

Genetic Support of *bla*_{GES-1}: Novel Location in Tn402-like Transposons of *Pseudomonas aeruginosa* (*Pae*) from Argentina

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Background: The GES-type ESBLs constitute an important mechanism that mediates ceftazidime (CAZ) resistance and has recently emerged in *Pae* from Argentina. Up to now, *bla*_{GES} genes were only found as cassettes of *sull*-containing class 1 integrons (*sull*-In) in several parts of the world.

Methods: 65 out of 17,645 *Pseudomonas* spp. isolates from WHONET-Argentina clinical laboratories (2001 to 2005) showed an ESBL-phenotype (unusual CAZ/imipenem synergism) and were confirmed as GES producers by PCR. A representative subset of these isolates (20 *Pae*, 1 *P. putida*) from 11 hospitals was studied. MICs were determined by agar dilution (CLSI). Integron cartography was done by PCR using primers against the 5'- and 3'-conserved sequence (3'CS, *sull*-In) or the *tniC* gene of the Tn402 transposition module, combined with *bla*_{GES} primers. DNA sequencing was done by standard methods.

Results: CAZ MICs were 32-256 µg/ml for all but one isolate (8 µg/ml). Integron cartography resulted in 15 *Pae* and 1 *P. putida* with *sull*-In that harbor *bla*_{GES-1} as (n): a unique cassette (1); the first of 2, 3 or 4 cassettes (11, 1 and 2, respectively), or the second of 2 cassettes (1). Interestingly, in the remaining 5 isolates *bla*_{GES-1} was found in class 1 integrons that lack the 3'CS but have the *tniC* of Tn402, with the following cassette arrays (n): *bla*_{GES-1}/*aac*(6')-Ib (3, from different regions of Argentina); *aac*(6')-Ib/*aacA7*/*bla*_{GES-1} (1), and *aacA7*/*bla*_{GES-1}/*aac*(6')-Ib / cassette 4 (unknown function) / *bla*_{OXA-2} (1). The cassette 4 was 94% identical to that of a *sull*-In harbored in plasmid pSp33 from a wastewater uncultured bacterium.

Conclusions: This is the first report on an ESBL gene linked to *tniC* of Tn402. The transposition potential of this genetic platform, found in 5/21 of GES producing *Pseudomonas* isolates, may have great impact on the epidemiology of such important resistant mechanism.

Keywords: *Pseudomonas*; ceftazidime resistance; Tn5090-like

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