# Prevalence and Comparative Studies of Some Major Serotype of *E.Coli* from Cattle and Buffalo Calf Scour

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Abstract

A study was carried out to find the different serotype of *E.coli* isolates from the young cattle and buffalo calves affected with calf scours. Different strains of *E. coli* were isolated from 30 cases of calf scour from both cattle and buffalo calves each. All the isolates of *E. coli* were typed for 'O' antigen. The relationship of serotypes of *E. coli* to each case showed that two of the twenty six serotypes were common and appeared most virulent in both the species.

**Keywords**: Calf scour, *E.coli*, Serotype, Calves.

## Introduction

Colibacillosis is one the important diseases in new born calves, piglets, lambs and foals caused by pathogenic serotypes of *E. coli* (Carlton, 1992) and characterized by marked prostration profuse diarrhea and septicemia. The most commonly found and extensively studied enteropathogens for calf scours are enteropathogenic *Escherichia coli* (EPEC) (Bellows et al., 1987). Enterotoxigenic *Escherichia coli* produces severe diarrhoea in calves mainly during the first two weeks of life and even some reports are available at the highest frequency of *E. coli* occurs in calves younger than three days old (Snodgrass et al., 1986).

Serotyping of *E. coli* occupies a central place in the history of this pathogen (Lior, 1996). Prior to the identification of specific virulence factors in diarrhoeagenic *E. coli* strains serotype analysis was the predominant means by which pathogen strains were differentiated. According to modified Kauffman scheme, *E. coli* is serotyped on the basis of their O (somatic), H (flagellar) and K (capsular) surface antigen profiles (Lior, 1996).

## Material and Methods

The samples were collected from cattle and buffalo calves of villages of Anand District of gujarat state and Organisation farm of Anand Agricultural University. Out of total 286 cattle calves and 677 buffalo calves, 122 (42.65 %) and 314 (46.38 %) calves were found positive for calf scours respectively. For *E.coli*, samples were collected using a sterilized Hi media swab. These swabs were transported on ice to the laboratory. Blood agar was used for striking of the swab and then colony on Blood agar was striked off and was inoculated on the Mac Conky agar and incubated at 37°C overnight. The pink colonies (i.e. lactose fermenting colonies) on the Mac Conky agar were then inoculated on the EMB (Eosin and Methylene Blue) agar and incubated at 37°C overnight. The metallic sheen type colonies were positive for E.coli. Amongst all the *E. coli* isolates 30 isolates each of cattle and buffalo diarrheic calves were sent to National Salmonella and Escherichia Centre, Central Research Institute, Kasauli (Himachal Pradesh) for serotyping.

## Result

*E. coli* of specific sero group can be associated with reproducibility of certain clinical syndrome. The distribution of different serotypes of E. coli varies with geographical regions and their prevalence in man and animals in a particular area. A shift in 'O' sero groups along with their virulence factors has also been observed (Soderlind et al., 1988).

All the isolates of E. coli were typed for 'O' antigen. In diarrheic cattle calves the prevalence of serotype O56 and O82 was highest three (14.28 %) of both the isolates followed by two each (9.52%) serotype of O8 and O164. While a single (4.76%) serotype of O66, O17, O5, O169, O76, O171, O103, O20 and O100 were found. Also there were five isolates which were untypeable, five of the isolates were not viable and one isolate (4.76 %) was rough.

In diarrheic buffalo calves the prevalence of serotype O56 was highest three (14.28 %) followed by two (9.52 %) serotypes of O82. While a single (4.76 %) serotype of O97, O13, O89, O131, O5, O48, O169, O25, O3, O8, O4, O16 and O132 were found. Also

there were five isolates which were untypeable, five of the isolates were not viable and two isolate (9.52 %) was rough.

Among all the serotype O 56 and O 82 were in common in both cattle and buffalo calves and were more as compare to the other serotypes.

**Table-1. Serotype of *E.coli* isolates from diarrheic cattle and buffalo calves.**

| *E.coli* serotypes of diarrheic cattle calves | | *E.coli* serotypes of diarrheic buffalo calves | |
|---|---|---|---|
| O 56 | 3 | O 56 | 3 |
| O 82 | 3 | O 82 | 2 |
| O 8 | 2 | O 97 | 1 |
| O 164 | 2 | O 13 | 1 |
| O 66 | 1 | O 89 | 1 |
| O 17 | 1 | O 131 | 1 |
| O 5 | 1 | O 5 | 1 |
| O 169 | 1 | O 48 | 1 |
| O 76 | 1 | O 169 | 1 |
| O 171 | 1 | O 25 | 1 |
| O 103 | 1 | O 3 | 1 |
| O 20 | 1 | O 8 | 1 |
| O 100 | 1 | O 4 | 1 |
| UT | 5 | O 16 | 1 |
| Not Viable | 5 | O 132 | 1 |
| Rough | 1 | UT | 5 |
| | | Not Viable | 5 |
| | | Rough | 2 |

In the present study, among the isolates the serogroups viz. O5, O22, O18, O25, O48, O89, O20 and O17 have been also reported by Srivastava and Arya (1979) from calf diarrhoeal cases. Of these, serogroup O5 have been also reported by various other workers (Kaura et al., 1991). The serogroup O22 has been also reported by Hussain et al. (2003) and Wani et al. (2004) from cases of neonatal cow calf diarrhoea. The serotypes O8, O171, untypable, O20, O48 were in agreement with findings Palampur area in India (Kumar Sharma et al., 2007). Similarly the different E.coli serotypes from diarrheic calves in agreement with the findings in present study were O8 and O20 (Ueda et al., 1981); O5, O17, O22 and O25 from diarrheic buffalo calves of Gujarat (Latif, 1982); O8, O97 and O132 (Panda and Panda, 1987); O20 (Shah 1989); O8, O17, O25, and O169 from diarrheic cattle calves and O25 from diarrheic buffalo claves (Kaura et al., 1991);O4, O8, O20 and O25 of diarrheic calves and O8 and O132 of diarrheic buffalo calves and O8 of healthy buffalo calve (Joon and Kaura, 1993); O3, O8, O20, O22, O25, O86, O89, O100, O131, O132, O162, O164 and O165, untypable and rough (Wani et al., 2004); O8, O20, O48 and O171 (Kumar Sharma et al., 2006). It has been concluded that the prevalence rate of O 56, O 82, O 8 and O 164serotype of *E.coli* isolates from both the cattle and buffalo diarrheic calves was high in Milh pocket area of Anand district of Gujarat State. The serotype O56 and O82 which are in highest prevalence in the present study were not been reported by any of the worker in past.

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