

Short interval from calving to milking is essential for high IgG content in colostrum

Rikke Engelbrecht¹, PhD, Mette Marie Løkke², PhD, Lars Wiking², PhD, Associate Professor

¹Western Union of Agricultural Services, Ringkøbing, Denmark, ²Department of Food Science, Aarhus University, AU-Foulum, Denmark

Objective

To investigate the connection between milking time and colostrum quality concerning antibody concentration

Conclusion

Milk fresh cows at latest 5h after calving to increase the likelihood of harvesting colostrum with IgG > 50 g/L

Introduction

Colostrum of good quality is pivotal for the health and growth of the newborn calf. In order to ensure enough mass of IgG fed to the calf, the recommendation is to feed 4 L of colostrum with an IgG concentration of >50 g/L within 4-6 hours after calving.

The aim of this study was to investigate the effect of time passed from calving to milking on the content of IgG in colostrum. From these data a scheme is proposed that can be used at dairies with long intervals between milkings to increase the likelihood of harvesting colostrum with a high content of antibodies.



Photo: Ida Ringgaard

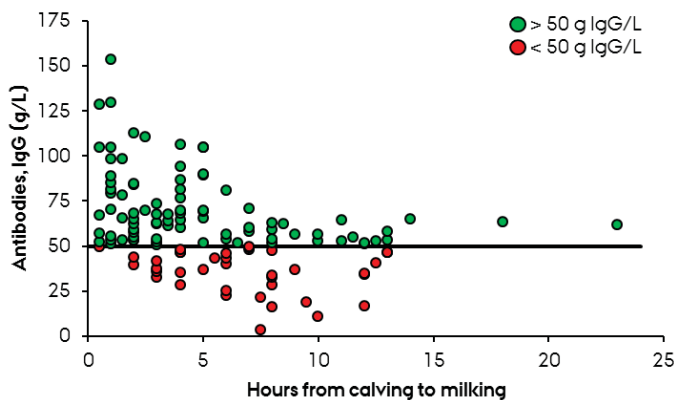


Figure 1. The results showed that the IgG content decreased at increasing time from calving to milking. Cows milked within 5 hours after calving will most likely produce good colostrum (> 50 g IgG/L).

Results

The study included 21 dairies with 100-1250 dairy cows per farm each delivering between 1 and 23 colostrum samples. Colostral IgG concentration was determined with ELISA.

The results showed that 82% of the samples harvested during the 5 hours following calving contained the recommended level of IgG (Løkke et al., 2016), whereas only 51% of the colostrum collected later than five hours after calving contained more than 50 g IgG/L (Figure 1).

At dairies with more than 5 hours between milkings an extra effort is necessary to ensure high quality colostrum; a mobile milking unit can be good solution. A scheme for milking is depicted in Figure 2.

(Løkke, Engelbrecht, Wiking, 2016, J. Dairy Res. 83:58-66)

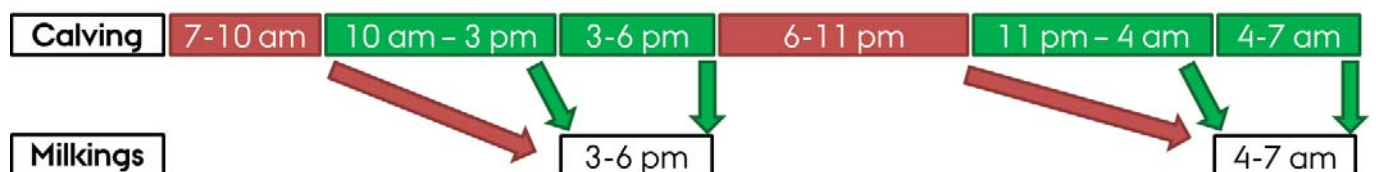


Figure 2. Scheme for optimizing high quality colostrum at dairies with two daily milkings.

Fresh cows calving in the green intervals can be milked in the ordinary milking period. Fresh cows calving in red periods needs an extra effort to increase the likelihood of good colostrum.

Short interval from calving to milking is essential for high IgG content in colostrum

Mette Marie Løkke,¹ postdoc, PhD; Rikke Engelbrecht,² PhD; Lars Wiking,¹ Associate Professor, PhD

¹Department of Food Science, Aarhus University, AU-Foulum, Denmark; Western Union of Agricultural Services, Ringkøbing, Denmark

Introduction

Colostrum of good quality is pivotal for the health and growth of the newborn calf. In order to ensure enough mass of IgG fed to the calf, the recommendation is to feed 3 to 4 L of colostrum with an IgG concentration of >50 g/L within 4-6 hours after parturition. However, the content of antibodies in colostrum decreases as time passes from calving, and it is therefore important to milk as soon as possible after parturition. This is manageable to reach this goal on larger farms, where the milking system is used most of the time. However, at smaller farms, where milking is done in a few shorter periods each day, an extra effort must be made to milk fresh cows as soon as possible after calving. The aim of this study was to investigate the effect of time passed from parturition to milking and from these data propose a scheme that can be used at smaller farms to increase the likelihood of harvesting colostrum with a high content of antibodies.

Materials and methods

Twenty-one farms with 100-1250 dairy cows per farm participated in the study in September through November 2013 delivering between 1 and 23 colostrum samples from each farm. The included dairy farms were positioned <2 h drive from the University Laboratory (AU-Foulum, Denmark). Colostrum was harvested as the farmer would normally do it, and at latest 24 h after calving. For each sample the time for calving and milking was noted by the farmer; 92% of the samples were collected at latest 13 h after calving. Colostral IgG concentration was determined with ELISA (Bovine IgG ELISA quantitation Set, Cat. No. E10-118; Bethyl Laboratories Inc, Montgomery, TX). The results were expressed as IgG concentration in g/L.

Results

The results showed that the IgG content decreased at increasing time from calving to milking ($R^2 = 0.15$). Only 51% of the colostrum collected later than five hours after calving contained more than 50 g IgG/L, whereas 82% of the samples harvested during the five hours following calving contained the recommended level of IgG (Løkke et al., 2016). In practice it is however difficult to milk all fresh cows at latest 5 hours after calving. To get around this, fresh cows can be milked right after startup of the milking system and cows that give birth during the milking period can be milked at the end. In the period after the milking system is turned off until five hours before next milking, a mobile milking unit can be used.

Conclusion

The results emphasize the importance of milking as soon as possible after calving. By changing routines at the farm it is possible to milk most fresh cows within five hours after calving and thereby increase the likelihood of collecting high quality colostrum from 50% to around 80%.

Løkke, MM, Engelbrecht, R, Wiking, L (2016). Covariance structures of fat and protein influence the estimation of IgG in bovine colostrum. *Journal of Dairy Research*, 83, 1:58-66.