

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES

[ISSN: 0975-4725; CODEN(USA): IJPS00] Journal Homepage: https://www.ijpsjournal.com



Review Article

Unlocking The Benefits Of Goat Milk: A Nutritional Powerhouse

Aisha A. Patalpure*, Akshada U. Pawar, Pooja A. Shinde

Matoshri College Of Pharmacy, Eklahare, Nashik.

ARTICLE INFO

ABSTRACT

Published: 28 Oct 2024 Keywords: Goat Milk, Composition, Health Benefits, Nutritional value, Medicinal value DOI: 10.5281/zenodo.14002346

Goat milk, which is high in calcium and protein, is a highly digestible and nutritious alternative to cow milk. Despite its bad impression in some areas, rising awareness of its health benefits, particularly for allergy sufferers, is driving demand for goat milk products, particularly cheese and yogurt. Goat milk, which is high in critical nutrients, has several health benefits, including antibacterial, anti-inflammatory, and immunemodulatory qualities. Its proteins have shown promise in treating autoimmune illnesses, allergies, and cancer. Goat milk is also good for the heart and digestion. Goat milk, which is higher in Vitamin A and more alkaline than cow milk, has many nutritional benefits. It contains more short and medium-chain fatty acids, as well as calcium and vital minerals. Goat milk is lower in lactose, has a distinct protein structure, and contains important vitamins and amino acids. Goat milk is very digestible and nutritious, with benefits such as better gastrointestinal health, antibacterial qualities, and cardiovascular support. It provides vital elements like calcium, selenium, and vitamins A, C, and E. Goat milk's distinct composition makes it ideal for sensitive skin, delivering hydration and anti-aging benefits. It also promotes immunological function, particularly in babies. Goat milk products, such as cheese, yogurt, and butter, have a large market potential, particularly when pasteurized milk is used. The addition of probiotics to fermented items improves their health benefits, making goat milk an excellent supplement to diets.

INTRODUCTION

In milks the goat milk is an best alternative. Goat milk is a wealthy source of crucial vitamins which includes calcium, protein, and nutrients. Goat milk is recommended for infants, old and convalescent people. The consumer acceptance of goat milk and its products is reported to be excellent. Goat cheese production in Nepal is coming up in a big way which will prove to be a boon to Nepalese cheese industry. Despite this fact, goat has remained neglected in research and development. Universally recognized as 'poor man's cow', goat now has to be fully exploited to get maximum benefits, particularly meat, milk and milk products having medicinal values. (1) Goat

*Corresponding Author: Aisha A. Patalpure

Address: Matoshri College Of Pharmacy, Eklahare, Nashik.

Email ≥: patalpureaisha@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

milk superior digestibility, has alkalinity, buffering capacity, and a few healing blessings in remedy and human vitamins than cow or human milk (2). However. goats have received extraordinarily negative press for a long term, resulting in giant prejudice closer to goat products offered within the United Kingdom (UK). It is taken into consideration that nearly all of us who isn't a goat admirer might symbolize the milk as "rancid, salty, goaty, or candy". It become almost not possible to get everybody to sample goat milk with this sort of terrible popularity, although it

turned into furnished without cost. Regrettably, that is real in many areas in the course of the arena. The public's negative belief of the "goat-like" taste and seasonal milk production are the 2 most vast limitations to advertising GM. The origins of this delusion can be traced returned to the truth that goat milk is sometimes acquired in unsanitary circumstances and that GM merchandise are produced in substandard situations. Only sizeable education about goat milk's health benefits and scrumptious flavor can probably exchange this negative recognition. (3)



Fig no 1: Goat and Goat Milk

The alkaline pH of goat's milk is related frequently with the content material of calcium, potassium, and sodium, and its salty aftertaste is due to the high content material of chlorine. Compared to cow's milk, goat's milk has a tremendously high degree of magnesium, which prevents pressure, increases the frame's immunity, and is a cofactor in many enzymatic reactions [4]. The contents of micro and microelements in goat's milk and merchandise make it vary greatly and rely on many factors, for example, species, breed, or breeding conditions of animals, such as, specially, their feeding, or lactation section (5) Goat milk is an brilliant source salicylic acid as examine to cow milk which performed a important position within the mind development .Goat milk additionally possesses a few curative properties which make it effective in human vitamins and medication.(6) Home consumption is one of the most major

factors of goat milk demand. As the world population is increasing, so does this need. The second important aspect of demand for goat milk is the connoisseur interest in goat milk products especially, cheeses and yoghurt in several developed and developing countries. Because people's disposable incomes are rising, this need is also expanding. Another important aspect of demand for goat milk derives from the affliction of persons with cow milk allergies and other gastrointestinal ailments. This demand is also growing because of a greater awareness of problems with traditional medical treatments to such afflictions among the people, especially in developed countries. Despite the far higher amount of cow milk available, the production of goat milk and its products is often significantly lower, resulting in a higher market price. Production and marketing of goat milk and its products is therefore the a key



niche in the entire dairy industry sector.(2) The incredible digestibility and nutritional content material of goat milk, in addition to its healing capacity, make it an critical purposeful meals. These traits pave way for the producing of a wide variety of dairy products from goat milk, together with yogurt, cheese, non-fermented and fermented drinks, condensed milk, butter, ice cream, and candies (4). Between 1917 and 2017, dairy goats went from simply functioning as surrogates for cows to transgenic carriers of human enzymes. Goat milk has been an important part of human nutrition for millennia, thanks to its greater similarity to human milk, softer curd formation, higher proportion of small milk fat globules, and different allergenic properties than cow milk;

however, key nutritional deficiencies limit its suitability for infants. Not only have protein variations between goat and cow milk been studied extensively, but so have fat and enzyme differences, and their impact on the physical and sensory qualities of goat milk and dairy products Because of physiological differences between the species, separate procedures must be used to analyze somatic cell counts, which are naturally greater in goat milk. The enormous global value of goat milk has necessitated the development of a variety of procedures for detecting adulteration of goat milk products with cow milk. Advances in all of these areas have been well recorded in the Journal of Dairy Science (JDS), and this review covers them (6)





HEALTH IMPORTANTS OF GOAT MILK

The significance of goats in human nutrition has likely been identified since the early degrees of domestication. Research has shown that goat milk proteins have several health benefits, including immunomodulatory effects, allergy management, anti-inflammatory, and antioxidant effects, as well as antimicrobial and anticancer properties. They have the potential to be used as a treatment for autoimmune diseases, allergies, and other immune system disorders due to their ability to modulate the production of cytokines and other immune system components. Furthermore, their antimicrobial properties can help prevent the growth of harmful bacteria and reduce the risk of infection. Future research will focus on the potential of goat milk proteins as a functional food ingredient, their effects on gut health and

microbiota, and their therapeutic potential for various health conditions. This research may lead to the development of new functional foods that promote health and prevent disease, and potentially pave the way for the use of goat milk proteins as a therapeutic agent for various health condition (9). Goat's milk has better levels of calcium, magnesium, and phosphorus than either cow's or human milk, but lower levels of vitamin D, B12, and folate. Goat milk is secure and wholesome for toddlers, the old, and the recovery. Capric, caprylic, and capric acid are three fatty acids which have shown promise as ability treatments for a huge range of scientific problems. Considering the benefits and drawbacks of goat milk over cow milk is essential.(10) Goat milk has additionally been recognised for its useful and healing consequences on the people who have cow milk allergic reaction. These nutritional, fitness therapeutic advantages and enlighten the potentials and values of goat milk and its distinctiveness merchandise(11).

USES OF GOAT MILK

- Goat milk is a rich source of vitalutrients along with calcium, protein, and nutrients. Source: NIH
- Goat milk has a higher attention of mediumchain fatty acids, which might be useful for coronary heart health. Source: NCBI
- Goat milk carries higher levels of certain minerals, such as selenium and zinc, compared to cow milk. Source: Pubmed
- Goat milk is often used in the manufacturing of uniqueness cheeses, along with feta and chèvre. Supply: Dairy Council of California
- The presence of all goat milk compounds might also save heart diseases like heart assault, atherosclerosis, and stroke.
- Goat milk may act as an immunity booster and may help in shielding someone from sicknesses.

• The CLA mechanism to inhibit most cancers growth is not but understood completely and extra studies is required. However, the antioxidant impact and any other related mechanism of fermented goat milk may advantage cancer(12).

Composition of Goat Milk

Goat and sheep milk is white in coloration as as compared to cow milk, that's yellowish because of the presence of carotene and goats convert all carotene into Vitamin A in the milk, hence is higher in content as compared to cow milk and similar to human milk content material of Vitamin A. Goat milk has a stronger flavor than sheep milk, which is due to liberation of brief chain fatty acids which imparts goaty odor. Unlike cow milk, which is moderate acidic, goat milk is alkaline in nature, which is very beneficial for human beings with acidity issues. This alkalinity is due to the better protein content and distinct arrangement of phosphates. The excessive nutritive price of goat and sheep milk is related to its chemical composition. The chemical composition of goat milk is comparable to cow milk with the primary distinction in protein and fats structure at the same time as sheep milk has higher fat, protein and lactose content. The differences in gross composition of goat and sheep milk make the rennet coagulation time for sheep milk shorter and the curd less assailable because of the variations awithin the casein composition and content material(6)

1.FATS

The average general fats content material within the milk is just like that discovered in other ruminant an issue most in all likelihood derived from the fact that the average percent of milk fats, as with cow's milk fats, is a variable thing, frequently ranging between 3.0 and 6.0percentage. There are some types of goat milk containing fats:

a. Medium-chain fatty acid:



Goat milk includes significant amounts of short and medium chain fatty acids.Goat milk fat contains around 16% C6-C10 fatty acids, compared to 8% in cow milk fat. Goat milk has significantly more caproic (C6:0), caprylic (C8:0), and capric (C10:0) fatty acids than the longer chain fatty acids stearic (C18:0) and oleic acid.(7)

b. Monosaturated fat:

Consuming monounsaturated fats may reduce blood levels of harmful cholesterol and triglycerides. Triglycerides are fat cells that circulate through the blood and are stored in the body's fat cells. Triglyceride levels in the blood are linked to an increased risk of heart and blood vessel disease.

c. Polysaturated fats:

A diet high in omega-6 fatty acids, especially when they substitute saturated fats, may have various health benefits. One of the primary benefits is the ability to lower levels of bad cholesterol (LDL), which has been associated to a lower risk of cardiovascular disease. Furthermore, omega-6 fatty acids can assist reduce triglyceride levels, which benefits cardiovascular health. This type of diet may also help to increase good cholesterol (HDL), which protects against heart disease. Furthermore, omega-6 fatty acids may help with blood sugar regulation, which could benefit people at risk of or managing diabetes.

2.PROTEINS

The relative percent of protein is similar in both the cow and the goat not with standing beyond assertions that the protein content material of goat's milk is lower. This variation in variety is due to in part to a loss of standardization of protein testing tactics in addition to the wide differences encountered among animals universal because the identical breed and interbreed variations.

3.VITAMINS

Goat's milk differs from cow's milk in its much lower content of B1 (thiamine). The meaning of this difference is not entirely clear. It is remarkable that caprine milk derives its vitamin A potency entirely from the vitamin itself and entirely lacks the precursor carotenoid pigments characteristic of bovine milk, which also causes goat's milk and milk fat to be much whiter in color than the milk of the cow due to higher casein content. It typically contains 25% more vitamin B6, 47% more vitamin A than regular cow's milk, and is mainly contains vit A2. Goat milk incorporates excessive stages of the nutrients B I i.e., thiamine, riboflavin and pantothenate for a human infant, consequently infants fed completely on goat milk are overburdened with those minerals as well as nutrients.(15)

4.LACTOSE

The lactose concentration is usually determined to be lower than that observed in cow's milk, however the value of the difference is tough to quantify due to the version in strategies of analysis hired. An agreement has not been evolved on whether or not to analyze for lactose in the nonhydrated shape or the mono-hydrated shape, and this water of hydration is capable of introducing a percentage variation inside the 5 stated concentration of the identical actual quantity of lactose.

5.MINERAL SALT

The milk includes important and trace minerals together with Ca, Na, Mg, P, K and Zn, Mn, Se, Co, Cu, Fe respectively. For example, the milk is a good supply of calcium, containing about thirteen% more calcium according to serving than cow's milk, and making it one of the most important natural minerals in milk and containing about 134% more K detail.

6. Amino acid

Goat milk carries a similar amino acid profile to cow and human milk, except a decrease awareness of cysteine than human milk. The main free fatty acids in goat milk are taurine, glycine and glutamic



acid, the content material of taurine being mainly higher compared to cow milk(14).

7.Casein

Casein in milk is comprised of ~80% caseins and 20% whey proteins. Principal caseins (CN) in goat and cow milk are α s1 CN, α s2 CN, β CN and k

CN. The main forms of caprine and ovine caseino– macropeptides are the soluble C-terminal derivatives from the action of chymosin on k casein during the milk clotting process of cheese making.(8)

Sr .no.	Components	Cow	Goat
1	Fat	40	50
2	Protein	35	40
3	Vitamin A	21	39
	Vitamin B	45	68
	Vitamin C	2	2
	Vitamin D	0.7	0.7
4	Lactose	50	40
5	Minerals	0.7	0.8
6	Casein	2.5	2.9
7	Total solid	120	140

Table no.1 Comparison Between Goat and Cow Milk Composition

NUTRITIONAL VALUE OF GOAT MILK

- Most of the sector's populace beverages goat milk.
- Goat milk is extra digestible due to the fact the fat molecules are a smaller length than those from cow milk making it without difficulty tolerated by using people with compromised digestive systems.
- Goat milk has less cream separation because of smaller fat molecules.
- Goat milk consists of the precursor to diet A inside the milk fats that permits it to be simply available to be used through the frame.
- Goat milk is closer to human milk and is extra effortlessly time-honored in particular by those young or frail.
- Goat milk does now not shape mucous (phlegm) and is higher tolerated by asthmatics and people with hypersensitive reactions.
- Goat milk contains extra chlorine, fluorine, and silicon than every other domestic cattle. Chlorine and fluorine are natura(14)

COSMETIC AND DERMATOLOGICAL ADVANTAGES OF GOAT MILK

Goat milk is beneficial for the skin due to its unique composition, offering several advantages:

1. Hydration:

Goat milk's high water content and hyaluronic acid help lock in moisture, leaving skin soft and supple.

2. Anti-aging:

Antioxidants and vitamins in goat milk reduce fine lines, wrinkles, and age spots.

3. Soothing and calming:

Goat milk's anti-inflammatory properties alleviate redness, irritation, and conditions like eczema and acne.

4. Gentle exfoliation:

Alpha-hydroxy acids (AHAs) in goat milk gently remove dead skin cells, promoting cell turnover and brightening.

5. Skin elasticity:

Goat milk's high calcium content improves skin elasticity, firming and toning.

6. pH balancing:

Goat milk's pH level is close to the skin's natural pH, helping maintain the skin's barrier function.

7. Nourishment:

Vitamins A, C, and E, as well as minerals like zinc and selenium, provide essential nutrients for healthy skin 8. Acne treatment: Goat milk's antibacterial properties help control acne-causing bacteria.

8. Acne treatment:

Goat milk's antibacterial properties help control acne-causing bacteria.

9. Skin brightening:

Goat milk's tyrosinase-inhibiting properties reduce melanin production, brightening the skin.

10. Sensitive skin friendly:

Goat milk is gentle and non-irritating, making it suitable for sensitive Incorporating goat milk into your skincare routine through products or direct application can lead to healthier, more radiant, and youthful-looking skin.

GOAT MILK MEDICINAL VALUE

1.Revention of dengue fever

Dengue fever that is transmitted by using the chunk of Aedes aegypti mosquito is of extremely good hassle in tropical countries. Each serotypes of dengue virus (DEN 1, 2, 3 and four) are equally responsible to purpose excessive dengue and haemorrhagic syndrome. Ferropenic anaemia and bone demineralization have been better recovered with GM. Dengue is endemic in 112 international locations of the arena. Regular consumption of GM is suggested with the aid of doctors in case of dengue fever due to the fact it's miles essential to hold frame fluid stability and additionally transfusion of platelets isn't always possible in all cases. If platelet level drops (beneath 20,000) and there is sizeable bleeding then platelet transfusion must be provided. Selenium (Se) that's present in GM act in stopping dengue. GM have extra than 2.5 times the Se powdered little one system (19.98 mg/L vs. 7.Forty seven mg/L) in comparison to cow milk and almost 35% more than pasteurised

cow milk (19. Ninety eight mg/L vs. 14. Eighty five mg/L). As as compared to cow milk GM possesses 27% greater Se. Se if emerge as poor can cause an irreversible cardiomyopathy. Se facilitates in controlling the human immune device in case of autoimmune ailment with the aid of upgrading it when necessary and degrading it while it's far overactive. Se has anticlotting impact at the same time as thrombotic and seasoned-clotting results are due to its deficiency. The replication of dengue virus is averted by means of Se. T cell and interleukin both are essential factor of immune gadget and Se assist by using modulating the manufacturing of interleukin or with the aid of increasing the T cell characteristic. In treatment of dengue fever GM and its merchandise are very useful as they at once modulate human immune gadget. Immune reaction and antioxidant safety of host can be appreciably improved by way of the incorporation of Se as selenocysteine in Gaps. Deficiency of Se can be avoided via having capsules and animal merchandise that contain Se.

2.Treatment of gastrointestinal illnesses

Infants who're affected by problems like gastrointestinal disturbances, vomiting, colic, constipation and diarrhoea can be treated when they are fed GM. Pasteurised GM is without problems tolerated with the aid of babies who are suffering from such illnesses. GM easily assimilates in human body as chemical composition of GM is nearly just like human one that therefore complements the bioavailability of nutrients in it. It is said that GM intake increases the uptake of Iron and Copper in digestive tract. The readily bioavailable nature of GM has multiplied its consumption in recent years. The availability of useful intestine microbes will increase when GM is taken. Soft curd formed in fermented milk of goat is effortlessly digested and absorbed. People who're lactose intolerance also can without problems digest it because of its small sized fats globules in which the total floor vicinity



of globules are correctly connected with lipids and also the fat globules of GM do no longer clump collectively cow's milk. as in GM is the vital supply of bioorganic sodium, the absence of which causes arthritis. Human stomach shops extra sodium than any other organ. The absence of sodium reasons digestive discomforts and inhibits stomach from producing wished enzymes main to bloating or even ulcers. Soft curd in GM can be tremendous for grownup human beings who're laid low with gastrointestinal disturbances and ulcers. Also, the property of excessive buffering potential of GM appears to be fruitful in treating gastric ulcers. The intestinal inflammation and medical signs (diarrhoea and bloody stools) in colitis may be decreased by means of consuming GM. The presence of oligosaccharides in its milk exhibits antiinflammatory impact within the control of Inflammatory bowel disease (IBD). It has been reported in one examine of rats inflamed with colitis whilst fed GM oligosaccharides reduces and promotes restoration of damaged colonic mucosa due to less severe lesions in colon and manufacturing of greater beneficial intestine microbiota (16)

3.Antimicrobial residences

Proteins derived from milk are proved to be precursors of antimicrobial peptides. GM have been pronounced to have antimicrobial activity of several pathogenic bacteria that are contained in meals substances. GM caseins fragments are suitable supply of antimicrobial peptides which are powerful towards gram bad micro-organism [38]. Alpha-S2 Casein (CSN1S2) in GM is studied for its antimicrobial property. The result indicated that this caprine protein has inhibition hobby that opposes the pathogenic bacteria by using greatest awareness of five mg/ml in all micro-organism in particular Gram superb (Listeria monocytogenes, Staphylococcus aureus and Bacillus cereus) and terrible (Escherichia coli, Salmonella typhi and Shigella flexneri). This assets of CSN1S2 casein are detected while it goes thru degradation through gastrointestinal enzyme pepsin. The wonderful antimicrobial impact of GM and its precise chemical composition can result in extended antimicrobial compounds production. Another have a look at suggests that in the fermentation of GM with person microorganisms of kefir grains, bioactive substances have been released which have antimicrobial homes towards deadly traces of bacteria found in meals (14). Short chain fatty acids (SCFA), Medium Chain Triglycerides (MCT), capric, caproic and caprylic acids determined in GM had been proved to possesses antimicrobial interest. GM proteins can be in-vitro hydrolysed via enzymes or can be fermented via lactic acid bacteria which provide amazing antioxidant peptides (17).

4.Treatment of cardiovascular disease (CVD)

CVD consists of diseases that involves coronary heart and blood vessels, veins, coronary heart illnesses, excessive blood pressure, arrhythmias, atherosclerosis and so forth. In order to hold regular blood strain and right coronary heart functioning a very good amount of potassium rich food is needed and GM serves for the same. GM supply 498.7 mg of K and 121.5 mg of Na that is sufficient in preventing excessive blood stress and towards atherosclerosis. The protective Angiotensin changing enzyme (ACE) inhibitory peptides received after hydrolysis of GM caseins have proven useful results on blood strain law. Fat in GM reduces general cholesterol levels thereby making it as a food of desire for the prevention of cardiac issues. GM have selenium and its absence is concept to motive irreversible cardiomyopathy. When extra amount of fat is deposited in the arterial wall and blood vessels then cardiac arrest is commonplace. In case of goat, fat present in its milk and meat is considered as person friendly. The Low-density lipoprotein (LDL) is called "terrible cholesterol" because it transports



cholesterol from liver to blood vessels while Highdensity lipoprotein is "accurate cholesterol" because it transports cholesterol from vessels to oxidative amendment of LDL which suppresses atherosclerosis. Goat milk wealthy in medium chain triglycerides. These MCT to inhibits or restrict cholesterol deposition in the tissues. Altogether MCT found in goat milk. An in vitro study have shown that cells remoted from human beings who were consuming goat milk from exceptional breeds had been trigged by using components inside the milk to release nitric oxide (NO). It turns the NO reaches the blood circulates thru lymphatic path, therefore scary vasodilation and exerts cardio- defensive and anti-atherogenic have an effect on. (18)

5. Immunological residences

Se is essential because it performs role in proper functioning of the immune system and thyroid hobby as well as participates in spermiogenesis thereby affecting fertility [90]. It is a crucial part of the antioxidant potential of the organism. GM and its products act as immunity booster and forestalls from several infection in infants. There is involvement of many cells like T lymphocytes (T-cells), Natural Killer (NK) cells and Blymphocytes (B-cells) inside the innate and adaptive immune reaction. Even although the shape of Immunoglobulin's (Ig) are similar, minor variations exist in the essential immunological training (IgG, IgM, IgA, IgD and IgE). The essential houses of serum immunoglobulin accounts for IgG and IgA. Several researches have shown immunomodulatory outcomes of GM in case of both in-vitro and human studies. The release of nitric oxide (NO) from human blood cells exhibits aerobic protective effects within the milk customer and additionally possesses antibacterial activity which prevents them from infections. Content of sialic acid is better in GM which acts as an important biological aspect in

gambling essential function in mind improvement and in boosting little one immunity (18).

Goat Milk Nutritional Products

Goat milk products are taken into consideration to be the dairy products with the finest advertising potential. Fermented goat milk incorporating live probiotic cells Represents a group of products with outstanding prospects in the future (19)

1. Cheese: -

The consumption of cheese organized from uncooked milk has been implicated as the reason of epidemics of brucellosis, listeriosis, and staphylococcal meals poisoning. Therefore, it's far pretty vital to use simplest pasteurized milk to manufacture cheese to protect the fitness of the patron. (20) While there are extensive variations inside the taste, body, texture, and unique dietary qualities of goat cheeses, the)' have traits in not unusual. (21)

2. Yogurt: -

Yoghurt, a fermented type of dairy product, is a healthful meals that may provide customers with numerous health benefits Manufacturing of fermented merchandise, specifically yoghurt crafted from GM, is generally regarded as hard because it has equal coagulation and consistency traits to that of cow milk products, thanks to the presence of low natural as1-CN content and periodic adjustments in the composition of GM. Various techniques, inclusive of the incorporation of stabilizers, the usage of precise starter and probiotic cultures that resource in generating exopolysaccharides, increasing the strong content material of milk, processing of milk with transglutaminase, and homogenization of enzymes with the aid of utilization of high-stress, may also allow the producing of yoghurts (probiotic fortified) from GM with applicable rheological and consistency characteristics . (21) Yoghurt is a fermented milk product obtained by means of lactic acid fermentation of milk with the useful resource of two strains of bacterial cultures-



Lactobacillus bulgaricus and Streptococcus thermophiles which confer various beneficial fitness impact of devour. (22)

3. Butter:-

Butter is an important dairy product, which is obtained by churning the cream. It should possess minimum 80% of fat . In India, over 6% of the total milk is converted into butter(20). Goat milk lacks agglutinin, which reduces its capability to form easy clusters during butter making. Since goat milk fats has a decrease melting point in comparison to cow milk fats it results in very tender butter at room temperatures which isn't always suitable.

4. Frozen Products

Ice cream and frozen yogurt are manufactured from goat milk. The 3 flavor formulations of goat ice cream are French vanilla, chocolate, and premium white mixes.(23)

CONCLUSION

As discussed above, Goat milk is a rich source of more bioavailable proteins, fats, vitamins and minerals with great suitability for infant foods. Due to its high nutritive value and physiological properties, goat milk should be promoted in the like developing countries India, where malnutrition and diseases are more prevalent along with high poverty levels. The maintenance cost, general management and feeding of dairy goat is very low. But commercialization and utilization of goat milk is still lacking in developing countries. And scientific community has lack of information related to its use for commercialization. This area needs more research to do.

REFERENCE

- 1. Bhattarai RR. Importance of goat milk. Journal of Food Science and Technology Nepal. 2012; 7:107-11.
- Singh S, Kaur G, Brar RP, Preet GS. Goat milk composition and nutritional value: A review. The Pharma Innovation Journal. 2021;10(6):536-40.

- Nayik GA, Jagdale YD, Gaikwad SA, Devkatte AN, Dar AH, Dezmirean DS, Bobis O, Ranjha MM, Ansari MJ, Hemeg HA, Alotaibi SS. Recent insights into processing approaches and potential health benefits of goat milk and its products: a review. Frontiers in nutrition. 2021 Dec 6; 8:789117.
- 4. Kumar A, Sharma A. Nutritional and medicinal superiority of goat milk over cow milk in infants. International Journal of Paediatrics Nursing. 2016;2(1):47-50.
- 5. Nayik GA, Jagdale YD, Gaikwad SA, Devkatte AN, Dar AH, Ansari MJ. Nutritional profile, processing and potential products: A comparative review of goat milk. Dairy. 2022 Sep 5;3(3):622-47.
- 6. Clark S, García MB. A 100-year review: Advances in goat milk research. Journal of dairy science. 2017 Dec 1;100(12):10026-44.
- Kumar H, Yadav D, Kumar N, Seth R, Goyal AK. Nutritional and nutraceutical properties of goat milk-a review. Indian J. Dairy Sci. 2016 Jan 1;69:513-8.
- Park YW. Goat milk products: quality, composition, processing and marketing. Encyclopedia of Animal Science, Pond, WG, & Bell, N.
- 9. Paszczyk B, Czarnowska-Kujawska M, Klepacka J, Tońska E. Health-promoting
- 10. ingredients in goat's milk and fermented goat's milk drinks. Animals. 2023 Mar 2;13(5):907.
- Chauhan S, Powar P, Mehra R. A review on nutritional advantages and nutraceutical properties of cow and goat milk. International Journal of Applied Research. 2021;7(10):101-5.
- 12. A L Kaisy QH, Al-Saadi JS, A l-Rikabi AK Altemimi AB, Hesarinejad MA, Abedelmaksoud TG. Exploring the health benefits and functional properties of goat milk



proteins. Food science & nutrition. 2023 Oct;11(10):5641-56.

- 13. Yangilar F. As a potentially functional food: Goats' milk and products. Journal of food and nutrition research. 2013;1(4):68-81.
- 14. Navamniraj KN, Sivasabari K, Indu JA, Krishnan D, Anjali MR, Akhil PR, Pran M, Nainu F, Praveen SV, Singh P, Chopra H. Beneficial impacts of goat milk on the nutritional status and general well-being of human beings: anecdotal evidence.
- 15. Dr Rajeev Singh "Goat Milk: Uses, Benefits, Side Effect" Available At :https://pharmeasy.in/blog/ayurveda-usesbenefits-side-effect-of-goat-milk/.
- 16. Getaneh G, Mebrat A, Wubie A, Kendie H. Review on goat milk composition and its nutritive value. Journal of Nutrition and Health Sciences. 2016;3(4):1-0.
- 17. Panta R, Paswan VK, Gupta PK, Kohar DN. Goat's milk (GM), a booster to human immune system against diseases. In Goat Science-Environment, Health and Economy 2021 Dec 2. Intech Open.
- Ahmed AS, El-Bassiony T, Elmalt LM, Ibrahim HR. Identification of potent antioxidant bioactive peptides from goat milk proteins. Food Research International. 2015 Aug 1;74:80-8.

- Zenebe T, Ahmed N, Kabeta T, Kebede G. Review on medicinal and nutritional values of goat milk. Academic Journal of Nutrition. 2014;3(3):30-9.
- Riskó TC, Csapó Z. Goat keeping and goat milk products in human nutrition-review. APSTRACT: Applied Studies in Agribusiness and Commerce. 2019;13:24-36.
- Pal M, Dudhrejiya TP, Pinto S, Brahamani D, Vijayageetha V, Reddy YK, Kate P. Goat milk products and their significance. Beverage & food world. 2017 Jul;44(7):21-5.
- 22. Nayik GA, Jagdale YD, Gaikwad SA, Devkatte AN, Dar AH, Ansari MJ. Nutritional profile, processing and potential products: A comparative review of goat milk. Dairy. 2022 Sep 5;3(3):622-47.
- Tafes AG. Compositional and technological properties of goat milk and milk products a review. Concepts Dairy Vet Sci. 2020;3:295-300.
- 24. Park YW. Goat milk products: quality, composition, processing and marketing. Encyclopedia of Animal Science, Pond, WG, & Bell, N.

HOW TO CITE: Aisha A. Patalpure, Akshada U. Pawar,Pooja A. Shinde, Unlocking The Benefits Of Goat Milk:A Nutritional Powerhouse, Int. J. of Pharm. Sci., 2024,Vol2,Issue10,1695-1705.https://doi.org/10.5281/zenodo.14002346

