

# DETECTION AND ANTIMICROBIAL SUSCEBILITY OF *Escherichia coli* ISOLATED FROM COASTAL WATERS OF A RIO DE JANEIRO BEACH

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## **ABSTRACT:**

*Escherichia coli* is a human pathogen able to cause a variety of infections including urinary tract infections (UTI) and bloodstream infections (BSI). Such isolates are referred to as extra-intestinal pathogenic *E. coli* (ExPEC), and those causing UTI, as uropathogenic *E. coli* (UPEC). Extended-spectrum beta-lactamase production presents a concern to treatment of infections caused by ExPEC. The pandemic lineages of ExPEC, defined by multilocus sequence typing in sequence types (ST), ST131, ST95 and ST69, have been described as contaminants of river waters, in studies to assess the microbial quality of surface waters in other countries. However, the presence of any of these three clones in Brazilian waters remains undescribed. The aims of the present study were to screen beach waters in Rio de Janeiro for *E. coli* isolates belonging to ST131, ST95 and ST69, and to determine antimicrobial susceptibility and carriage of ESBL encoding genes by isolates. A 2L water sample from the beach was collected and millipore membranes were used to filter different volumes that were cultured onto EMB agar plates. Colonies resembling *E. coli* were identified by MALDI-TOF. STs were screened by previously designed PCR protocols to detect conserved regions of these clones. Isolates were submitted to disk-diffusion antimicrobial susceptibility test and ESBL production, and multiplex PCR to detect ESBL encoding genes. Fifteen *E. coli* isolates were identified; 4 were resistant to ampicillin, two to trimetoprim-sulfametoxazol and one to ceftiofur. None of the isolates were ST95 or ST69, and one was ST131, which was resistant to ampicillin and carried a *bla*TEM gene (sequencing pending). Detection of ST131 *E. coli* in beach waters suggested that this strain is spreading to the environment in Rio de Janeiro as already occurred in river waters in other countries.

**Keywords:** UPEC, MLST, pandemic clones, environment

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