ABSTRACT

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Title:

Quantitative binding of different analogues of vancomycine to D-Ala-D-Ala using surface plasmon resonance

This diploma thesis discusses the interaction studies of different glycopeptide antibiotics: teicoplanin; MDL 63,246; mideplanin; BI 397 (dalbavancin); A 40926 and vancomycin with D-Ala-D-Ala dipeptide. Firstly, the HPLC analysis conditions for these antibiotics were defined and optimized in order to probe their purity. Then, the interaction studies were carried out, for that various self-assembled monolayers (SAM) were prepared based on different hydrophobicity and length of the chain. These SAMs were functionalized with the dipeptide D-Ala-D-Ala for the study of the binding with the antibiotics. The results suggest that the best way to prepare the SAM is incubation of the chip overnight in the ethanol solution of alcanothiol chain. The most applicable SAM for the study of interaction of antibiotic to D-Ala-D-Ala is formed by alcanothiol chain with a carbon chain of 8 carbons and a tetraethylene glycol chain ending in a carboxylic group. Over this surface we performed the study of interactions. All of the glycopeptidic antibiotics show stronger interactions that vancomycin, especially BI 397 - dalbavancin.