

Synthetic study of Sialyl *N*-glycan using efficient glycosylation by controlling aggregation

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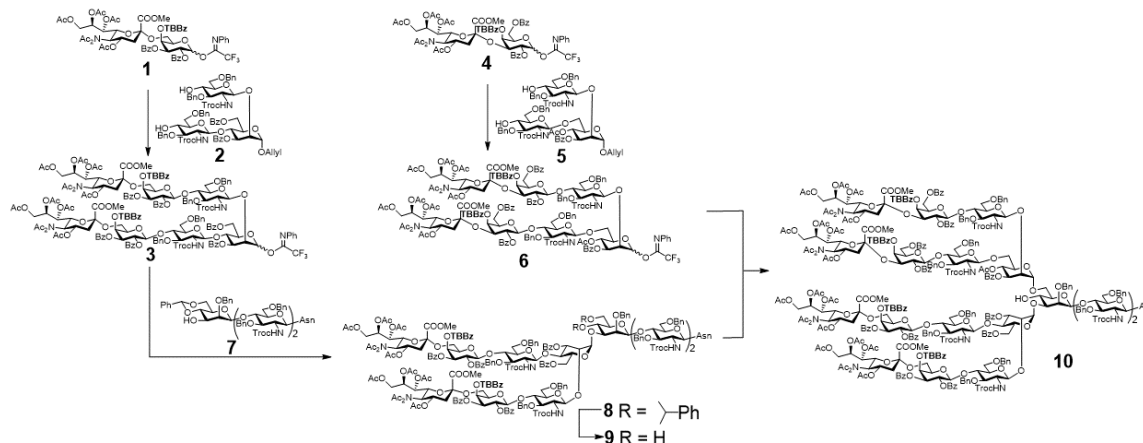
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Asparagine-linked glycans (*N*-glycans) play important roles in various biological events. For example, sialyl *N*-glycans interact with sialic acid-binding immunoglobulin-like lectins (Siglec) and are involved in regulation of the immune responses.

We have reported the synthesis fully sialylated tetraantennary *N*-glycan possessing sia α (2,6)gal linkages. In this synthesis, we used diacetyl strategy in which NHAc is protected as NAc₂ to improve the reactivity by preventing intermolecular hydrogen bonds. [1] Nevertheless, sialic acid containing fragments used here had low solubility to decrease the reactivity in glycosylation. In order to increase the solubility, we employed *p*-*tert*-butyl benzoyl (TBBz) group as a protecting group of sialyl fragments. [2]

In this study, we investigated the synthesis of the tetraantennary sialyl *N*-glycan possessing sia α (2,3)gal and sia α (2,6)gal linkages. Heptasaccharides **3** and **6** were synthesized by the glycosylation using sia α (2,6)gal **1** and sia α (2,3)gal **4**, having a TBBz group. The [3+7] glycosylation between **7** and **3** afforded decasaccharide **8**. After the cleavage of benzylidene group, the glycosylation between **9** and **6** is under investigation.



Bibliographic references:

- [1] A. Shirakawa, Y. Manabe, R. Marchetti, K. Yano, S. Masui, A. Silipo, A. Molinaro, K. Fukase (2021), *Angew. Chem. Int. Ed.* (133) 24891-24898.
 [2] S. Asano, H. Tanaka, A. Imamura, H. Ishida, H. Ando (2019), *Org. Lett.* (21) 4197-4200.