

These polyamines are found to be important for optimal growth, gastrointestinal tract (GIT) cell function, maturation of GIT enzymes and have been involved in reducing the incidence of food allergy in infants.

- ✓ Goat milk fat is healthier, easily digestible and high in desired fatty acids.
- ✓ Infant formula made from goat milk have adequate nucleotides to fulfil the requirement.
- ✓ Goat milk has 20-40 times higher taurine content than cow milk.
- ✓ Polyamines are rich in goat milk as compared to milk from other mammals.
- ✓ Oligosaccharides content in goat milk is significantly higher than cow and sheep milk.

Oligosaccharides

Goat milk typically contains 4–5 times higher oligosaccharides (250-300 mg/L) than cow milk and 10 times higher than sheep milk. Though, the amount of goat milk oligosaccharides is still much lower than in human milk (5–8 g/L). Oligosaccharides of goat milk are complex, with a profile most similar to human milk. Oligosaccharides are considered to be vital components of human milk due to their prebiotic and anti-infective properties. Goat milk oligosaccharides can contribute several functional properties, including antiadhesive, antimicrobial, immune modulators, intestinal epithelial cell response modulation, nutrients for neonatal brain development, and growth of desired gut microflora. Thus, goat milk appears to be an attractive natural source of human-like oligosaccharides for the infant.

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***FUNCTIONAL
COMPONENTS
IN GOAT MILK***

Goat milk has shown beneficial effects on health, physiological functions and in the nutrition of children and elderly people. Also, it can be consumed without negative effects by people afflicted with a cow milk allergy. These benefits are powered by its superior compositional makeup as well as differences in casein, fats, and other micro-constituents compared to cow milk. Though the major constituents of goat milk look similar to cow milk, the former one is rich in many vital nutrients signifying its nutritional importance.

Several micronutrients like vitamin A, vitamin B₁, vitamin B₂, vitamin B₅, calcium, phosphorous, zinc, potassium, and selenium are present in significantly higher amount in goat milk as compared to cow milk. Goat milk contains 13% more calcium, 25% more vitamin A, 134% more potassium, 3 times more niacin, and 4 times higher copper than cow milk. The health-promoting features and constituents of goat milk are briefly mentioned here.

Healthy and digestible fat

The percentage of total fat in goat and cow milk is quite similar, and the fatty acid composition depends to a large extent on the diet in both species. However, there are two characteristics of goat milk fat that have important consequences on health values and product manufacturing. The first one is, the smaller size of the fat globules in goat milk than those in cow milk. This is responsible for the softer texture of goat milk products, though it poses the difficulties in butter processing from goat milk. Also, smaller fat globules contribute to better digestibility of goat milk. The second feature is, a higher proportion of medium-chain triglycerides – caproic (C6:0), caprylic (C8:0), and capric (C10:0) acids.

These medium-chain triglycerides (MCT) have become established medical treatments for the number of clinical disorders due to their unique metabolic ability to provide direct energy instead of being deposited in adipose tissues, and because of their actions of lowering serum cholesterol, inhibiting and limiting cholesterol deposition. Besides medium-chain triglycerides, goat milk also exceeds cow milk in monounsaturated

“Goat milk possesses several healthier components known to participate in many biological activities.”

(MUFA) and polyunsaturated fatty acids (PUFA), which are known to be beneficial for human health, especially for cardiovascular conditions. Under average feeding regimes goat milk has a comparatively high number of minor branched-chain fatty acids and the content of trans-C18:1 fatty acids is significantly lower than in cow milk. Both the conditions are regarded as beneficial for coronary heart disease risks.

Goat milk nucleotides

Goat milk, in contrast with cow milk, possesses a complex array of nucleotides. The nucleotides content of infant formula made from goat milk approaches the same levels as human milk and no additional supplementation is needed. These nucleotides are supposed to participate in several biological functions, including immune maturation of the milk-fed offspring, mediation of energy metabolism, signal transduction and general regulation of cell growth, lipoprotein metabolism,



enhancement of high-density lipoprotein (HDL) plasma concentration, synthesis of apolipoprotein (Apo) A1 and Apo A1 V in pre-term infants, and upregulation of long-chain polyunsaturated fatty acid synthesis in human neonates.

Free amino acids

Taurine, glycine, and glutamic acid are the major free amino acids present in goat milk. The amount of taurine in goat milk is about 20–40 folds higher than cow milk. Taurine is involved in bile salt formation, osmoregulation, antioxidation, calcium transport, and the central nervous system functions.

Premature infants lacking the enzymes needed to convert cystathionine to cysteine may become deficient in taurine. Thus, for them taurine is a dietary essential nutrient and is often added to many infant formulas. In adults also, taurine is beneficial and helping to regulate blood pressure and possibly to alleviate other cardiovascular ailments. Thus, goat milk is a valuable source of taurine for the human neonate as well as the adult.

Polyamines

The goat colostrum and milk are rich in polyamines, the highest compared to the milk of other mammals.