



COLOSTRUM, IMMUNITY AND VACCINATION OF CALVES

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It is commonly acknowledged that successful colostrum management is the single most important factor influencing the future health of the calf.

The quality of colostrum in beef breeds is generally good, so that adequate passive transfer can be assumed as long as it is ensured that the calf is suckling early on.

In dairy cows, the quality of colostrum is poorer to begin with, and it is furthermore diluted substantially with every hour that passes between calving and first milking. Also, the ability of the calf to absorb immunoglobulins decreases rapidly so that any delay in harvesting the colostrum and feeding the calf increases the risk of failure of passive transfer.

Normal sized Holstein calves should drink at least 3 L of good quality colostrum within 4 hours, and a total of 4 L within 12 hours from birth if nipple fed. Calves that are not ingesting the crucial 3 L should be stomach-tubed. Alternatively, calves can be given 3 L of good quality colostrum (> 50 g/L IgG) by stomach tube within 2 hours.

These recommendations have been simplified into the Colostrum **1 – 2 – 3** for dairy calves:

1. Use colostrum from the **1st** milking for the first feed
2. Give colostrum within **2** hours from the calf's birth
3. Give at least **3** litres

Feeding colostrum by a nipple feeder is more natural and the absorption of antibodies is slightly better, but to ensure adequate colostrum is fed, it may be necessary to feed colostrum by stomach tube. Leaving the calf with the cow to drink is not a reliable method for colostrum intake in dairy calves.

Hygienic harvesting and proper storage of surplus colostrum is crucial since bacterial contamination poses a high risk of transmission of infection and impairs the absorption of immunoglobulins. Colostrum should be refrigerated immediately and used within one day. Frozen colostrum can be stored for one year.



For the assessment of colostrum management on farm serum samples should be examined from 12 healthy calves in the first two weeks of life. TP can easily be measured using in-house biochemistry or a refractometer. If TP is used for screening, 80% of samples should show values above 55g/L.

Commercially available scour vaccines that are given to the dams prior to calving increase the level of specific antibodies in serum and milk of vaccinated cows as well as in serum of calves that have ingested colostrum from vaccinated dams. Good quality clinical studies on their benefit in naturally acquired diarrhoea are scarce and the results ambiguous.

The efficacy and economic viability of vaccination against respiratory disease in young calves remains uncertain. Calves do not produce specific antibodies after vaccination in the presence of maternally derived immunity. For this reason, it is commonly believed that maternal antibodies can interfere with the efficacy of vaccination. To overcome this issue, research in recent years has focused on the use of the mucosal immune system for vaccination, and intranasal vaccines against BRSV and Bovine Herpes Virus 1 are now available.

Literature:

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