ABSTRACT

Diarrhea is of special concern in the developing nations including India. Although *Yersinia enterocolitica* is a known pathogen to cause diarrhea and gastroenteritis, scanty literature is available about the pathogen in the context of diarrhoeal illness in Indian scenario. The present work was carried out to study the occurrence of *Yersinia enterocolitica* in stool samples obtained from diarrhea patients residing in and around Chandigarh. A total of 495 stool samples were collected. The stool samples were subjected to solid enrichment and alkali treatment. To identify the bacteria belonging to family Enterobacteriaceae, the samples were cultured on MA, XLD and SS agar. The bacteria were then subjected to Gram staining, catalase test and oxidase test. 285 colonies showed the characteristic features of family Enterobacteriaceae, that is, they were gram negative and gave positive catalase test and negative oxidase test. This was followed by motility test and urease test and 8 samples were observed to contain *Y. enterocolitica*. The bacterial species was confirmed by a number of biochemical tests. The pathogenicity of the bacterium was tested by Congo red dye uptake test and esculin hydrolysis. 5 out of 8 samples were shown to harbor pathogenic strain of the bacterium. These results were verified from Pasteur Institute, Paris. The pathogenic strain belonged to the biotype 1B and serotype 7, 8-8-13-8, 19. The non-pathogenic strain belonged to the biotype 1A and serotype 41, 42-41, 43. Molecular characterization was also done to further support the results. All the 8 strains showed 16s RNA gene and 38 kDa outer membrane protein irrespective of the pathogenicity as revealed by PCR and SDS-PAGE. The 5 pathogenic strains revealed the presence of *ail* gene and 17 kDa outer membrane protein. Similar to the human smaples, pig throat samples were collected and analyzed for the presence of pathogenic and non-pathogenic *Y. enterocolitica*. Out of the 22 pig throat swabs, 3 strains of the bacterium were identified. Among these three two were proved pathogenic and one non pathogenic by Congo red uptake test and esculin hydrolysis. These results were
again confirmed by Pasteur Institute, Paris. The pathogenic bacteria belonged to
biotype 1B and serotype 7,8-8-13-18,19. The results of human samples were
further ascertained by in vivo rabbit ileal loop experiment. Histopathological
studies revealed destruction of villus architecture and inflammatory cell
infiltration in the section of Y. enterocolitica exposed intestines.
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