RESEARCH ARTICLE

PREVALENCE OF ESCHERICHIA COLI F5 ANTIGEN IN CALVES

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ARTICLE INFO	ABSTRACT
	Diarrhoea in calves is one of the most important disease complexes evident by rapid and frequent passage of semisolid and liquid faeces material through Several studies have addressed the high distribution of *Escherichia coli (E. coli)* strains in infectious calf diarrhoea the gastrointestinal tract. In the present study, the prevalence of *E. coli* F5 antigen was studied by strip test based on the principle of lateral immuno-chromatography in the calves of in and around areas of Jabalpur, M.P., India. The study was conducted on a total of 220 calves below 3 months of age, belonging to various dairy farms and Goshalas. History revealed that out of 220 calves, 50 were suffering from diarrhoea. The faecal samples of these 50 diarrhoeic calves were examined with the help of *E. coli* F5 (K99) immuno-chromatographic test strips. The overall prevalence *of E. coli* F5 antigen was found to be 50 % and it was higher in male as compared to female calves. The results of age wise prevalence showed that the presence of *E.coli* F5 was found to be highest in the calves up to 15 days of age followed by calves from 16 to 30 days of age group then in calves from 1 to 2 months of age group and no infection was found in calves of 2 to 3 months of age group.

INTRODUCTION

Diarrhoea in calves is one of the most important disease complexes evident by rapid and frequent passage of semisolid and liquid faeces material through the gastrointestinal tract. It involves both increase in motility of gastrointestinal tract and absorption of fluid with loss of electrolytes, particularly sodium (Na^+) and water (Rang *et al.,* 2003) which may lead to disease and eventually death of calves. The effectiveness of treatment and control of herd epidemics of diarrhoea in calves is threatening and causes heavy economic loss (Radostits *et al.,* 2010). Infectious agents are considered to be the most commonly detected causes of calf diarrhoea (Schroeder *et al.,* 2012).Several studies have addressed the high distribution of *Escherichia coli (E. coli)* strains in infectious calf diarrhoea (Nguyen *et al.,* 2011). *E. coli* strains produce a variety of adhesions that promote attachment of bacteria to cell surface receptors. The fimbrial adhesion F5 (K99) plays a role in colonization of enterotoxigenic *E. coli* in epithelial cells of small intestine of calves. The strip test based on the principle of lateral immuno-chromatography that can be very easy method for detection of the attachment factor F5 or toxin.

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Whenever a small number of analysis is to be performed, chromatographic lateral flow assay is preferable because of its simplicity, rapidity, sensitivity and specificity. In the present study, the prevalence of *E. coli* F5 antigen was studied in the calves of in and around areas of Jabalpur, M.P., India.

MATERIALS AND METHODS

The study was conducted on a total of 220 calves below 3 months of age, belonging to various dairy farms and Goshalas in and around areas of Jabalpur (M.P), India. The age, breed, sex, history of deworming and feeding habit of the calves were recorded. History revealed that out of 220 calves, 50 were suffering from diarrhoea. The faecal samples of these 50 diarrhoeic calves were examined with the help of *E. coli* F5 (K99) immuno-chromatographic test strips (Bio X diagnostics, Belgium) to detect *E. coli* F5 attachment factor in the faeces.
This assay is a immune chromatographic lateral flow immuno assay containing strips coated with coloured gold colloidal reagents labelled with monoclonal antibodies species for bovine *E.coli* F5. There are two regions and a control region, on the membrane of the test strips. The first line develops rapidly when *E.coli* F5 is present in specimen. If *E.coli* F5 is not present, no T line develops in the test region but the control line (C line), should always appear.

RESULT AND DISCUSSION

Out of 50 calves tested, 25 were found positive for *E. coli* F5 antigen. Therefore, the overall prevalence *of E. coli* F5 antigen was found to be 50 per cent (25 out of 50 calves).

Prevalence of *E. coli* infection in calves

No. of calves screened	No. of calves positive	Prevalence (%)
50	25	50

Sex wise prevalence

The results of sex wise prevalence showed that the presence of *E.coli* F5 was found as 65 per cent in male calves (15 out of 23 calves) and 37 per cent in female calves (10 out of 27 calves).

Sex wise prevalence of *E. coli* F5 in calves

S.No.	Sex	No. of calves examined	No. of calves positive	Prevalence (%)
1	Male	23	15	65.21
2	Female	27	10	37.04

Age wise prevalence

The results of age wise prevalence showed that the presence of *E.coli* F5 was found to be highest i.e. 80 per cent in the calves up to 15 days of age (20 out of 25 calves) followed by 28.57 per cent in the calves from 16 to 30 days of age group (4 out of 14 calves), then 20 per cent in calves from 1 to 2 months of age group (1 out of 5 calves) and no *E.coli* F5 was found in calves of 2 to 3 months of age group.

Age wise prevalence of *E. coli* F5 in calves

S.No.	Age groups	No. of calves examined	No. of calves positive	Prevalence (%)
1	0-15 days	25	20	80.00
2	16-30 days	14	4	28.57
3	1-2 months	5	1	20.00
4	2-3 months	6	0	0

The evidence of prevalence of *E.coli* F5 antigen was observed in and around Jabalpur. In the present study the per cent positivity of 50% was recorded in diarrhoeic calves due to *E.coli.* The prevalence of *E.coli* infection was higher in male as compared to female calves.

However, Pal *et al*. (2012) have also reported highest prevalence (45.56%) in male than in female i.e. (43.58%). The results of age wise prevalence showed that the presence of *E.coli* F5 was found to be highest in the calves up to 15 days of age followed by calves from 16 to 30 days of age group then in calves from 1 to 2 months of age group and no infection was found in calves of 2 to 3 months of age group. The findings of Pal *et al*. (2012) also suggested similar observations in terms of the maximum prevalence up to the age of 15 days in calves (i.e. 28.75% between 4-6 days and 9.9% between the age of 13-15 days).

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