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Review Article

Gir Cow Milk: The Wealth for Human Health

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Abstract

The consumption of milk from the Gir Cow serve a lot for the provision of nutrition and protection from all the types of disorders through the improvement in the quality of metabolism. Richness of amino acids in the Gir Cow milk helps the body of human being to fight with diseases like: Pains in Joints; Asthma; Obesity; Insomnia. Development of strong immunity is the significant feature of consumption of milk of Gir Cow. There is the antioxidant property for Gir Cow Milk. This property of antioxidant protects the cells of human colon from the cancer causing. Gir Cow milk is well esteemed for the richest source of calcium. The calcium serves to orchestrate the process of building the bones. The calcium through Gir Cow milk helps human to build strong bones. Various studies show that, the gir cow milk helps patients to overcome from arthritis like problems. It prevents the formation of serum cholesterol in body. The acidity problem in human being is reported to reduce significantly through the Gir Cow milk. The efficiency of working of the kidneys is reported significantly improved through the Gir cow milk. Proper functioning of human heart depends on the level of potassium. The gir cow milk is rich in potassium contents.

Keywords: *Bos taurus*; Casein; Lactoglobulin; Whey Proteins

Introduction

Milk is a natural fluid source of nutrition for young ones of the mammals. Feeding the young ones with milk is unique feature of mammalian group of vertebrates. As such, milk contains valuable nutrients that help support a growing body, including calcium and protein. Due to rising concerns about health, lactose intolerance, and animal welfare, plant-based milk, and dairy alternatives are gaining popularity [1]. The most significant and common class of ungulates for domestication is the cattle. Male cattle are the bulls. Female cattle are the cows. Biologically, the cattle belong to class- mammalia. It belongs to order- artiodactyla. The biological family and subfamily of cattle are Bovidae and Bovinae respectively. The biological genus of the cattle is Bos. The cattle species include: taurus; primigenius; indicus and longifrons. The present day cattle are a prominent member of the subfamily Bovinae and they are the most widespread species of this genus. The scientific nomenclature of modern cattle is *Bos taurus* (L) [1].

The significant purpose of raising the cattle as livestock is milk. They are also raised for meat and for hides. The hides are used for leather. Cattle are used as riding animals. Cattle are also used as draft animals. The oxen or bullocks pull the carts. The oxen or bullocks pull the plows and other agricultural implements. One more product from cattle is the dung can be used to obtain manure or fuel. In India, cattle deserve religious significance [2].

History of domestication of the taurine cattle goes back, around 10,500 years ago. There were domestication of cattle taurine group from as few as eighty progenitors in central Anatolia, the Levant and Western Iran [1]. The Food and Agriculture Organization (FAO) recorded one and half billion (approximately) cattle in the world as

of 2018 [2]. In 2009, cattle became one of the first livestock animals to have a fully mapped genome [3]. Although sheep and goats were domesticated earlier, cattle are the most important herd animals in the world. There are about 800 distinct breeds, and together they contribute to the nutrition or income of about 6.6 billion people. The cow is the first livestock animal whose genome has been sequenced, part of an effort to read and analyze the DNA of organisms that have scientific, medical or economic importance. In addition to dozens of microbes and several plants, those sequenced so far include the chimpanzee, mouse, rat, dog, chicken, mosquito, fruit fly, opossum and platypus. Of a cow's 22,000 genes, versions of at least 14,000 have counterparts in other mammals. Cows appear to have about 1,000 genes that they share with dogs and rodents but that are not found in people. The most recently evolved genes tend to be clustered in parts of the cow's 31 chromosomes where stretches of DNA have been duplicated, copied and inserted upside down, or added to by invading viruses. Those events are usually catastrophic and often lead to the fatal breakage of chromosomes. Over evolutionary time, however, a few survive and provide the raw material for new genes -- and new functions.

Gir breed of cattle

Mammals are a group of vertebrate animals constituting the class: mammalia, and characterized by the presence of mammary glands which in females produce milk for feeding (nursing) their young, a neocortex (a region of the brain), fur or hair, and three middle ear bones. Cows are female cattle and the term is also the common name for the entire 'Bos taurus' species. Cows are the first large mammals domesticated some 8000 years ago for their meat, milk and hide, and are also venerated as holy animals. Cows feed mainly on grass and hay and need to have given birth to a calf to be able to produce milk. The Gir is one of the significant "Zebu-Breeds". The origin of gir breed of cattle is India. The gir breed has been used mostly for local improvement of other breeds of cattle, like including "Red Sindhi" and "Sahiwal. In North America, the gir breed of cattle was used in the development of the Brahman breed. The gir cow, *Bos indicus* (L) is resistant to hot temperature and diseases of tropical region. The significant feature of gir cow, *Bos indicus* (L) is the highest quality of the milk production. These features made the countries like Brazil and other South American countries to raise the gir cow, *Bos indicus* (L). Gir is used frequently because, as a *Bos indicus* breed, it is resistant to hot temperatures and tropical diseases. The gir cow, *Bos indicus* (L) is not only famous well for milk producing qualities but also for breeding with Friesian cows for obtaining the Girolando breed [4].

Appearance of rounded (typically) and domed forehead is the distinct morphological character of the gir cow, *Bos indicus* (L). The science labels the typically rounded and domed forehead of the gir cow, *Bos indicus* (L) as, "Ultraconvex". The ear lobes of the gir cow, *Bos indicus* (L) are long and pendulous. The horns of the gir cow, *Bos indicus* (L) are spiral out and pointed backwardly. Colour of the gir cow, *Bos indicus* (L) is generally mottled ranging from red through yellow to white. black being the only unacceptable colour. According to Marleen Felius (1995) [5], the origin of the gir cow, *Bos indicus* (L) is southwest India (Gujarat state). The gir cow, *Bos indicus* (L) have since spread to neighbouring states of Gujarat (Maharashtra and Rajasthan). The weight of cows of the gir breed, *Bos indicus* (L) is average 385 kg. The height of cows of the gir breed, *Bos indicus* (L) is average130 cm. The weight of bulls of the gir breed, *Bos indicus* (L) is average 545 kg. The height of bulls of the gir breed, *Bos indicus* (L) is average140 cm. At birth, calves of the gir breed, *Bos indicus* (L) weigh about 20 kg [3]. The average milk yield for the gir cow, *Bos indicus* (L) is 1590 kg per lactation. India recorded 3182 kg milk production at 4.5% fat. Brazil recorded the average 3500 kg per lactation, with the highest (world record) production of 17 120 kg milk by the cow Profana de Brasília [5]. Valerie Porter., *et al*. (2016) reported 915000 number of gir cows in the Saurashtra of Gujarat state of India in the year: 2003. In the year: 2010, the population of gir cows is approximately five million [4].

The vertebrate animals of class: mammalia deserve unique and significant feature of release of the milk through mammary glands. Milk is a nutrient-rich fluid food material serving as a primary source of nutrition for young mammals, before they are able to digest solid food [6]. The colostrum is the early lactation milk. It contains antibodies, which strengthen the system of immunity and thus serve to reduce the risk of microbial diseases. The colostrum is with other nutrients, including proteins and lactose [7]. In nature, there is a system of "interspecies consumption of milk". The young ones of human being are fed with the milk derived from other mammals like cow. Physically, milk is an emulsion or colloid made up of butterfat globules within a water based liquid. A water-based liquid of milk contains dissolved aggregates of the protein, minerals and carbohydrates [8]. The purpose of secretion of milk is the provision of benefits for growth of young ones. Therefore,

the milk is containing energy rich compounds like lipids, lactose and protein [9]. The bovine derived milk is with thirty to thirty-five grams of protein per liter. About eighty percent of milk protein is in the form of "arranged casein micelles". Normal bovine milk contains 30-35 grams of protein per liter of which about 80% is arranged in casein micelles. Each casein micelle is roughly spherical. It is about a tenth of a micrometer across. Casein is of four different types: αs1-, αs2-, β, and κ-caseins [10]. In addition, milk contain many (dozens of) other types of proteins including enzymes. The other milk proteins (except casein) are more soluble in water. When the casein undergoes through the process of coagulation (for curd), the other milk proteins remain suspended in whey. This may be the reason to call other milk proteins (except casein) collectively as "Whey Proteins". Lactoglobulin is the most significant whey protein. The ratio of caseins to the whey proteins in the milk of cow is about - 82:18 [11].

Advantages of milk from gir cow

The milk from gir cow helps in all major diseases of human being. It protects the consumer from all the types of lifestyle disorder. Gir Cow milk is with amino acid that helps human being to fight with diseases (examples: Pains in Joints; Asthma; Obesity; Insomnia). Gir Cow milk protects the cells of colon from the cancer causing. It helps human body to develop strong immunity. Gir Cow milk deserve the properties of antioxidation. Gir Cow milk is rich source of calcium that helps human body to build strong bones. Various studies show that, the gir cow milk helps patients to overcome from arthritis like problems. It prevents the formation of serum cholesterol in body. It reduces the acidity problem and increase metabolism. Gir cow milk is considered good for kidney. Proper functioning of human heart depends on the level of potassium. The gir cow milk is rich in potassium contents [8-12].

The alpha-casein and beta-casein are two types of casein, the milk protein: The largest group of proteins found in milk is of alpha casein, which is 80% of total protein. The beta casein is in two forms: A.1 and A.2. Gir Cow A2 Milk is pure desi cow milk but unlike regular milk, it naturally contains only the easy to digest A2 protein, 100% free from the A1 protein that many people struggle to digest. Gir Cow A2 Milk comes from cows with the hump on the back, they naturally produce only A2 protein beneficial and not A1 - and that makes all the difference. At Captain's Farm, we produce and deliver Preservative Free 100% pure Gir Cow Raw A2 Milk. Gir cow A2 Milk is a powerful yet soothing combination of Calcium, Potassium, Protein, and other nutrients which is essential for healthy bones. Apart from this, raw a2 milk also plays an important role in other aspects of health and nutrition. Gir Cow A2 Milk is pure desi cow milk but unlike regular milk, it naturally contains only the easy to digest A2 protein, 100% free from the A1 protein that many people struggle to digest. Gir Cow A2 Milk comes from cows with the hump on the back, they naturally produce only A2 protein beneficial and not A1 - and that makes all the difference [4]. At Captain's Farm, we produce and deliver Preservative Free 100% pure Gir Cow Raw A2 Milk. Gir cow A2 Milk is a powerful yet soothing combination of Calcium, Potassium, Protein, and other nutrients which is essential for healthy bones. Apart from this, raw a2 milk also plays an important role in other aspects of health and nutrition.

Benefits of A.2 milk from gir cow

Raw A2 Milk contains Vitamins that are beneficial to our health. These help in absorbing phosphorus and calcium very necessary to build and maintain our bones and teeth. Riboflavin helps our body use carbohydrates for energy and Vitamin B12, helps our body in breaking protein and RBC production. Minerals like calcium, phosphorus, and potassium in milk help us to maintain a healthy lifestyle [10]. Calcium is very much needed for the proper functioning of muscle, bones and to maintain our blood pressure. Phosphorous not only provides building blocks for healthy bones and teeth but also helps to produce protein for cells and tissue growth, maintenance, and repair. Potassium is important for the functioning of our body cells, tissues, organs, and in regulating blood pressure. Protein in a2 milk is the most affordable source - 1 gm in 30 ml. A2 milk doesn't cause the same inflammatory response in those who are lactose intolerant as the way A1 milk causes. When you consume pure A2 milk, you can relish its benefits without any gastrointestinal discomforts.

Conclusion

Whole milk is an important source of calcium, but it also provides carbohydrates (lactose), lipids and proteins. Among the lipids contained in whole milk (more than 3.5%), saturated fatty acids should be consumed in moderation, hence semi-skimmed or skimmed milk may be recommended for those who consume large quantities of milk. The gir cow, *Bos indicus* (L) is resistant to hot temperature and diseases of tropical region. The significant feature

of gir cow, *Bos indicus* (L) is the highest quality of the milk production. These features made the countries like Brazil and other South American countries to raise the gir cow, *Bos indicus* (L). Gir is used frequently because, as a *Bos indicus* breed, it is resistant to hot temperatures and tropical diseases. The gir cow, *Bos indicus* (L) is not only famous well for milk producing qualities but also for breeding with Friesian cows for obtaining the Girolando breed. Gir Cow milk deserve the properties of antioxidation. The calcium serves to orchestrate the process of building the bones. The calcium through Gir Cow milk helps human to build strong bones. Various studies show that, the gir cow milk helps patients to overcome from arthritis like problems. It prevents the formation of serum cholesterol in body. The acidity problem in human being is reported to reduce significantly through the Gir Cow milk. The efficiency of working of the kidneys is reported significantly improved through the Gir cow milk. Proper functioning of human heart depends on the level of potassium. The gir cow milk is rich in potassium contents. The Gir Cow milk protects the consumer from all the types of lifestyle disorder through the improvement in the quality of metabolism.

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