

EFFECTS OF PROPHYLACTIC ADMINISTRATION OF A NONSPECIFIC IMMUNE STIMULANT SUPERIMMUNE ON THE PERFORMANCE ON NEONATAL CALF DIARRHEA.

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SUMMARY

Neonatal diarrhea is one of the main causes of calf death worldwide and also of financial loss in the cattle industry. The mean incidence of diarrhea in individual herds of cattle can be as high as 80%. The main cause of neonatal calf diarrhea is infectious disease of the intestine. A study the effect of essential oil mixture (Eucalytus oil,menthol and mint oil) supplementation at different doses in milk replacer during pre-weaning period and in water during post-weaning period of the calves has been found to increase daily body gain, reduced feed intake and improved FCR and the higher doses of EOM administration less effective and uneconomical to be used(Salton,2009). Our study revealed that 70 new born calves 77.8% were positive for isolates while 20 cases 22.2% were negative for bacteriological culturing this may be due to other causes such as viruses ,parasites or as result from metabolic disorders that originated more or less from digestive origin-Coli was the most prevalent bacterial isolate was incidence of 40%. e enteropathogenic E-Coli O26 and O114 were the main microbiological cause of enteric infections in diseased calves. the efficacy of superimmune alone in treatment in neonatal calves diarrhea was found to be 70% and recurrence rate of diarrhea within 21 days post treatment was found to be 10% , while the efficacy of both super immune and marbocyl in recovery of neonatal diarrhea was found to be 86.7% and recurrence rate of diarrhea to treated calves within 21 days post treatment was found to be 16.7% ,while the efficacy of marbocyl alone in treatment of diarrhea in neonatal calves was found to be 76.7% and recurrence rate of diarrhea within 21 days post treatment was found to be 30% this may be explained on the basis of antibiotics will destroy both pathogenic bacteria and intestinal microflora leading to recurrence of diarrhea while super immune will increase immunity of gastro-intestinal tract and improve balance between intestinal microflora and pathogenic bacteria so decrease the recurrence rate of diarrhea . To control diarrhea in neonatal calves superimmune must be given as soon as possible after parturition. The best treatment of neonatal calves diarrhea is combination of super immune with antibiotic.

INTRODUCTION

Neonatal diarrhea is one of the main causes of calf death worldwide and also of financial loss in the cattle industry. The mean incidence of

diarrhea in individual herds of cattle can be as high as 80% (Cornaglia et al., 1992; Wright et al., 1995); therefore, rates of diarrhea \geq 50% are not unusual. The mortality rate was reported to vary between 1.5 and 8% (Bendali et al., 1999), although rates up to 25% have been described (Frank and Kaneene, 1993). More than 52% of diarrhea cases and about 60% of all losses occur within the first 7 to 10 d of life (Virtala et al., 1996; Bendali et al., 1999). The main cause of neonatal calf diarrhea is infectious disease of the intestine. Treatment of calf diarrhea is commonly based on the use of broad-spectrum antibiotics or other antimicrobials, either with or without concomitant liquid electrolyte therapy. Before Sir Alexander Fleming's discovery of penicillin, disorders of the intestinal tract were frequently treated with viable nonpathogenic bacteria to change or replace the intestinal microflora. Today, probiotic treatment is increasingly becoming the focus of clinical interest (Abe et al., 1995; Avila et al., 1995; Kyriakis et al., 1999). The gastrointestinal tract of newborn calves is sterile; microbes are introduced from the environment and from the dam's birth canal and colonize the gastrointestinal tract (Ewaschuk et al., 2004; Ouwehand et al., 2002). By 3 days after birth, coliforms, Lactobacilli, and Bifidobacteria are the predominant flora in the feces (Ouwehand et al., 2002; Vlková et al., 2006). **However, in the neonatal calf the microbial population is in transition and extremely sensitive.** Neonatal calf diarrhea, which affects mostly animals under 6 weeks of ages, is easy to diagnose, and is characterized by frequent removal of soft feces (less than 10% dry content) (Millemann 2009). Many factors, including the calf's exposure to pathogens, the weather conditions, the production systems and the nutritional and immunological condition of young calves, impact on the occurrence of diarrhea (Barrington et al., 2002). Both, the number of calves with diarrhea and the severity of the disease increase during the winter (Millemann, 2009). Several pathogens, alone or most often in combination with other pathogens, are etiologic agents of diarrhea in young calves. Most of these agents are predominantly transmitted by the fecal-oral route from the feces of infected animals to the mouths of susceptible animals (Barrington et al., 2002). A precise diagnosis is often not necessary because it does not affect the treatment (usually rehydration and antibiotic treatment).

However, at farm level, diagnosis is important and influences on the selection of management measures (Millemann, 2009). The use of phytogenic super immune and probiotics have increased as an alternative therapy that prevents the use of antibiotics and thus, reduces the emergence and spread of antibiotic-resistant bacteria and residual antibiotics in dairy foods, meat and milk (Abu-Tarboush et al., 1996). However, a consensus has not been reached as to whether probiotics and phytogenic substances may be effective in reducing the prevalence of gastrointestinal diseases in young calves. A newborn calf's treatment in the first few hours and days of its life can have a significant impact on its performance and health as it matures and enters different segments of a beef or dairy production cycle². A calf is born with a sterile gut and respiratory system. As soon as it is born, it is exposed to both pathogenic and nonpathogenic organisms through the nose and mouth. In intense management operations these pathogens are ubiquitous. Undifferentiated Respiratory and Enteric Diseases (URED) are prevalent infections in most commercial operations. Increasingly these organisms are resistant to most therapeutic antibiotics and are a major concern to herd health. Immunostimulants like Mycobacterium Cell Wall Fraction can play an important role in turning on the immune system to help fight disease. Precocious immune maturation as a result of MCW therapy in calves less than 24 hours of age has been demonstrated Losinger (1996). This leads to increased production and an overall decrease in the need for antibiotic therapies as demonstrated in this study. A study to the effect of essential oil mixture (Eucalyptus oil, menthol and mint oil) supplementation at different doses in milk replacer during pre-weaning period and in water during post-weaning period of the calves has been found to increase daily body gain, reduced feed intake and improved FCR and the higher doses of EOM administration less effective and uneconomical to be used (Soltan, 2009).

MATERIALS AND METHODS

Animals

Ninety calves aged ranged from 3-30 days suffering from diarrhea were used. Calves were randomly located into three groups. The first group was treated with super immune (eucalyptus oil, lavender oil, peppermint oil, glycerol trilaurate

menthol, alpha and beta pinene traumatic acid, citric acid and lemonen). The second group was treated with marbocyl . the third group was treated with the both marbocyl and super immune .

2. Bacteriological examination

Under aseptic conditions the collected fecal swabs from calves were cultured into nutrient broth and selenite F-broth at 37 c for 24 hours and then subcultured into the following media : nutrient agar ,5% cheep blood agar , MacConkey agar eosin methylene blue (EMB) SS agar and XLD agar . All plates were incubated at 37 c for 24-48 hours. The suspected colonies were picked, purified on triplicate soya agar and incubated at 37 c for 48 hour. The purified colonies were identified on the bases of morphological culture and biochemical characteristics as described by Cruckshank et al. (1982). Isolates that proved to be salmonella and E-Coli were serologically typed according to Kuffmann (1972) and Edwards and Ewing (1972).

RESULTS

Table (1) frequency of isolates from examined calves

Animal	Total NO. of examined calves	Positive cultures NO. %	Negative cultures NO. %
Diarrheic calves	90	70 77.8	20 22.2

Table (2) types and incidences of isolated pathogens from diarrhoeic calves

Animal	Total	E-Coli Spp NO. %	Salmonella Spp NO. %	Shigalla Spp NO. %	Proteus Spp NO. %
Diarrhoeic calves	90	36 40	9 10	10 11.1	15 16.7

Table(3) Serological identification of isolated E-coli and salmonella strains of diarrhoeic calves.

Enteropathogenic	No	%	
E-Coli O26	16	16/36	44.4
E-Coli O114	6	6/36	16.7
Untypable E-Coli strains	14	14/36	38.9
Salmenolla enteritidis D1	4	4/9	44.4
Untypable salmonella strain	5	5/9	55.6

Table (4) the effect of different treatments on diarrhoeic calves

Groups	Clinical recovery		Recurrence of diarrhea within 21 days post treatment	
	NO.	%	NO.	%
30 calves treated with super immune	21	70	3	10
30 calves treated with marbocyl	23	76.7	9	30
30 calves treated with both marbocyl and super immune	36	86.7	5	16.7

DISCUSSION

Diarrhea is a common problem affecting new born calves various degrees of diarrhea, depression, weakness and loss of weight were noticed during clinical investigation of diarrheic new born. Diarrhea in some cases was offensive, semi fluid, watery, yellowish, containing mucous and sometimes tinged with blood Rodostitis et al. 1994 Our study in table one revealed that 70 new born calves 77.8% were positive for isolates while 20 cases 22.2% were negative for acteriological culturing this may be due to other causes such as viruses ,parasites or as result from metabolic disorders that originated more or less from digestive origin Brobest (1975). In this study in table (2) revealed that E-Coli was the most prevalent bacterial isolate was incidence of 40% this result agreed with mentioned by Klipslein (1985), Badwi (1985) ,Byomi (1995) and Draz et al. (1999). In this study proteus spp. , shigella spp. And salomella were 16.7% , 11.1% and 10% respectively these results agreed with finding of Snodgrass et al. (1986)

These results recorded in table (3) revealed that the enteropathogenic E-Coli O26 and O114 were the main microbiological cause of enteric infections in diseased calves. This result agreed with that previously reported by Amer et al. (1985) and Snodgrass et al. (1986). Our results agreed with Johnston et al. (1976) who recorded that bacteriological examination of calves suffering from enteritis were found to be positive for either salmonella enteritidis and E-Coli In this study in table (4) reveals the efficacy of superimmune alone in treatment in neonatal calves diarrhea was found to be 70% and recurrence rate of diarrhea within 21 days post treatment was found to be 10% , while the efficacy of both super immune and marbocyl in recovery of neonatal diarrhea was found to be 86.7% and recurrence rate of diarrhea to treated calves within 21 days post treatment was found to be 16.7% ,while the efficacy of marbocyl alone in treatment of diarrhea in neonatal calves was found to be 76.7% and recurrence rate of diarrhea within 21

days post treatment was found to be 30% this may be explained on the basis of antibiotics will destroy both pathogenic bacteria and intestinal microflora leading to recurrence of diarrhea while super immune will increase immunity of gastro-intestinal tract and improve balance between intestinal microflora and pathogenic bacteria so decrease the recurrence rate of diarrhea .

CONCLUSION

To control diarrhea in neonatal calves superimmune must be given as soon as possible after parturition. The best treatment of neonatal calves' diarrhea is combination of super immune with antibiotic.

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