

Abstract

The cell wall of Gram-positive bacteria includes, in addition to the core peptidoglycan molecule, unique polysaccharides such as teichoic acids, capsular polysaccharides and exopolysaccharides, and covalently bound surface proteins. Together, they create a strong and durable layer that provides protection but also communication with the external environment.

Peptidoglycan biosynthesis in Gram-positive bacteria can be divided into three phases: cytoplasmic, membrane and extracytoplasmic phase. The individual phases consist of specific reactions that are catalyzed by often conserved bacterial enzymes, which are potential targets for antibiotic molecules. Most known antibiotics effective against Gram-positive bacteria are aimed at inhibiting the process of cell wall synthesis. The mechanisms of action of individual antibiotics are described with varying degrees of detail. Some are known and widely used in medicine or veterinary practice, and some have so far only shown the potential to become drugs. Another use of antibiotics is in the basic research itself, especially in the study of cell wall biosynthesis and bacterial division.

In this work, I have compiled a summary of knowledge about cell wall biosynthesis of Gram-positive bacteria and a list of antibiotics and a description of the mechanisms of their effect on the cell wall biosynthesis, primarily peptidoglycan.

Key words: cell wall synthesis, peptidoglycan, Gram-positive bacteria, antibiotics