



## COLOSTRUM MANAGEMENT IN NEW-BORN DAIRY CALVES

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### ABSTRACT

*Calves play an important role in dairy farming because these calves become the next generation of dairy animals. To get maximum production in their life span, these calves should be reared following scientific management practices. One of the important management practices for healthy calves and preventing mortality in calves is feeding colostrum to newborn calves. Feeding good quality colostrum in sufficient quantity and quality is important for good health and survival and the long-term productivity of newborn calves. In this paper, we have discussed the importance of colostrum feeding, its composition, and its benefits to dairy calves.*

### INTRODUCTION

Animal husbandry is backbone of Indian agriculture. Livestock plays an important role in Indian agrarian economy. The total Livestock population in India is 536.76 million, the total cattle and buffalo population in our country are 193.46 and 109.85 million (20<sup>th</sup> livestock census). The milk production in 2018-19 was 187.7 million tones and per capita availability of milk was 394gm/person/day. About 20.5 million people depend upon livestock for their livelihood. It also provides employment to farmers during lean period. India has vast livestock resources. The 70% of rural households still depend primarily on agriculture. Marginal and small farmers are 82% and are associated with livestock rearing. It is necessary to take care and manage the newborn calves in dairy farming because the same calves are used as stock in dairy production in the future. Care of calves' starts during pregnancy in animals. The pregnant cow should be managed properly by providing a balanced diet and care during pregnancy. For maximum profit and success in dairy business, newborn calves' mortality should be minimized with management practices. Colostrum management in newborn dairy calves is very important management practice to achieve better growth, calves' health, and continuity of dairy farming.

## CARE OF NEW BORN CALVES

There are different management practices to be carried out immediately after birth of calves. Cleaning of the nostrils and mouth of the calf to remove the mucus. This will help the child to breathe easily. Allow the mother to lick the calf; due to this, the body's blood circulation will be good. If the calves are born in winter then special care of calves/calves is required. In such a situation, keep the calf in a good enclosure where cold air does not come and provide straw/dry grass bedding. Cut the navel cord at a distance of two inches and apply 7% tincture iodine. Use only a new blade or scissors to cut the cord. The calf starts standing in an hour and tries to drink milk. If not, then help the weak calf. Allow the calf to suckle the cow for feeding of colostrum.

## COMPOSITION OF COLOSTRUM

Colostrum contains four-five times higher amount of protein and ten-fifteen times of the vitamin A comparison to the milk. The colostrum of the bovine contains higher amount of fat (6.7-7.8%), lactose content (2.5%), protein (16.51%) with good amounts of immunoglobins, minerals and growth factors (Shah et al., 2019). The calf gains passive immunity as a result of these antibodies being absorbed.

## PROPERTIES OF COLOSTRUM

The cow's first milking colostrum contains nutrients, immunoactive cells, growth boosters, and immune stimulants. Colostrum has a lower lactose level than milk, but because of the larger fat content, it has about twice the gross energy. Colostrum has a somatic cell count of over 1 million leukocytes and epithelial cells. The majority of colostrum's passive immunity is made up of these and immunoglobulins. Within the first 24 hours of life, both immunoglobulins (Ig) and leukocytes are actively transported across the gut wall to reach the bloodstream. The half-life of Ig is 11.5 to 16 days (LeJan, 1996).

## BENEFITS OF COLOSTRUM FEEDING

The calf's survivability is greatly increased when they are fed with colostrum immediately after birth. Colostrum gives a laxative effect which is helpful in the expulsion of meconium (first feces). Colostrum contains a higher concentration of minerals and vitamin A, which is essential for disease prevention. Gamma globulins must be absorbed whole across the intestinal wall and into the bloodstream. After the first few hours (1-2) of life, this permeability is gradually lost.

## COLOSTRUM QUALITY

The nutrient content of colostrum varies generally by breed and by individual animal. Mature cow colostrum contains a high concentration of gamma globulins because they have a higher exposure to infection. The late gestation cow will produce higher levels of immunoglobulins in her colostrum based on her response to infections. This is usually a combined result of natural exposure and vaccination administration. Older cattle tend to produce higher levels of antibodies in their colostrum as opposed to first calf heifers. In response to earlier infection, cows in late pregnancy produce more immunoglobulin in their colostrum. This is usually a combination of natural exposure and vaccination. Compared with newborn heifers, older cows tend to produce higher levels of immunoglobulins in colostrum. Pre-calving Milking will reduce colostrum levels. Color and consistency are qualitative indicators for evaluating antibody content. The thicker and darker the yellow, the better the quality of colostrum. There are several ways to test the quality of colostrum. The colostrometer, an instrument that determines specific gravity, is an easy and inexpensive evaluation method (Fleenor and Stott. 1980). Colostrum is classified as poor if it contains <22 mg/ml of IgG (red zone), moderate if between 22 and 50 mg/ml (yellow zone) and excellent if the level is >50 mg/ml (green zone) of IgG. Variations in fat and non-Ig protein content will change the viscosity of colostrum and affect the reliability of this method.

## STORAGE OF COLOSTRUM

The excess colostrum can be stored by refrigeration and can be used to other calves or orphan calves. Colostrum can also be freezed and stored. Harvest of colostrum at 6 hours post-calving has been shown to reduce antibody levels up to 40% as opposed to removal within 2 hours of parturition (Davis and Drackley, 1998). Cummins et al (2016) reported that colostrum storage at  $\leq 4^{\circ}\text{C}$  for 2 days ensure adequate passive transfer when fed to calves. Use of clean milking utensils and proper udder preparation should be followed for pathogen control. Stabilization by the use of microbial inhibitors such as potassium sorbate has proven useful. These will not reduce the number of bacteria but will impede replication. Pasteurization offers a means to take advantage of the low cost, complete nutrition, and effective immune protection offered by colostrum with a substantial reduction in the risk of pathogen exposure from the environment or the dam.

## NUTRITIONAL BENEFITS OF COLOSTRUM FEEDING

The benefits of colostrum feeding are laxative, nutritive and protective, laxative to the digestive tract. This neonate's body contains only 3% fat. In the absence of milk intake, the calf only has 18 hours of energy to use, even under thermally neutral conditions. Colostrum contains a lot of protein and fat and contains a higher concentration of vitamins and minerals. Alternate substitutes do not have these ideal properties present in colostrum. The calves must be provided colostrum as early as possible.

## CONCLUSION

Keeping in view of the importance of colostrum to newborn calves, sufficient quantity, and quality of colostrum should be given to calves at an appropriate time to achieve good growth and avoid health complications and related losses. Following scientific management practices, dairy farmers can take good care of their newborn calves and earn good profits from dairy farming.

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