

Research article

MOLECULAR AND IMMUNOLOGICAL STUDIES OF PATHOGENIC *ESCHERICHIA COLI* IN MEAT SAMPLES COLLECTED FROM DIFFERENT LOCALITIES OF LAHORE

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Escherichia coli (*E. coli*) is the predominant non pathogenic facultative flora of the human intestine. A minority of *E. coli* strains are capable of causing human illness by producing several different toxins. *E. coli* O157:H7, an emerging cause of food-borne diseases with the occurrence of an estimated 20,000 illnesses and 250 deaths each year in the USA, has now been reported from several developing countries including Pakistan. Meat contamination occurs during slaughtering, processing and storage due to ineffective sanitary and handling practices. This research work was based on Microbial, Immunological screening and Molecular study of pathogenic bacteria *E. coli* in meat samples (Beef, Mutton, Quail and Fish). Three hundred Meat samples were collected from different localities of Lahore. Tryptic soy broth (TSB) and MacConkey agar was used for growth and identification of *E. coli* while Enriched media (mEC) supplemented with Novobiocin, broth was prepared for isolation of *E. coli* O157:H7. Out of 300 samples, 225 samples were identified as contaminated with *E. coli* by culture method. Polyclonal antibody production against pathogenic *E. coli* O157:H7 was performed by immunizing rabbits with pure grown culture of pathogenic *E. coli* O157:H7. Immunological studies {Dot Blot assay and Enzyme Linked Immunosorbent Assay (ELISA)} were performed for all meat samples by using produced polyclonal antibody and verified the results by using commercial monoclonal antibody (anti *E. coli* O157:H7) which confirmed the presence of pathogenic *E. coli* in collected contaminated meat samples. Molecular studies include DNA and RNA extraction by using commercial kits. To study genomic DNA band patterns and RNA analysis of pathogenic *E. coli* O157:H7, agarose gel electrophoresis was performed. Crude proteins were extracted from pure culture of *E. coli* O157:H7 grown on selective media and their band patterns were observed by resolving on SDS-Polyacrylamide gel electrophoresis.

Key words: *Escherichia Coli*, Pathogenic, Molecular, Immunological, Electrophoresis, Monoclonal, Antibody, Polyclonal.

Introduction

Escherichia coli (*E. coli*) being a microbial, commensal organism, abundant in the lower digestive tract of both humans and animals, was firstly described in 1885 by German paediatrician Theodor Von Escherich (1857-1911). It is important in suppressing the growth of

harmful bacterial species and vitamins synthesis (Chen and Frankel, 2005). *E. coli* belongs to the family *Enterobacteriaceae* which also includes many other pathogens such as *Salmonella*, *Shigella*, and *Yersinia* (Ewing, 1986). *E. coli* is commonly non virulent but some strains have adopted pathogenic or toxigenic virulence factors that make them virulent for humans and animals. *E. coli* are a Gram negative bacteria that can be distinguished serologically on the basis of their 'O' (lipopolysaccharides) and 'H' (flagellar) antigens

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