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## Successful management of calf diarrhea and mortality in an organized dairy farm

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### Abstract

The mortality rate among calves up to the age of 6 months was around 15% for a period of 3 months at Base Farm, Kolahalamedu Idukki District, Kerala. The animals had clinical signs such as diarrhea, high temperature, anemia, weight loss, rough hair coat, staggering gait, weakness and debility. Examination of faecal samples and blood smear revealed the occurrence of gut as well as blood parasites. In certain calves the symptoms indicated bacterial/viral enteric infections. Conventional treatment protocols such as deworming, and administration of antibiotics/ anti haemoprotozoan drugs, could lower the mortality to a certain extent. Along with conventional treatment/management methods, oral administration of half an egg/calf/day could stop the occurrence of death in the calves completely for one month. Therefore, it is recommended to include chicken egg in the ration of calves reared in conditions prone to infections until the age of 6 months.

**Keywords:** calf mortality, diarrhea, haemoprotozoans, egg, nutritional management

### Introduction

Calf mortality is an important factor causing economic loss in commercial dairy farming. Calf diarrhea caused by pathogens like virus, bacteria and protozoa remains the main cause of calf mortality in the developing world. Calf mortality rate gets further enhanced in areas prone to infections with haemoprotozoans. Various control measures adopted in organized dairy farms to lower the calf mortality rate includes, periodic deworming, treatment with antibiotics, spraying of ectoparasiticide drugs and parenteral administration of antihemoprotozoan drugs. Various supplementation strategies are also adopted to enhance the immune response and growth rate of calves reared in farms. In the present investigation, since routine treatment and management practices couldn't improve the occurrence of death in calves, a nutritional strategy was experimentally adopted as a management measure.

### Materials and Methods

The investigation was undertaken in an instructional dairy farm at Kolahalamedu, Peerumedu Taluk of Idukki District, Kerala State. The area is located at a latitude of 9.5760° N and longitude of 77.0255° E, the altitude range is from 1100 m above sea level, with an annual rainfall of 2295 mm. The herd strength of the farm is around 150 and the animals are cross breeds having the mixed germplasm of native breeds with exotic breeds such as Jersey, Holstein Friesian and Brown Swiss. Calves are reared in individual pens until the age of 3 months and in groups in a loose house until 6 months of age. Day old weaning is practiced and they are fed with colostrum for 4 days. They are offered raw milk as per standard recommendations until 3 months of age. Calf starter and green grass is provided from two weeks of age. Deworming is practiced by rotation of anthelmintic drugs as per standard schedule. The mortality rate among calves up to the age of 6 months was increasing and it reached around 15% for a period of 3 months from March 2020 to May 2020. Hence it was decided to adopt various treatment measures and management strategies to bring down the death rate.

### Results and Discussion

Clinical signs exhibited by the ailing calves were high temperature (103-106<sup>0</sup>F), anemia, diarrhea, weight loss, staggering gait, weakness and debility. The post mortem lesions noted were varied among animals. In most cases the abomasum was congested, mucous membranes were pale, a few calves had enlarged liver, mild cardiomegaly and congestion of intestine

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walls. In majority of the cases trachea, lungs and kidney appeared normal. Samples of faeces and peripheral blood smear, were collected from twelve of the remaining live calves for examination. Stray oocysts of coccidian and stray ova of strongyle and monezia could be identified in representative samples of faeces. In the blood smears, stray organisms of Theileria could be identified. Bipolar stained organisms suggestive of *Pasteurella multocida* were detected from the blood smear of a dead calf. The faecal samples collected from a dead calf and a sick animal were found to be negative for enterohemorrhagic *Escherichia coli*. Based on the clinical symptoms and test results, conventional treatment protocols such as deworming, spraying with acaricides and administration of antibiotics/ anti haemoprotozoan drugs were performed and this could lower the mortality rate to a certain extent. Since mortality was not under total control, as a supplementation strategy, half an egg was provided through the diet of calves.

It was noted that conventional treatment/management strategies could successfully stop the incidence of death among calves only when nutritional supplementation strategy was introduced. Introduction of chicken egg in the ration had improved the health condition, general vigour and growth characteristics of calves. Before development of antimicrobial drugs, numerous remedies were practiced as treatments for digestive disorders in calves. One such practice was to feed several fresh raw eggs daily with limited milk (Brown *et al.*, 1962) [2]. Chicken egg is having high content of protein with good biological value. The avian egg contains all of the necessary nutrients and growth factors required for the developing embryo, including antibodies that are transported from the blood of the hen into the yolk to provide immunity to the chick. Chicken egg yolk immunoglobulin called immunoglobulin Y (IgY) is similar in function to IgG with different physiochemical properties and biological activity (Barati *et al.*, 2016) [1]. Egg as a source of immunoglobulin (IgY) possesses various advantages over mammalian IgG such as convenience, high yield and cost effectiveness (Diraviyam *et al.*, 2014) [3]. Oral administration of chicken IgY was found to be effective against a variety of diarrheal pathogens such as bovine and human rota viruses, bovine corona virus and Salmonella (Xu *et al.*, 2011) [6]. Better nutritional value and high content of immunoglobulin's in egg appears to enhance the immune response of calves against haemoprotozoan organisms and enteric pathogens. However, there are reports that feeding practice with high inclusion rates of liquid egg (15% of diet) reduced the growth and performance of calves while levels of 10% or less did not significantly affected the growth rate (Touchette *et al.*, 2003) [5].

### Conclusion

Better nutritional value and high content of immunoglobulin's in egg appears to enhance the immune response of calves against various pathogens and thus lowers the occurrence of calf mortality in the farm. Supplementation of calves with half an egg/day appears to be a good management practice in calf rearing until the age of 6 months in conditions prone to infection with gut parasites/microbes and haemoprotozoans.

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