SEROTYPES OF *E. COLI* FROM VARIOUS FISH AND READY-TO-EAT (RTE) FISH FOOD PRODUCTS

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ABSTRACT

A study was conducted for evaluation of major serotypes of *E. coli* from various fish and Ready-To-Eat (RTE) fish food products. A total of 184 samples comprising 96 raw fish and 88 ready- to-eat (RTE) fish products were collected from Ludhiana and other parts of Punjab and were subjected to test for *E. coli* employing suitable microbiological methods. All the isolates of *E. coli* were typed for 'O' antigen. Results of serotyping revealed a total of 15 different serotypes among the *E. coli* isolates. More variation was observed among isolates from raw fish samples (12 serotypes) while RTE fish products harboured only 5 different serotypes.

KEY WORDS: *E. coli,* serotypes, prevalence, fish and RTE fish products

INTRODUCTION

There are various pathogens responsible for food borne enteritis and among various enteric pathogens, diarrhoeagenic *E. coli* belongs to the most common bacteria causing intestinal infections in both developing and industrialised countries. *E. coli* is a heterogeneous group of bacteria whose members are a part of the normal microflora of the intestinal tract of humans and animals but certain subsets of this bacterial species have acquired genes that enable them to cause intestinal or extra intestinal disease (Kaper et al., 2004). Serotyping of *E. coli* becomes of prime importance from epidemiological study point of view. Hence, the present study was undertaken to ascertain serotypes of *E. coli* from fish and fish products.

MATERIALS AND METHODS

A total of 184 samples comprising 96 raw fish and 88 ready-to-eat fish products were collected aseptically. Samples were transported to laboratory on ice and stored at -4°C till further processing. All samples were processed for isolation of *E. coli*, within 24 hr. Swabs of slime layer, gills and muscle parts of raw fishes and ready to eat (RTE) weighing approximately 50 g were collected in sterile zipper polythene pack from retail road side food points/dhabas, meat shops from various parts of Ludhiana, under standard aseptic procedure.

For isolation of *E. coli* Mac Conkey Lactose Broth (MLB, Hi-media, Childs and Allen (1953)) was used as enrichment broth and Eosin Methylene Blue Agar (EMB, Hi-media, Levine (1921)) was used as selective and differential media. *E. coli* isolates exhibited nucleated colonies with dark centre with a distinctive metallic green sheen on EMB. All the 54 isolates, 47 from raw fish samples, and 7 from ready- to-eat fish product were sent to National Salmonella and Escherichia Centre, Central Research Institute (CRI), Kasauli (Himachal Pradesh) for serotyping. For this isolates were sent to CRI as stab culture on semisolid agar.

RESULTS AND DISCUSSIONS

Seventeen different serotypes (12 serotypes ie O11(2), O17(1), O28(4), O41(1) ,O44(1) ,O58(1) ,O69(26) ,O103(1), O168(1), O170(1) ,UT(7) and Rough(1) from raw fish and 5 serotypes ie. O5(1) ,O44(1), O100(1) ,O172(3) and UT(1) from RTE) were identified. Two serotypes 044 and UT were found in both raw fish and RTE fish products which perhaps indicate cross over contamination of RTE fish foods, other ten serotypes were exclusively isolated from raw fish and three 05,0100 and

0172 were isolated from RTE only.

The results of this study revealed distribution of different serotypes of *E. coli* in a geographical region and their prevalence in man and animals in a particular area varies and a shift in 'O' sero groups with their virulence factors has also been observed. Some of Serotypes like O5 and O103 were found to be associated among various non -O157:H7 type human diseases (Nataro and Kaper,1998), were also isolated from samples of fish and RTE fish products of the area, this indicates that the fish and RTE fish products are harboring potential pathogenic *E.coli* and a more intensive study of enteritis and food poisoning cases in the area with associated causative agent and their virulence potential is needed and there is a need of necessary intervention to ensure fish food safety and to safeguard public health.

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