O-antigen variability among clinical isolates of Klebsiella pneumoniae

Jolanta LUKASIEWICZ [1], Daria ARTYSZUK [1], Wojciech JACHYMEK [1], Anna MACIEJEWSKA [1], Marta KASZOWSKA [1]

[1] Ludwik Hirszfeld Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wroclaw, Poland

jolanta.lukasiewicz@hirszfeld.pl

Klebsiella pneumoniae is a nosocomial pathogen, pointed out by the WHO as "critical" regarding the highly limited options for the treatment of infections.

Lipopolysaccharide (LPS, O-antigen) and capsular polysaccharide (K-antigen) are its virulence factors and surface antigens, determining O- and K-serotypes and encoded by O- or K-loci. They are promising targets for antibody-based therapies (vaccines and passive immunization) as an alternative to antibiotics. To make such immunotherapy effective, knowledge about O/K-antigen structures and distribution among clinical isolates is necessary. *K. pneumoniae O*-antigens seem to have limited variability *[1]*, however the presence of new O-serotypes was indicated by genetic analyses *[2]*.

Twelve nontypeable and drug-resistant clinical isolates of *K. pneumoniae* were analysed for *O*-antigen structure. Isolates were selected based on the lack of homology between isolates' O-loci and reference O-loci for already known O-antigens. Discrepancies for O2 serotyping between Kaptive-based predictions (O2 variant 2 serotype) and the actual phenotype (O2 variant 1) were explained for strains BIDMC 7B and ABC152 (presence of insertion sequences in O-loci) *[3,4]*. New O-antigens have been identified for isolates Kp175, Kp231, Kp254. Semi-rough character was found for Kp159 and Kp160 LPS. Isolates Kp164, Kp165, Kp166 were identified as the O4. Additionally O-antigen variability of New Delhi metallo-β-lactamase (NDM)-producing *K. pneumoniae* responsible for a countrywide outbreaks in Poland (2012-2018) is discussed.

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