

Virulence, pathogenicity, antibiotic resistance and plasmid profile of *Escherichia coli* strains isolated from drinking waters

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Abstract

The aim of this study was to investigate the antibioresistance profile and the virulence and pathogenicity hallmarks of *Escherichia coli* aquatic strains. Material and methods. 50 environmental *Escherichia coli* were isolated from drinking water in Constanta, Romania. The disc diffusion susceptibility test was used to investigate the antibiotic resistance profile of these bacteria. The rapid test to nitrocephine was used for the confirmation of the presence of β -lactamases. The analysis of plasmidial DNA was performed using Wizard extraction kit. The virulence tested features were: adherence capacity on HeLa cells by Cravioto adapted method, adherence on inert substrata quantified by slime test, production of extracellular enzymes and exotoxins (haemolysins and other pore-forming toxins, amylase, mucinase, gelatinase, caseinase, aesculin hydrolysis). Results and discussions. The results of the present study have shown that aquatic medium signifies an appropriate ecological system for the existence and maintenance of a complex reservoir of antibioresistance and virulence factors with high risk for human host colonization and implications in the human health.

Keywords: *Escherichia coli*, virulence, pathogenicity, antibiotic resistance.

Introduction

Contamination of surface waters by fecal pollution raises a serious environmental and public health threat. In large complex systems, fecal pollution can be introduced from multiple sources, including sewage overflows, agricultural runoff, and urban stormwater. Identifying and eliminating the source of contamination is not straightforward because assessment of fecal pollution generally relies on a limited number of surface water samples to measure fecal indicator organism densities (Byappanahalli et al., 2003; Gordon et al., 2002). *E. coli* is a type of fecal coliform bacteria commonly found in the intestines of