



The importance of colostrum in new-born animals (Ruminants) and raising one that has not had enough after birth

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Introduction

All mammals suckle their young, this means they produce milk from mammary glands to provide the correct nourishment for the first and very important phase of life. The first milk produced is called colostrum and is absolutely essential to the wellbeing of the new-born as it is high in nutrients and antibodies. Cows, sheep and goats are all mammals and suckle their young. A new-born animal lacks disease protection because antibodies do not pass across the placenta to the foetus' immune system before birth. Antibodies in colostrum provide young with their initial protection after birth. They get passive immunity to the diseases their mother is resistant to. If they do not drink adequate amounts of this colostrum within six hours of birth they will remain susceptible to any disease until they develop their own immunity at two or so months of age.

In dairy enterprises the calves are often removed soon after birth and raised artificially. Some of these calves, especially males, get sold off the farm to be raised by new owners. If these animals have not had colostrum in the first 6 hours of life, it will have very serious negative consequences for its health, such as diarrhoea or pneumonia (usually of bacterial origin). An important and valuable benefit of colostrum is the reduction in the incidence of scours and increase in average daily weight gain all of which have a significant benefit to both the animal and owner.

What is in colostrum?

Colostrum contains lower levels of lactose but higher levels of protein than ordinary milk. It also contains

higher levels of minerals e.g. calcium, phosphate, magnesium and sodium, hormones and growth factors. Colostrum has higher levels of vitamins A, D and K1. The concentration of thiamine, riboflavin, folate, vitamin B6 and B12 are also higher in colostrum than in milk. It has very high levels of immunoglobulins which allows passive immunity to be passed to the young. These immunoglobulins pass through the gut wall of the animal, however, the permeability of the gut wall decreases rapidly after birth, therefore it is important to feed them before they can no longer be absorbed (roughly six hours). After being absorbed in the gut, the antibodies enter the bloodstream and once intestinal absorption stops, the calf starts to secrete digestive enzymes, which digest the antibodies. The absorbed antibodies protect against invasion by pathogens while antibodies that are not absorbed play an important role in protection against intestinal diseases.

Colostrum also has a mild laxative effect, encouraging the passing of the first stool, which is called meconium.

New-born requirements

Calves need at least five percent of the calf's body weight of colostrum within four hours of birth and more in the next 24 hours. Usually calves take this in by suckling their dams, however, in dairy enterprises calves are often removed soon after birth and do not get the chance to suckle. In these case, the calves must be fed the colostrum by bottle or feeding-tube. Colostrum should be from healthy cows in at least their third lactation as they generally provide higher-

quality colostrum than heifers. A yellow colour and a thick, creamy consistency are good indications of quality.

What to do if new-borns have not had enough colostrum

Colostrum can be stored by freezing and is easily thawed with warm water for feeding. Rapid defrosting using boiling water or microwave ovens destroys a portion of the antibodies. A warm water bath will ensure that antibodies are undamaged. Do not give any other feed before giving colostrum, as this will interfere with the calf's uptake of antibody ability. Artificial replacements or supplements are also commercially available. Unfortunately, this colostrum still has to be fed within 24 hours of birth to be at all effective. Most calves purchased for artificial rearing are older than this and may be permanently disadvantaged if the original owner has not ensured sufficient colostrum intake after birth.

Calves being moved from one place to another soon after birth are exposed to enormous stress. They have been recently born, they may or may not have had adequate colostrum/nutrition, they are removed from their mothers, they are transported near or far to a place with new bacteria. A healthy calf is being tremendously challenged by all this, a compromised calf is in severe danger of falling ill. The majority of calf deaths occur pre-weaning and are usually caused by scours. Artificially raising calves, lambs or kids is covered in Agri-update 2015/06.

Raising a potentially compromised calf requires great care and attention to detail. The calf pen must be clean, dry and draft free with a nice deep bed of shavings or hay (calves are very sensitive to cold). Pens must be cleaned and disinfected regularly, ensuring all manure is removed. If calf pens are not kept clean, it could lead to a build-up of infection which could interfere with their passive immunity.



FIGURE 1: Clean, dry and draft free calf pen.

Feeding utensils must be spotlessly clean. The calf must not be mixed with other animals but must be able to see and hear them. If using a milk replacer, buy the best one affordable. Look on the list of ingredients or nutritive properties, if fibre is on the list it means the powder has been made containing plant matter, a calf is not geared to digest it at such a young age. Try to find a milk substitute with milk or whey powder in it, they are more expensive but the calf will grow better. Always ensure the temperature of the milk / milk replacer is between 37 - 39 degrees Celsius. When the calf first arrives give it a first feed of milk and electrolytes to help it transition. Dose it or inject it with vitamin ADE.

A liquid vitamin supplement containing –

Vitamin A	1 000 000 IU min
Vitamin D	500 000 IU min
Vitamin E	10 000 IU min
Vitamin C	10 g min
Niacin	1 g min
Vitamin B1	0.2 g min
Vitamin B6	0.2 g min
Biotin	4 mg min
Vitamin B12	1 mg min
Zinc Bacitracin	2 g min
Lasalocid	2 g min

Vitamins can be added to the milk daily (eg. Supacalf). This supplement will help a compromised calf tremendously and will be well worth the cost.

Make sure the calf has free access to complete calf meal and clean water at all times. Feed the milk at the same time and at the same temperature every day (37 -39 degrees Celcius). If the calf shows any signs of illness treat it immediately, the next day will be too late. Possible illnesses include digestive upsets (scours, colibacillosis, paratyphoid, coccidiosis and bovine viral diarrhoea) and pneumonia; a sulpha based injectable antibiotic can help with this. Keep the calf on milk until at least 6 weeks to two months of age, do not try to early wean a compromised calf. Deworm for tapeworms at a month old and again at weaning. Vaccinate the calf as soon as it is old enough to help with immunity as it grows.

Conclusion

Do not buy dairy calves to rear if you are not prepared to spend the money to raise them properly. Check with the farmer how he manages his calving cows and that he ensures that even the bull calves get

colostrum timeously. Spend your money wisely; a sickly calf will not be profitable.

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