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Calf Note #38 – The "18 pound rule" of colostrum feeding

Introduction

Feeding enough high quality colostrum is an important part of rearing dairy calves. But determining the quality of colostrum to ensure an adequate intake of IgG to ensure adequate transfer of passive immunity can be a real challenge - especially when veterinarians and other dairy professionals are telling producers that calves should be fed 1 gallon (~4 liters) of colostrum as soon as possible after birth - but always within the first 2 hours.

Measuring the amount of IgG in colostrum can be estimated on the farm by using a colostrometer (see Calf Note #22 "Using a colostrometer"). However, sometimes the colostrometer can be unwieldy, time consuming or difficult to interpret. So, other methods of estimating colostrum quality are useful.

Researchers at Washington State University evaluated colostrum from 919 Holstein cows and related the characteristics of the colostrum (including IgG concentration) to various characteristics of the cows. The researchers reported that there was a negative relationship between the volume of colostrum produced by the cow and the amount of antibody it contained.

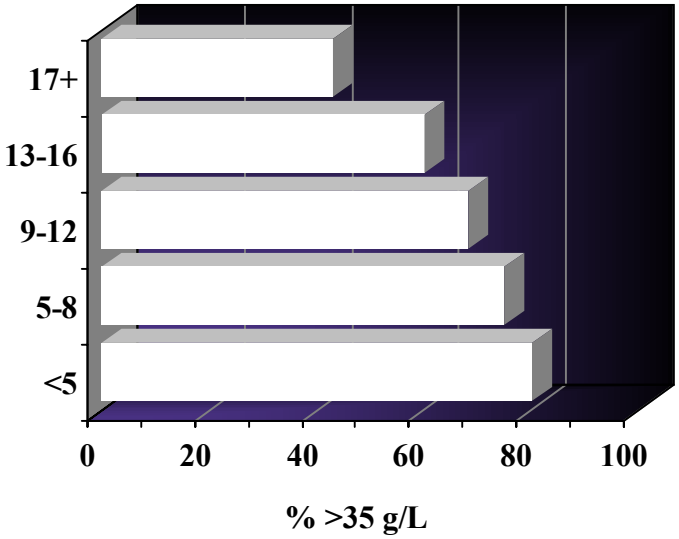

Figure 1. Proportion of first-milking colostrum samples containing >35 g of IgG_1/L of IgG1 when characterized into categories of colostrum amount produced (<5 lb., 5-8 kg., etc.). From Pritchett et al., 1991.

Other researchers have also reported this negative relationship, although more recent data suggests no relationship between volume and IgG content (Jardon et al., 1998). One of the important findings was that when cows produced more than 8.5 kg of colostrum (about 18 lbs.), the chances that the colostrum contained sufficient IgG_1 to provide adequate passive immunity declined from 77% to 64% of all samples. The researchers classified "sufficient IgG_1" as 35 grams of IgG_1 per liter of colostrum. At very high amounts of colostrum produced (> 17 kg), the chances of obtaining high-Ig colostrum are < 50% (Figure 1). So, when you collect first-milking colostrum from your fresh cows, be sure to check the amount of colostrum produced. If the amount of colostrum exceeds 18 lbs. (8.5 kg), then consider using it for later feedings. Use stored, high quality colostrum for the first feeding instead.

This measure of colostrum volume should be used along with other estimates of colostrum quality (e.g., colostrometer) to get a better picture of overall colostrum quality.

References

1. Pritchett, L. C., C. C. Gay, T. E. Besser, and D. D. Hancock. 1991. Management and production factors influencing immunoglobulin G1 concentration in colostrum from Holstein cows. J. Dairy Science. 74:2336-2341.

2. Jardon, P. W., J. Robison and J. Myake. 1998. Evaluation of specific gravity as a screening test for colostrum. Bovine Pract. 31:196.