

Synthesis of Fluorophore Attached Glucosamine Derivatives at 6-Position

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Glucosamine is a constituent of various natural carbohydrates such as lipopolysaccharide, chitosan, heparin, blood type determining group and DNA binding glycoproteins. In physiological study of those ligands, fluorescence is one of the useful way to tag those carbohydrates. The attachment of a fluorophore to *N*-acetylglucosamine at 6-position can be rationalized well. Because, the 6-hydroxyl group is further exposed from the pyranose ring and more reactive than other hydroxyl groups. The fluorophores, NBD (7-nitro-benzoxadiazole) and APM 2-(1-aminohexyl-1-*H*-pyridin-4-ylidene)-malonitrile was attached to the glucosamine at 6-position via carbamate bond. The 6-hydroxyl group of *N*-acetylglucosamine derivative was selectively activated in a functionality of phenyloxy carbonate, then reacted with the corresponding amino fluorophores to give fluorescent glycoconjugates. The stepwise conversions; selective phenyloxycarbonylation and displacement with the amino-fluorophore provide us conveniently with the synthetic way for fluorophore attached glucosamine derivatives at 6-position.

