

PREVALENCE OF *BLA*_{CTX-M}, *BLA*_{SHV} E *BLA*_{TEM} B-LACTAMASES GENES IN *Escherichia coli* NOSOCOMIAL STRAINS ISOLATED FROM PATIENTS AT SANTA CASA DE MISERICÓRDIA IN SOBRAL, CE

Authors: Barbosa, F.C.B.¹, Santos, R.A.¹, Rocha, F.R.¹, Ponte, I.L.², Pinto, V.P.T.¹

Institutions: ¹ UFC - Universidade Federal do Ceará – *Campus* Sobral (Avenida Comandante Maurocélío Rocha Ponte, 100 - Derby - CEP 62041-040 - *Sobral* - CE), ² SCMS - Santa Casa de Misericórdia de Sobral (Rua Antonio Crisóstomo de Melo 919, Centro - Sobral - Ceará, CEP 62010-550).

Abstract:

Over the last two decades, the resistance to antibiotics in members of Gram-negative *Enterobacteriaceae* rose tremendously worldwide; highlighted by the emergence of extended spectrum beta-lactamases (ESBLs) producing organisms. Different types of ESBLs have been found in different countries. Recently, the CTX type (mainly cefotaximases) is being detected with increasing frequency, particularly in ESBL producing *Escherichia coli*. Genotypes of ESBLs producing isolates may be associated with the antibiotic resistance pattern, as it has been reported previously that the presence of CTX-M gene has been associated with the resistance to fluoroquinolones, aminoglycosides, and cotrimoxazole. *Escherichia coli* is an important pathogen causing serious infections in hospitalized patients, multiresistant to drugs of clinical importance. This study aimed to detect the main genes responsible for ESBL production in *E. coli* nosocomial strains isolated from patients admitted to Santa Casa de Misericórdia (SCMS) in Sobral, a support tertiary hospital in the northern region of the state of Ceará, from November 2013 to August 2014. Twelve clinical isolates of ESBL-producing *E. coli* from different patients were evaluated. The strains were isolated from blood, wound secretions, urine and tracheal aspirate of patients with nosocomial infections admitted to clinical and surgical wards and adult and pediatric intensive care units (ICU) in SCMS. The genomic DNA extraction was performed by the kit "Easy DNA"™ (Invitrogen, Carlsbad, USA) according to manufacturer's recommendations. The detection of *bla*_{CTX-M}, *bla*_{SHV}, and *bla*_{TEM} genes was performed by PCR. The *bla*_{CTX-M} gene was detected in 9 (75%) isolates, *bla*_{SHV} in 6 (50%) and *bla*_{TEM} in 5 (41.6%). On the other hand, in 3 (25%) isolates were detected concomitantly the three types of beta-lactamases searched. Therefore, this result showed a high prevalence of *bla*_{CTX-M} gene in isolates analyzed. However, more studies are necessary to check the spread of these microorganisms in the hospital environment.

Keywords: *Escherichia coli*, ESBL, nosocomial infection, CTX-M.

Funding agency: Santa Casa de Misericórdia de Sobral.