielding kind that generates A1 milk protein and the other type that produces A2 milk protein. Recently, a correlation between disease risk and the consumption of A1 or A2 genetic variations was discovered. Studies indicate that milk from cows with A2 genes is significantly healthier than milk from cows with A1 genes. Increasing evidence links A1 milk to bad health. Among these include type 1 diabetes in infants, cardiovascular disease (IHD), delayed psychomotor development in children, autism, schizophrenia, sudden infant death syndrome (SIDS), auto-immune illnesses, intolerances, and allergies. Certain individuals are at a greater danger than others. Those with digestive diseases such as stomach ulcers, ulcerative colitis, Crohn's disease, and Celiac disease, as well as those using long-term medications or antibiotics, are at a greater risk. This may also explain the growing anti-



dairy sentiment and the growth in the number of people choosing vegan diets. On the contrary, milk with A2 protein is known to provide numerous health benefits. It has been proven that the A2 milk variation prevents childhood and adult obesity, improves brain function, promotes digestion, and increases breast milk production in nursing women.

Conclusion

Drinking A2 milk safeguards us from milk related health concerns coming primarily from A1 milk. Although this type of issues also varies from person to person since every human being has diverse power to bear the complications because of their distinct physiological qualities. Regular milk contains both A1 and A2 beta-casein, but A2 milk has just A2 beta-casein. There is no evidence to show that having A2 milk rather than the commonly eaten commercial milk, which contains both the A1 and A2 proteins, confers any kind of benefit on individuals who do not have any difficulties as a result of milk consumption.

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