

Public Abstract

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EFFECT OF COLOSTRAL ADMINISTRATION PRACTICES ON SERUM IMMUNOGLOBULIN CONCENTRATIONS IN DAIRY CALVES

The type of placenta in cattle allows minimal transfer of immunoglobulins which are essential for passive immunity to different pathogens in the newborn calf. Thus calves acquire these immunoglobulins through ingestion of colostrum. Despite the accumulated understanding of the factors which affect the transfer of immunoglobulins and their importance, approximately 35-40 % of US dairy calves have inadequate passive transfer. Thus, either the total immunoglobulin mass being fed to the calves is inadequate or colostrum administration practices require more concerted effort than most farmers perform. The main objectives of the presented study were to determine the role of immunoglobulins present in the calf's blood before feeding colostrum, determine the optimum method to assess the concentration of colostrum immunoglobulins and evaluate factors affecting transfer from colostrum to the calf. There was no apparent link between presence of immunoglobulin in the blood of the calf and common pathogens known to be transmitted across the placenta. The electronic refractometer had more advantages over the hydrometers or weight of first milking colostrum as a test method to identify colostrum samples with low IgG concentrations (<50 g/L). At least 150 to 200 g of colostrum immunoglobulin is required for adequate passive immunity transfer in tube fed calves. Calves ingesting 3 L at first feeding and 3 L at 12 hours was resulted in a majority of calves receiving adequate immunity through colostrum.