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## Detection of integrases classes 1 and 2 (intI-1 and intI-2) in multidrug resistant enterobacterias isolated from clinical samples

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The disease burden of bacterial infections is found to coexist with the rapid spread of resistance to commonly used antibiotics. The molecular basis of antibiotic resistance lies within genetic elements such as plasmids, transposons, integrons, genomic islands, etc., which are found in the bacterial genome. Integrons are known to acquire, exchange, and express genes within gene cassettes and it is hypothesized that they play a significant role in the transmission of multidrug resistance genes in several Gram-negative bacteria including enterobacterias. Here we are reporting the presence of class 1 and class 2 integrases (intI-1 and intI-2) and antibiotic resistance genetic cassettes (*bla*OXA, *bla*TEM, *sul*1 and *sul*2) among multidrug resistant enterobacteria isolates in Costa Rica. The antibiotic resistance pattern and presence of antibiotic resistance genes were analyzed in 58 bacterial isolates, including *Shigella*, *Escherichia coli*, *Klebsiella pneumoniae*, *Citrobacter freundii*, among others. All isolates were resistant to at least, one antibiotic. Multidrug resistance was observed in 54 out of 58 isolates (93%), and 100% of isolates carried integrase class 1 (intI-1). Integrase class 2 (intI-2), *bla*OXA, *bla*TEM, *sul*1 and *sul*2 were observed in *Shigella* isolates. In 19 out of 24 *Shigella* isolates, transfer of intI-1 *bla*OXA and *bla*TEM, cassettes were detected by conjugative plasmids to a competent and antibiotic-sensitive strain of *E. coli*. These results confirm that information about epidemiology and molecular mechanisms of multidrug resistance determinants in enterobacterias is important to develop intervention strategies. Regional and local antimicrobial resistance pattern in bacterial pathogens should be considered as a part of control strategies.

### Biography

Barrantes K is a Microbiologist and Researcher at the Health Research Institute (INISA) from University of Costa Rica (UCR). She has completed her Master degree on Microbiology and a specialist degree on immunology from UCR. She has published more than 10 papers in the field of infectious diseases transmitted by food and water and antibiotic resistant pathogens.

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