Synthesis of Trehalose Based Cell Surface Glycolipids

Vikram A. Sarpe, Suvarn S. Kulkani*

Department of Chemistry, Indian Institute of Technology Bombay, Mumbai-400076, India.
(*Email : suvarn@chem.iitb.ac.in*)

Trehalose glycolipids are attractive synthetic targets due to their complex structures and interesting biological activities.[1] Their synthesis needs differentiation of C2-symmetric trehalose core which can be achieved by stereoselective glycosylation or regioselective differentiation of commercially available trehalose. Stereoselective glycosylation provides lower selectivity and involves lengthy synthesis of monomeric building blocks.[2] Regioselective differentiation of hydroxyl groups on trehalose have been long studied, but till date there is no common solution for the differentiation of the 8 hydroxyl groups on trehalose. We have successfully explored differentiation at 6 and 6' position by regioselective differentiation of primary hydroxyls making use of TMS protecting group and regioselective ring opening of benzylidene acetal. The methodologies were used for synthesis of 6,6'-diacylated maradolipid,[3] and 4-monoacylated analog of recently isolated glycolipid fusaroside.[4] We applied this strategy for the synthesis of 4-deoxy-4-amino-galacto-gluco derivative of trehalose.

References:

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