

TITLE: ISOLATION AND MOLECULAR IDENTIFICATION OF *Escherichia coli* IN BIVALVE MOLLUSKS FROM THE SOUTH COAST OF THE STATE OF SAO PAULO, BRAZIL

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ABSTRACT:

Bivalve mollusks have been recognized as a high risk food by the food industry and health agencies because of infectious diseases transmission. This is due to the abilities of filtering, accumulating and concentrating contaminants present in the water. The aim of this research was to isolate and identify strains of *Escherichia coli* in mussels (*Mytella* spp) and oysters (*Crassostrea* sp) from natural banks of Cananeia estuary complex in the State of Sao Paulo, Brazil, verifying the occurrence of genes encoding virulence factors related to the isolated pathotypes that could be potentially responsible for foodborne diseases. It were collected 75 samples of mussels and oysters during 10 months, adding up to 150 samples analyzed. From the positive samples, five random colonies of *E. coli* were isolated for genotypic identification, performed by PCR and sequencing. It were identified fragments corresponding to the genes responsible for the production of alkaline phosphatase (PhoA), thermolabile toxin 1 (LT1) and 2 (LT2), thermostable toxin (ST1), verotoxin (VT1 and VT2) and adhesin intimates (eaeA); also the Einv gene encoding the invasion plasmid (plnv) and the Eagg gene for aggregative adhesion plasmid (pAA). *E. coli* was detected in 48 (32%) samples: 20 (27%) oysters and 28 (37%) mussels. From 240 *E. coli* colonies selected, 130 (54%) presented positive results for the Einv gene, present in enteroinvasive *E. coli* (EIEC); 69 colonies (29%) were positive for the gene encoding adhesion intimine (aeaA) present in strains of enteropathogenic *E. coli* (EPEC) or enterohemorrhagic *E. coli* (EHEC) and 41 (17%) were positive for VT1 and VT2, genes present in strains of enterohemorrhagic *E. coli* (EHEC). It is concluded that there is contamination by *E. coli* in samples from the Cananeia estuarine complex, with different virulence genes, evidencing the pathogenic potential of the strains found. Microbiological standards for seafood quality are regulated by Brazilian Health Regulatory Agency (ANVISA), based only on coliform densities at 45°C, coagulase-positive *Staphylococci* and *Salmonella* sp. It should be noticed that the legislation include neither limits for *E. coli* nor its different strains, leading to a concern regarding public health.

Keywords: Coliforms, EIEC, EHEC, EPEC, Virulence factors.

Development Agency: Capes.