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Correlation between the number of ProAla repeats in the EmrA-homologue of *Acinetobacter baumannii* and resistance to Tobramycin, Netilmicin and Imipenem

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The occurrence of multidrug resistant (MDR) strains of *A. baumannii* is a growing problem especially when concerning patients in intensive care units. One of the causes of antibiotic resistance is the presence of transporter proteins responsible for their removal. So far, for strains of the species *A. baumannii,* a system of transporting antibiotics composed of three proteins, AdeA, AdeB and AdeC responsible for resistance to gentamicin, ofloxacin, cefotaxime, and tetracycline has been described. Multiple alignment revealed a 39% similarity of CAP01997 protein of *A. baumannii* containing Pro-Ala repeats to EmrA that is part of the EmrA/EmrB/TolC transportation system of *E. coli* responsible for mutlidrag resistance. We took tryin to check whether there is a correlation between the number of Pro-Ala repeats in the EmrA homologue of *A. baumannii* and the resistance to antibiotics. In this study 79 MDR *A. baumannii* strains isolated from patients were analyzed. Resistance to antibiotics was determined on Mueller–Hinton agar plates using a Kirby–Bauer disk diffusion test. The number of CCTGCA repeats encoding Pro-Ala repeats in EmrA-homologue of A. baumannii was determined using PCR method and capillary electrophoresis. The results of this research showed significant correlation between resistance to tobramycin and netilmicin, susceptibility to imipenem and the numbers of repeated Pro-Ala sequences in the CAP01997 protein, a homologue of EmrA.

Based on presented results ($p<0.0001$) we can conclude that EmrA-homologue of *A. baumannii* confers resistance to Imipenem and Netilmicin depending on the presence of 7 and 5 Pro-Ala repeats in CAP01997 protein, respectively.

Biography

Alicja Nowak-Zaleska, PhD, dissertation in the field of genetic differentiation of the genus Acinetobacter, a microbiologist, an assistant in the Department of Biology, Ecology and Sport Medicene. Roman Kotłowski, PhD, chemistry, an assistant in the Department of Molecular Biotechnology and Microbiology. Agnieszka Mikucka, MD, microbiologist, deputy head of Dept. of Microbiology, Nicolaus Copernicus University in Toruń, Collegium Medicum of L. Rydygier in Bydgoszcz. Eugenia Gospodarek, MD, microbiology, prof. NCU in Toruń, head of Dept. of of Microbiology Nicolaus Copernicus University in Toruń, Collegium Medicum of L. Rydygier in Bydgoszcz.

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