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

Munashe Chigerwe

Dr. Jeffrey W. Tyler, Dissertation Supervisor

ABSTRACT

Despite the accumulated understanding of the factors which affect passive transfer of colostral immunoglobulins and its recognized importance in dairy calves, approximately 35-40% of US dairy calves have inadequate passive transfer of colostral immunoglobulins. The objectives of this research were 1) determine the frequency and role of precolostral serum immunoglobulin concentration in dairy calves, 2) Compare various methods in assessing colostral immunoglobulin concentration, 3) determine the amount of colostral IgG required for adequate passive transfer of colostral immunoglobulins in calves fed colostrum by oroesophageal tubing and evaluate other accepted factors on passive transfer of colostral immunoglobulins in dairy bull calves, and 4) determine factors affecting serum IgG concentrations in bottle fed heifer calves.

There was no apparent link between precolostral serum immunoglobulin against common infectious agents known to be transmitted transplacentally. The weight of first milking colostrum as a test method has low sensitivity, thus its use in identifying colostrum with low IgG concentration is not justified. At least 150 to 200 g of colostral IgG is required for adequate passive transfer of colostral immunoglobulins in tube fed calves. Probability of FPT in calves ingesting 3 L at first feeding and 3 L at 12 hours was < 0.05 even at low colostral IgG concentrations bottle fed calves.