

## LIPOPOLISACHARYD I INNE CZYNNIKI CHOROBTWORCZOŚCI PALECZEK *PROTEUS*

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1. Wprowadzenie. 2. Czynniki patogenności pałeczek *Proteus*. 2.1. Lipopolisacharyd. 2.2. Ureaza. 2.3. Proteazy. 2.4. Hemolizyny. 2.5. Fimbrie i afimbriowe adhezyny. 2.6. Rzęski. 2.7. Inne czynniki chorobotwórczości *Proteus*. 3. Podsumowanie

### **Lipopolysaccharide and others virulence factors of *Proteus* bacilli**

*Abstract: Proteus* bacteria are opportunistic pathogens, which cause mainly urinary tract infections (UTI), leading to severe complications, such as pyelonephritis and formation of bladder and kidney stones. *Proteus* bacilli are dimorphic bacteria, which exhibit swarming phenomenon. When grown in a liquid medium, they are motile, short rods (swimmer cells) 1,0 to 2,0  $\mu\text{m}$  in length, with 6-10 flagella per cell. When transferred to a solid medium, *Proteus* short bacilli differentiate to swarmer cells, which are multinucleated, nonseptated cells 20-80  $\mu\text{m}$  in length containing much more flagella. Virulence factors of *Proteus* sp. are swarming phenomenon, adherence due to the fimbriae or glycocalyx, flagella, invasiveness, urease, amino acids deaminases, proteases, hemolysins, capsular polysaccharide (CPS), and lipopolysaccharide (LPS, endotoxin). LPSs of these bacteria are built up three regions: O-specific part (O-antigen), core region and lipid A. Acidic O-specific polysaccharides mainly due to the presence of uronic acids represent the majority of *Proteus* O-antigens. Chemical and serological studies of the O-antigens have been undertaken with the aim to show the molecular basis of the serological classification of *Proteus* bacteria. The core region of LPS differs between strains. LPS of *Proteus* bacilli can be involved in biofilm creation, it contributes to the resistance of bacteria against the bactericidal action of serum and to the formation of urine stones. The present review is mainly focused on the structure and biological function of LPS, however, molecular basis and the pathophysiological role of others factors involved in the infections caused by *Proteus* sp., are discussed.

1. Introduction. 2. Virulence factors of *Proteus* bacilli. 2.1. Lipopolysaccharide. 2.2. Urease. 2.3. Proteases. 2.4. Hemolysins. 2.5. Fimbriae and afimbrial adhesins. 2.6. Flagella. 2.7. Others virulence factors of *Proteus*. 3. Summary

Słowa kluczowe: Bakterie *Proteus*, czynniki chorobotwórczości bakterii, lipopolisacharyd, zakażenia dróg moczowych (UTI)

Key words: *Proteus* bacteria, virulence factors of bacteria, lipopolysaccharides, urinary tract infections (UTI)

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