

Bovine & Ovine Colostrum

Introduction

The feeding and management of dairy calves directly impacts their future milk production, in addition to, proper colostrum intake on calf health. So, the first and adequate intake of colostrum is critical.

The dry period management is very important for the dam and the calf as well, so underfeeding during the last two months of gestation can increase mortality of the calf within the first two weeks of life and have an effect on the colostrum quality produced by the dam which can result in difference of colour, composition and function from normal milk produced after 72 hours from calving time (shown in Table 1).

Item	Milking Number			Milk
	1	2	3	
Specific Gravity	1.056	1.040	1.035	1.032
Solids, %	23.9	17.9	14.1	12.9
Protein, %	14.0	8.4	5.1	3.1
Casein, %	4.8	4.3	3.8	2.5
IgG, g/L	48	25	15	0.6
Fat, %	6.7	5.4	3.9	3.5
Lactose, %	2.7	3.9	4.4	5.0

Colostrum Immunoglobulin 4Q/4H

Calves are born without antibodies against diseases and need to absorb the immunoglobulin found in colostrum to build the local immunity. There are three types of immunoglobulins in colostrum of cattle: 70–80% IgG 10–15% IgM, and 10–15% IgA. Additionally, there are two isotypes of IgG: IgG1 and IgG2. These immunoglobulins work together to provide the calf with passive immunity until the calf's own active immunity develops.

Colostrum immunoglobulin (IgG) is absorbed most efficiently within the first 4 hours of life and gradually decrease within the first 24 hours of age equal zero.

Detecting the Colostrum-Deprived Calf

To determine if a calf has absorbed adequate levels of protective antibodies from colostrum a popular procedure for large dairies is measurement of serum total proteins by using Refractometer at the 3rd day of age.

Serum fractions from calves containing less than 5.0 gm/100 ml indicate insufficient colostrum antibody absorption.



Colostrum = Life



Less than 5.0 mg/dl	colostrum deprived
5.0–5.5 mg/dl	suspect deprived
5.5–7.5 mg/dl	colostrum satisfied

Table 2. Interpretation of serum total proteins.

Some suggestions to maximise the biological safety of colostrum:

- Collect colostrum from cows known to be healthy.
- John's and staph positive cows' cases should collect colostrum and discarded directly.
- A surveillance program for infected cattle can reduce the risk of transmission of disease through colostrum.
- Sanitise the udder prior to collecting colostrum – use the same methods that you would use for collecting milk. Dirty colostrum can be a significant source of disease to the calves during the first few hours.
- Collect colostrum into a clean, sanitised and dry container used ONLY for the purpose of collecting colostrum.
- Do not allow colostrum to sit at room temperature. If you are not feeding colostrum direct to the calves you should keep it frozen with the quality marked, date and batch number.
- The frozen colostrum is valid to be used again for 6 months from freeze date.



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