

Abstract

Daptomycin is one of antimicrobial peptides. These molecules are part of immune system of all organisms. Daptomycin consists of a cyclic peptide core and a lipophilic tail. Daptomycin is produced by *Streptomyces roseosporus* and is used to treat serious gram-positive infections. Daptomycin is active also against methicillin-resistant *Staphylococcus aureus*. Its antimicrobial effect depends on the presence of calcium ions and phosphatidylglycerol. Daptomycin targets bacterial cytoplasmic membrane, where it forms oligomers. Mode of action of daptomycin probably includes pore-forming effect leading to membrane damage. This disturbance causes ion efflux from cytoplasm which leads to membrane potential disruption, which results in inhibition of macromolecular synthesis and cell death. Daptomycin also causes changes in cell morphology. Despite its unusual mode of action, several mechanisms of resistance have emerged in some pathogenic strains. These are for example decrease in the amount of phosphatidylglycerol in the membrane, increase in the amount of lysylphosphatidylglycerol, release of membrane phospholipids or mutations in genes which control peptidoglycan synthesis.