Synthesis of isoxazole conjugates of sugars

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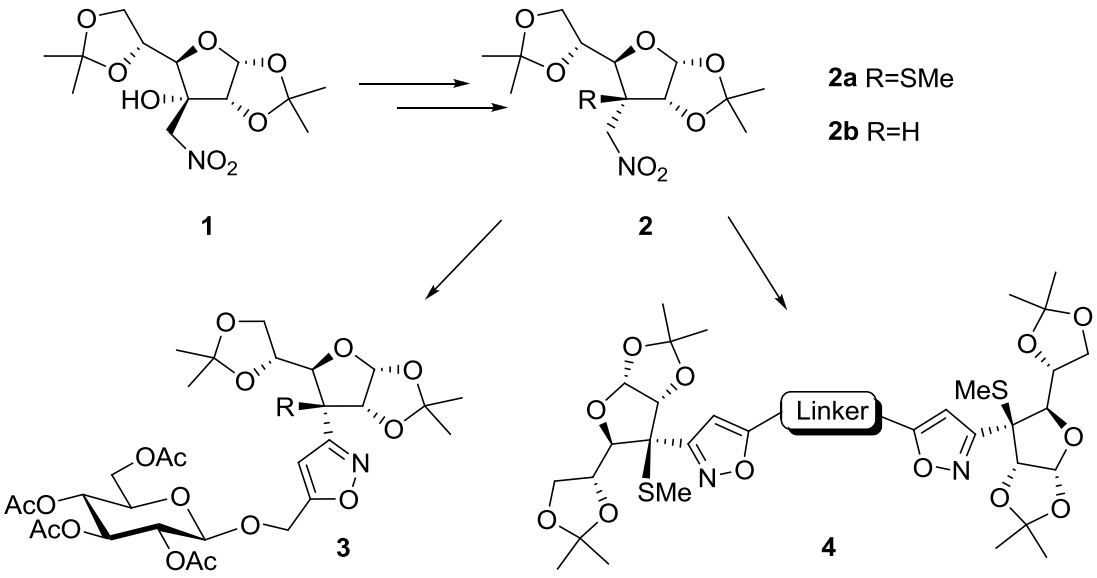
Isoxazoles as a subclass of azoles have gained a wide attraction due to their broad spectrum of biological activities. Recently, few interesting sugar-isoxazole conjugates were reported.[1] Hence, we proceeded to the synthesis of novel furanose-based isoxazoles.

The use of previously described nitrosugar **1**[2] lead us to discovery of an efficient dehydratation-Pummerer rearrangement-Michael addition sequence which provided thiomethyl-derivative **2a**. On the other hand, the known dehydratation followed by reduction gave nitrosugar **2b**.



Further, compounds **2a** and **2b** were successfully used as substrates for syntheses of isoxazoles **3** and **4**. Reactions were carried out using alkyl chloroformate and triethylamine for generation of active nitrile oxide intermediate modifying previously reported conditions.[3]

As dipolarophiles commercially available alkynes as well as terminal alkyne containing sugars were used.

1) Wankhede, K. S.; Vaidya, V. V.; Sarang, P. S.; Salunkhe, M. M.; Trivedi, G. K. *Tetrahedron Lett*. **2008,** *49*, 2069-2073.
2) Albrect, H. P.; Moffatt, J. G. *Tetrahedron Lett*. **1970,** *11*, 1063-1066.
3) Shimizu, T.; Hayashi, Y.; Shibafuchi, H.; Teramura, K. *Bull. Chem. Soc. Jpn.* **1986,** *59*, 2827-2831.