

FACTS ABOUT FPT IN CALVES

Failure of Passive Transfer (FPT) of Colostral Immunoglobulins in Calves

A calf is born essentially agammaglobulinemic and normally absorbs immunoglobulins from its dam's colostrum during the first 24 hours of life. These absorbed immunoglobulins protect the calf for the first 1-3 weeks of life from the onslaught of pathogens that are invariably present. Since the immunoglobulins in colostrum are concentrated from the cow's serum, they contain antibody activity to the pathogens to which the cow has been exposed or immunized. They afford no protection against the introduction of new pathogens.

The main point to consider about passive transfer in calves is that it fails to occur normally in a remarkably high number of cases. The prevalence of FPT varies with management and type of animal (beef or dairy), but is usually greater than 10% and may be as high as 40% in some dairy herds. Calves with FPT have a high risk of gastrointestinal and respiratory infections. The risk of death for calves with FPT is from 3 to 10 times greater than for calves that absorb adequate amounts of immunoglobulins. When calves dying of infections are considered, 90% have FPT.

The primary reasons for inadequate colostral immunoglobulin transfer are: 1) failure to obtain colostrum at an early enough age, and 2) ingestion of an insufficient volume of colostrum. Other factors affect the amount of colostrum absorbed, but to a much lesser degree. To prevent FPT, calves should be fed 3 liters of first milking colostrum during the first 6 hours after birth. In situations where hand feeding of colostrum is impossible, anything done to ensure nursing during the first 6 hours of life will be beneficial.

FPT can be detected in calves 24 hours after birth by measuring serum immunoglobulin. In situations where treatment is economically feasible, plasma can be given intravenously at a dosage of 20 ml/kg. If plasma is not available, 20 ml/kg of serum can be given intraperitoneally. Since antibody has a local protective effect in the intestine, colostrum should be fed as much as possible without causing scours. Administration of immunoglobulins should be done before any signs of infection, because their prophylactic effect is much greater than their treatment effect.

Suggested Criteria for FPT Diagnosis

Classification	Serum IgG₁ (mg/100 ml)	Prognosis
FPT	<800	Poor
Partial FPT	800-1600	Moderate
Normal	>1600	Good

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