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SWITCH TO INDIAN COW BREED A2 MILK

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ABSTRACT

Milk from dairy cow has been regarded as nature's perfect food providing an important sources of nutrients including high quality protein, carbohydrates and selected micronutrients. Being rich in there component, milk is considered as one of the essential food all over the world. Milk is divided into two group's type A1 and type A2 on the basis of beta casomorphin 7 (BCM-7) production. Our indigenous dairy cow produce A2 milk .The composition of beta-casein of milk has become an important economic traits of dairy animal. It has been claimed by researcher that milk containing A1 beta-casein protein consumption ,may increase the chance of number of diseases, unlike consumption of A2 beta-casein containing milk .we have neglected native breed of cows whose milk considered medicinal. The cross breeding programmed has been declining the availability of A2 milk in India. It is matter of great concern for the public health and hence there is need to cross check breeding policies, so that indigenous breed and their beneficial quality can be conserved. The main purpose behind this article is to make people aware about the A2 milk and their benefit.

Keywords: *A1 milk, A2 Milk, BCM-7, Indigenous Breed, Proline, Histidine, Cross Breed.*

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INTRODUCTION

India is finally waking up to the importance of its native breed of cow. At present, there are two type of cow's milk available in the market i.e.A_1 and A_2 milk. The health benefit of milk depend on the type of milk you get A_1 and A_2 are specific protein found in cow's milk depending on the breed of cow. A_1 protein varient is commonly found in milk from cross breed and European breed of cattle. A_2 milk is found basically in indigenous cow and buffaloes of India Currently A_2 milk is being market as a healthier choice than A_1 milk. It is claimed to have several health benefit and is easier to be digested. Today due to various factor the holy sacred Indian cow are becoming extinet and they are in severe threat which help us in many way. This review is written to give information on health benefit of indigenous cow A1 milk.

History of A1 and A2 milk

Milk, as we know is a great source of protein there are 2 major milk protein whey and casein. Casein makes up to 80% of protein in cow's milk and β casein is a subtype of casein. Because of thousands of year of genetic mutation, now 12 different variations of β casein exist. Of those 12, three are well known. Those 3 are β casein A_1, β casein A_2 and β casein B_1. A_2 beta casein is the beta-casein from cows that have been produced since before they were first domesticated over 10,000 years ago. In the past few thousand year, a natural mutation occurred, cow began to produce the A_1 type beta casein. As the breeding continued the A_1 beta- casein become more prevalent. The mutation cause a change in a single amino acid in the amino acid chain, the amino acid at number 67 is histidine in A_1 and proline in A_2 milk (Sodhi et.al 2012). Research has suggested that a peptide (BCM-7)is release during the digestion of A_1 casein. A seven – amino acid peptide beta casomorphine-7(BCM-7) can be cut away from the A_1 beta – casein protein by those enzymes, but the enzymes cannot cut the A_2 protein at that location so BCM -7 (beta case morphine -7) is not formed from A_2 protein (Truswell 2005).This BCM -7 is an opiod having an inhibitory effect on immune function and suspected to induce type I diabetes, heart disease, infant death and autism. Initial studies on indigenous cow (zebu type) buffalo and exotic cow have revealed that A_1 allele is more frequent in exotic cattle while Indian native dairy cow and buffalo have only A_2 allele (Mishra et.al 2009) and hence are source for safe milk.

Which Breed of cattle produces A2 MILK?

All Indian domesticated cow recognized as Bos Indicus or zebu cow which are humped, produces milk with high concentration of A_2 beta-casein. Zebu type cow are also found in many place in Africa also. India has 37 pure cattle breed. They are Sahiwal , Gir, Red sindhi, Tharparkar , Rathi, kankrej, Ongole and Hariana to name a few. The milk delivered by all the desi cow was of A_2 variety. Foreign breed like Holestin Friesian, Jersey milk which gets its name from A_1 beta-casein protein present in it. However, India

went on to hybrid its native desi cow with the European species of jersey and Holstein Friesian which delivered A_1milk.

Sacred sanctity of Indian Native cows

According to Hindu mythology and saying of sages the kamdhenu is the mother of all cow. since thousand of years we worship cow as kamdhenu the god who fulfill our desires. We worship cow as the mother of all entities which give all pleasures to everyone. Native cow are the only species in this world whose product and by product are created for the economics, social and spiritual betterment of human beings in many way since ages. However, since the sixties, in a bid to increase the production of cow milk the Indian Government has resorted to " cross-breeding " by using foreign bull and semen .This causes gradual extinction of our low-maintenance superior and enduring variety of native breed of cows. For the past period we have neglected the caring for the sacred Indian cows due to various factor and dynamics. Now the time has come to enlist ourselves in the mission to preserve the Native Breed of our Indian cattle from the spiritual perspective cow play a vital role in providing core ingradients for worship.

The significant features of Indian cows

The Indian native cow will have hump at the shoulder, long ear and the skin is hanging on the neck. They have suryaketu nerve on the back and it is believed that suryaketu nerve absorbs medicinal essences from atmosphere and makes milk urine and cow dung more nourishing. The ability to shake only a particular part of the body, for example it can shake only the skin the stomach area without shaking the other part of the body. It can withstand the tough climatic condition of this country either hot, rain or cold. It delivered around 15-20calves in her life span. India possesses 27 acknowledged indigenous breed of cattle and seven breed of buffaloes

Indigenous versus crossbreed

During 1970's there was open flood of exotic cow. cross breeding cows were done for their higher milk yield.. However the quality of milk was not kept in mind. The hot tropical climate of India doesn't suit them. The food is incompatible. Jersey and other crossbreed suffer from gas and diarrohea.They consume great amount of fodder. As a result they are more expensive to maintain. With a little intelligent manipulation by selecting the best pedigree indigenous cow can attain equally high levels of milk production, as has been demonstrated by countries like Brazil and Argentina which have been importing and breeding Indian cows of pure breed.

Desi cattle has been a part of Indian life styles since ages unknown. It has helped mankind in farm of plough on road ,to carry load of home with milk and with urine and cow dung for several other uses in day to day life. Desi cow is not only looks upon as a source of benefit but also considered as a family member and revered with a motherly states and often called Gaumata.

Desi cow have a distinct hump curved back and a flap on the neck while HF, Jersey cow do not. This is the easiest way to identify a desi cow.

Difference between A1 and A2 milk.

Milk is a great sources of calcium and protein. The primary protein in all cows milk is casein and it is found in cows milk in several different form. The three major form are alpha casein, beta casein ,kappa casein. Each group-alpha ,beta, kappa has its own subgroups that are distinguished by slight genetic variation.A_1 and A_2 refer to two of atleast 13 subgroup of beta casein. Casein makes up about 80 percent of protein in milk. Among them Beta casein makes up about 30 percent of the protein in cows milk. It has been suggested that A_2 protein milk is a healthier alternative to A_1 protein milk as the later is claimed to metabolized in to potentially detrimental peptides in the intestine.

The distinguishing structure between these 2 form of Beta casein is the presence of either histidine(His^{67}) in A1 or proline(pro^{67}) in A_2 at position 67 of this 209 amino acid protein with A1 being consequential to a point mutation from pro^{67} to His^{67} occurring in ancestors to modern European type cattle (Kaminiski et. al 2007).

The His^{67} mutation is absent in pure breed Asian and African cattle (De Noni et al. 2009). A1 protein variant is commonly found in milk from cross breed and European breed of cattle. A2 milk is found basically in indigenous cows and buffaloes of India(Asia as whole).When milk is consumed it goes into the stomach and there it break into fragment of protein and amino acid .They are absorbed into the intestine. Both Beta casein $A_1$and A_2 respond differently towards proteolytic degradation by enzymes of human gut. This is possibly because of one amino acid difference at 67^{th} position result in difference in susceptibility of peptide bond between amino acid 66 and 67.

A_1 variant has histidine at 67^{th} position whereas A_2 variant has proline at this position. Proline is strongly attached to β-casomorphin (A opioid peptide also commonly denoted as BCM-7) hence prevent it to release in human body after consumption whereas this BCM-7 is released in human body from A_1 milk due to weak bonding between histidine and BCM- 7.The proline found in A_2 milk prevent BCM-7 to reach our body.

What is BCM-7

BCM-7 is an opioid peptide. It is a small protein that does not digest in our body .This can lead to indigestion and many researches have shown that it may lead to various other diseases like diabetes etc ,so we can say that proline amino acid in A_2 prevent BCM-7 from going into our body(Woodford 2008). But A_1 cow do not make proline, so BCM-7 goes into our body and later it dissolves in the blood. It is believed that generation of BCM-7 is the major causative factor associated with A_1milk related health disorder. However A_2 casein not been linked to any of such health issues.

The absorption of BCM-7 in to the blood stream lead to the high incidences autism, schizophrenia and other neurological disorder(Birgisdottir et al 2006) BCM-7

causes human health hazards as it can potentially affect numerous opioid receptor in the nervous, endocrine and immune system. Many disease such as autism, schizophrenia(Laugesen et.al 2003 and Tailford et.al.2003) have been shown to have associated with consumption of β-casein A_1 milk. This protein is also linked to milk intolerance in some protein. Genetic polymorphism of bovine milk protein has great in trust in animal breeding due to its relationship with milk production traits, milk composition and milk quality(Roginski et.al 2003 and Jaiswal et.al 2014).

Inter-relationship between disease risk and consumption of A1milk.

After one major epidemiological study and series of animal experiment back in type 1992, Dr.Elliot and his team from NewZealand made a starking discovery that there was a positive correlation between consumption of milk containing A_1 β casein and Type I diabetes. After that the group also found correlation between A_1 type milk and heart disease, arthritis, cancer etc. Beside neurological disorder such as schizophrenia and autism(Woodford 2006) and sudden infants death syndrome were also appeared to be known to potentates by milk(sun et.al 1999). In many of the medical literature we got to know the link between the development of ischemic heart disease(CVD) and specific milk protein intake(Melachlan et.al 2001).

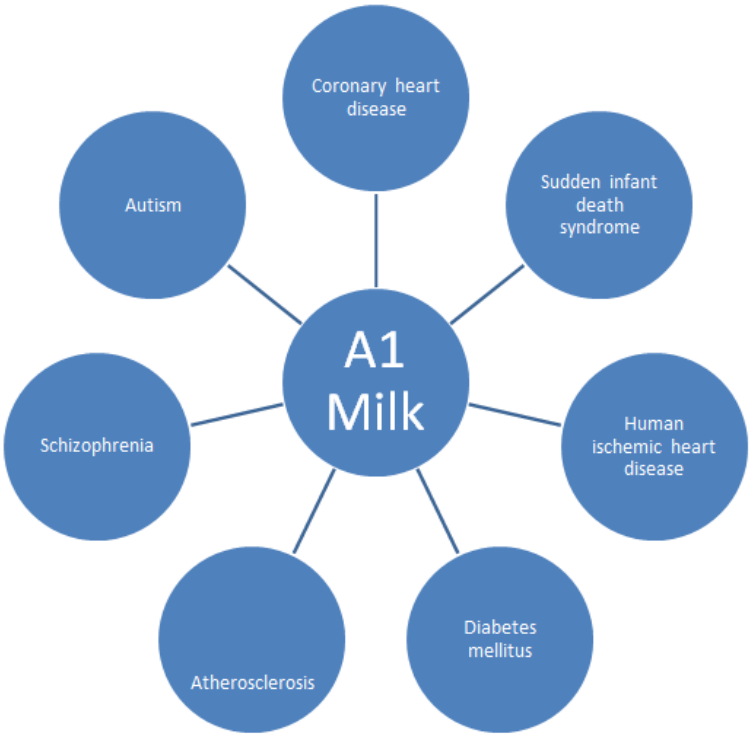

Fig. Health Hazard due to A1 Milk

Milk with A_2 protein on the contrary is Known to have several health benefit. In fact, the health benefits such as prevent obesity among children and adult, improve brain function, promote digestion and increase breast milk production in lactating mother. To explain further, in the case of A_2 beta casein milk, the milk protein are broken down into peptide which in turn are broken down to amino acid .This type of milk is easily digestible. However in type case of the A_1 beta casein milk the peptide cannot be broken down into amino acid and so they are indigestible.

Why Indian breed of cow are considered as mother

According to Hindu mythology we worship cow as the mother of all entities which gives all pleasure to everyone. Hindus have their sentiments attached to this sacred animal. But Hindus do not base their love and attachment to cow only on this explanation. According to vedic texts cow can provide cow milk(Godugdha), ghee(Goghruta), urine(Gomutra), dung(Gomaya) and during yojna(celebration) it is also said that it improve the air's oxygen level apart from providing excellent manure we call native cow as mother because of provide health through pachagavya, wealth through increased production, development of swadeshi independence and environment by purified spiritually.

CONCLUSION

According to Vedic science and current research clearly reveal that the Indian native cow breed A_2 type milk will play a vital role in human health care with multiple health benefit. Now the time has come to protect the native cow breed which gives us the safe and healthy A_2 type milk for the good health of people and along side they gives us hundred of value added product and they provide multiple socio-economic benefit to the people both the domestic and global awareness programs need to be conducted and educate the herdman regarding the A_2 breed cow. In this aspect, governments support is needed to accomplish the above anomalies of milk quality and standard to improve the health of the people but we all have somewhere, switch to a healthier lifestyle to A_2.milk.

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