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*Editorial*

# Multivariate factors influence production of milk and composition

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## EDITORIAL

A lot of variables influence the composition of milk in mammalian species. Milk yield and composition vary by species, food, breed, season, location, individual animals within a breed, lactation stage, parity, environmental circumstances, feeding and management practises, and so on. Goat milk is comparable to cow milk in terms of fundamental makeup. Caprine milk has an average total solids content of 12.2%, with 3.5% protein, 3.8% fat, 4.1% lactose, and 0.8% ash. Cow milk has less protein, fat, and ash, as well as more lactose, than goat milk. The total solids, fat, and protein contents of milk are high in early lactation, decline fast and reach a low during the second to third months of lactation, and then increase towards the end of lactation, according to the milk production curve of ruminant species. As a result of this occurrence, the amount of milk yield and the concentration levels of these components in the milk have an inverse connection. Between cow, goat, and human milks, there are no substantial variations in total solids or caloric values. The percentage of energy obtained from lactose, fat, and protein differs significantly.

Cow and goat milks have roughly 50%, 25%, and 25% fat, protein, and lactose, respectively, whereas human milk has 55%, 7%, and 38% fat, protein, and lactose, respectively. Protein and ash levels are the most noticeable differences in fundamental makeup between cow (or goat) milk and human milk. Cow and goat milk contain 3 to 4 times greater amounts of the two components than human milk, which may be linked to species differences and is almost directly connected to the growth rates of the respective species' new-born.

The nutrient content of a dairy animal's diet has a significant impact on lactation performance, milk composition, digestion, and metabolism.

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As a result, it's critical to figure out how much of each nutrient nursing animals need in their diet, especially in terms of crude protein levels. Dietary nutrients can influence gene expression either directly or indirectly, according to contemporary nutritional research. Thus, dietary nutrients can affect protein expression, signalling, and metabolic state in cells, tissues, organs, and the entire organism. The notion that dietary components might alter biological activities of body cells by interacting with transcriptome has changed monogastric animal feeding. This concept has the potential to be applied to the field of ruminant nutrition, particularly dairy cows, in terms of milk production efficiency and quality.

Dairy cows and small ruminant species such as goats and sheep have improved milk output significantly since the introduction of artificial insemination and cross breeding, thanks to cross breeding with high-producing varieties within the same species. Inadequate nutrition, illness, a lack of support services, and a lack of information on how to enhance animal breeding, marketing, and processing have all hampered the expansion of dairy production in emerging and poor nations. As a source of meat, milk, fibre, hide, and other animal products, non-bovine animals such as buffalo, goat, sheep, and mare have made important contributions to the economic and well-being of many developing nations. However, because to common livestock illnesses, inadequate management systems, and poor genetic performance, these species' contributions have fallen short of their projected potential in several nations.

In order for dairy production to be sustainable on a global scale, feed efficiency must increase and nutrient losses in the environment must be reduced. The bulk of dietary proteins are rapidly destroyed when ruminants are fed high-quality pasture diets. Microbial fermentation and breakdown release 56 % to 65 % of food protein nitrogen (N) in the rumen under this scenario. After ammonia is absorbed through the rumen wall, significant losses of decomposed dietary N into urine (25-35%) as urea occur. The primary source of volatile N loss to the environment is urea N. As a result, reducing protein breakdown in the rumen helps minimise dietary N losses. When modest dosages of Condensed Tannins (CT) in dry matter are added in the diet, it has been discovered that CT in forages can minimise ruminal protein breakdown and enhance intestinal protein flow. These condensed tannins can be used in ruminant diets since they are found in many plants.