Are unprotected glycosylhydroxylamines possible tools for glycoconjugation via SPANC?

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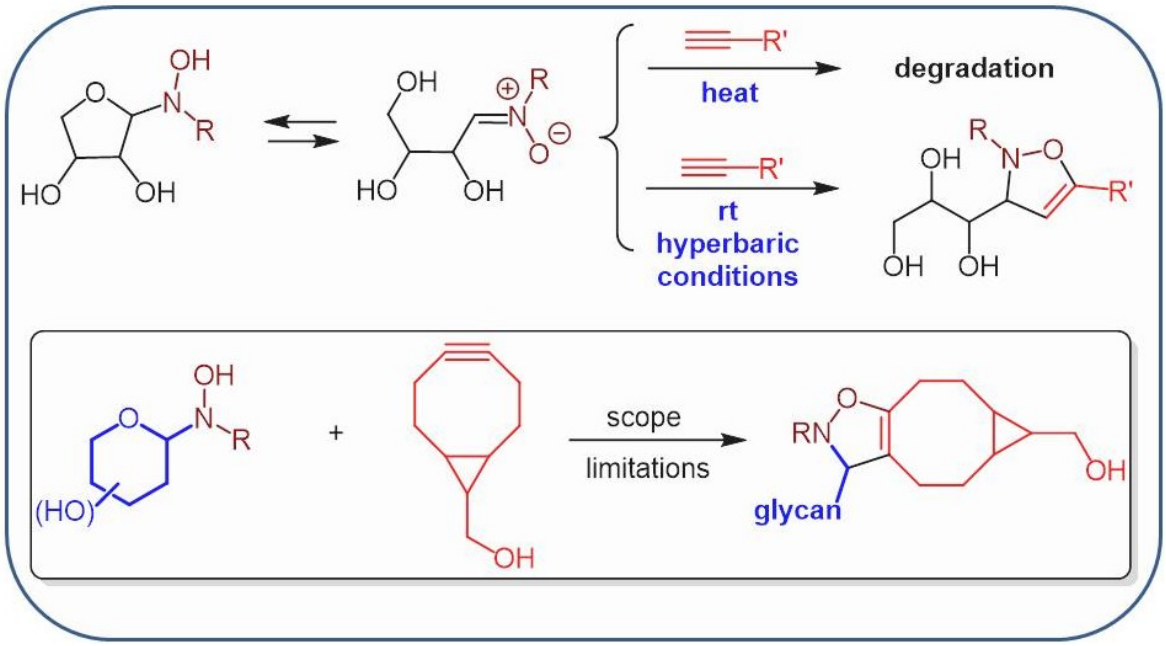
Conjugation of isolated glycans to biological counterparts by chemoselective ligation reactions is essential for unraveling physiological and pathological recognition events.[1] The peculiar reactivity of the aldehyde function of unprotected (reducing) glycans has found widespread application in the ligation with oxiamines or amines for example to prepare carbohydrate microarrays, fluorescently labeled carbohydrates or glycopeptide mimetics.[2] Recent focus of chemical ligation is shifting towards strain-promoted cycloaddition reactions with cyclooctynes which undergo rapid reaction with nitrones (SPANC).[3] The reaction of protecting-group free carbohydrate-derived glycosylhydroxylamines (as masked nitrones) with alkynes has been examined recently,[4] showing a high tendency of the formed isoxazolines to degradation under heat activation. However, hyperbaric conditions allowed the cycloaddition to occur with common alkynes, affording the expected products in good yields. Application of such a transformation to cyclooctynes proved efficient even under atmospheric pressure, which could afford an additional item in the toolbox of metal-free bioorthogonal reactions.



Reaction of unprotected glyconitrones with alkynes

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