CHAPTER 5
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Generally, most strains of *E.coli* are harmless and live in the intestines of healthy humans and animals. But some of these strains produces a powerful toxin that can cause severe illness. It has been responsible for a large number of food contamination outbreaks in a wide variety of countries. Infections due to enterohaemorrhagic (causing intestinal bleeding) *E. coli*, is an important foodborne diseases which have emerged over the last decades. Although their incidence is relatively low, their severe and sometimes fatal health consequences, particularly among infants, children and the elderly, make them among the most serious foodborne infections. Pathogenic *Escherichia coli* is recognized as one of the most important food borne human pathogens (Cray & Moon, 1995). Data from US estimated 20,000 cases may occur in annually. In some parts of the U.S., particularly the northernmost states, this infection is not rare. It may well be a global problem. Now common in Canada, the infection is being increasingly recognized in Europe, South Africa, the southern regions of South America, Australia and Japan. In a semi urban slum of Varnasi, India, 53.7% of milk samples from supplementary milk feeds of 149 children were bacterially contaminated *E. coli* (Ray et al. 2000). Human exposure to pathogenic *E coli* via food, water, direct contact with manure contribute to major public health problems. Cattles are considered as an important natural reservoir of pathogenic *E. coli*. In the past isolation of pathogenic *E.coli* was reported from human, food and other diarrhoeic and non-diarrhoeic animal sources. Present study was conducted to observe the occurrence and virulent gene profile of pathogenic *E.coli* from Dairy herds feaces collected from Solan Distt. of Himachal Pradesh in India. In order to achieve these objectives a total of , 50 samples were collected from feaces of various herd’s , thus collected samples were processed for isolation & biochemical characterization. Out of 50 samples, 36 (72%) found positive for *E.coli* as discussed under Table (4.3). All isolates were antigenically characterised for O antigen Table (4.4)
and Out of 36 *E. coli* strains, 5(13.8%) were typed as O153 and five other strains 5(13.8%) were characterized as O11, three strains 3(8.3%) were found to be O60, whereas three more 3(8.3%) strains were belonging to O90 serogroup. Another 3(8.3%) found to be O91. Three sets each containing 2 strains (5.5% each) were found to belong O147,O4& O6 serogroups whereas strains of *E. coli* were typed as O35, O135& O106. Rest 8(22%) strains were found to be untypable *E. coli*. Among 36 *E.coli* strains only 5(13.7%) were carring either stx1, stx2, eaeA, hlyA gene. It has been revealed from present study that 4 strains (11%) were possessing eaeA gene and only 1(2.7%) strains was carring stx2 gene. In previous study, *E. coli* was isolated from 58% diarrhoeic lambs in India (Wani et al. 2004). The present finding is in agreement with other reports who recorded (6%) in diarrhoeic lambs (Wani et al. 2003). However, other reports have higher prevalence rate of STEC 37% of bovine isolates being positive for STEC in India (Bhat et al. 2008). These differences could be due to limited number of samples investigated in present report. The isolated serogroups in the present study were O4, O6, O11, O35, O60, O90, O91, O106, O135, O147, O153. Supporting present findings O60 serogroup was also isolated as STEC from diarrhoeic sheep in India (Bhat et al. 2008). In present study O60 was negative for stx1 and positive for stx2 and study conducted by (Bandyopadhyay et al. 2009) O60 found positive for presence of both of the genes. Similarly, (Wani et al. 2003) Recovery of number of O60 may be a true indication of its potentiality to be an emerging pathogenic serogroup. Similar finding was also recorded in yak (Bandyopadhyay et al. 2009). Among all 1 isolates of O153 was found positive for eaeA gene in present study similar findings were reported by (Wani et al. 2004) in which one strain of O153 was found positive for eaeA genes. This indicates that these isolates could be more virulent in humans as eaeA gene may be required for the expression of full virulence of STEC for humans (Ramamurthy et al., 2008). In another study by (Wani et al., 2005) O6, O35, O60, O91 found positive for these virulence gene used for PCR analysis. In this study O60 was positive for stx2 genes, and in contradiction to another reports O60 found positive for eaeA gene, while O91 was positive for stx1. This contradiction may be associated with climatic, geographical & other environmental
factor. ETEC strains were regarded as the major pathogen to diarrhoea in new born calves, lambs, foals and piglets (DebRoy and Maddox 2001). About 13.7% of *E. coli* harbouring specific gene(s) for EHEC was recovered from the faeces in the present study. This finding could not be compared due to unavailability of previous reports. Presence of *eaeA* gene in *E.coli* isolates indicated that these isolates could be more virulent for humans. This is really a grave concern for the village peoples in India, who share a physically close relationship with the attle.

**Future Prospective**- Hence pathogenicity of *E.coli* considered as multifactorial i.e. depends upon various virulence attributes so that the other factors should be taken into consideration, for future similar studies which creates an useful reporting system for the factors responsible for the pathogenicity of pathogenic *E.coli*. 