Complete structures of Bordetella bronchiseptica and Bordetella parapertussis lipopolysaccharides - DTU Orbit (27/10/2019)

**Complete structures of Bordetella bronchiseptica and Bordetella parapertussis lipopolysaccharides**

The structures of the lipopolysaccharide (LPS) core and O antigen of Bordetella bronchiseptica and Bordetella parapertussis are known, but how these two regions are linked to each other had not been determined. We have studied LPS from several strains of these microorganisms to determine the complete carbohydrate structure of the LPS. LPS was analyzed using different chemical degradations, NMR spectroscopy, and mass spectrometry. This identified a novel pentasaccharide fragment that links the O chain to the core in all the LPS studied. In addition, although the O chain of these bacteria was reported as a homopolymer of 1,4-linked 2,3-diacetamido-2,3-dideoxy-alpha-galacturonic acid, we discovered that the polymer contains several amidated uronic acids, the number of which varies between strains. These new data describe the complete structure of the LPS carbohydrate backbone for both Bordetella species and help to explain the complex genetics of LPS biosynthesis in these bacteria.

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