Total Syntheses of Trisaccharide Repeating Units of Staphylococcus aureus Type 5 & 8 (CP5 & CP8)

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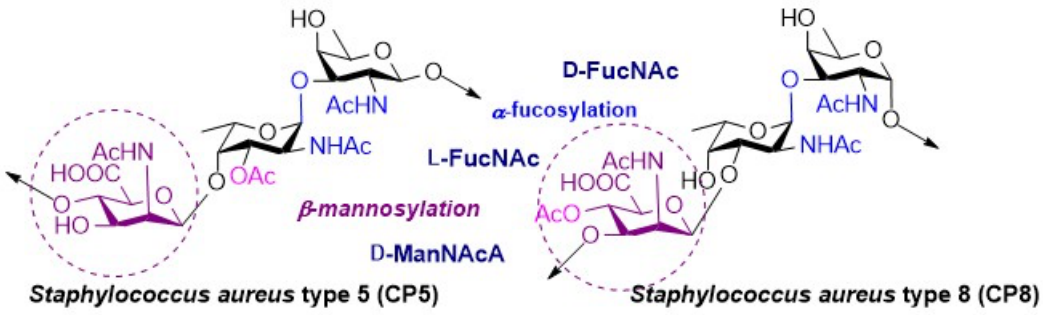
Polysaccharides isolated from pathogenic bacteria are endowed with unique immunological properties and are emerging as immunotherapeutic agents as well as vaccine carriers. Reported herein is a total synthesis of trisaccharide repeating unit of *Staphylococcus aureus* type 5 & 8 (CP5 & CP8). *Staphylococcus aureus* is listed as a "high priority" pathogen by WHO[1] which is a major cause of serious nosocomial infections such as bacteraemia, sepsis, and endocarditis. Owing to their ability to adapt resistance to almost any antibiotics, vaccines against these pathogens are urgently required, therefore synthesis of these urgently required oligosaccharides of S. aureus CP5 and CP8 has been attempted by various group.[2]

These pathogens express structurally unique and densely functionalized glycans on their surfaces which are absent on the host cells. Such carbohydrate antigens are valuable targets for the development of glycoconjugate vaccines and diagnostics. Herein, we report a highly efficient total synthesis of *Staphylococcus aureus* type 5 & 8 (CP5 & CP8) trisaccharide repeating unit in a lesser number of steps and high stereoselectivity.[3,4] These complex trisaccharides contain rare amino sugars, viz., D-fucosamine, L-fucosamine, and 2-acetamido D-mannuronic acid. The preparation of rare sugar building blocks and installation of consecutive sterically hindered 1,2-*cis* glycosidic linkages, especially *β*-mannosylation, is the key challenge in the synthesis.



- Rare deoxy amino sugars
- Consecutive 1,2-*cis* glycosylations
- Orthogonal groups at connecting points
- Direct *β*-mannosylation

Structure of Trisaccharide Repeating Units of Staphylococcus aureus Type 5 & 8 (CP5 & CP8)

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