

## Stereoselective and visible-light mediated 1,2-cis- $\alpha$ -thioglycosylation of 2-substituted glycols

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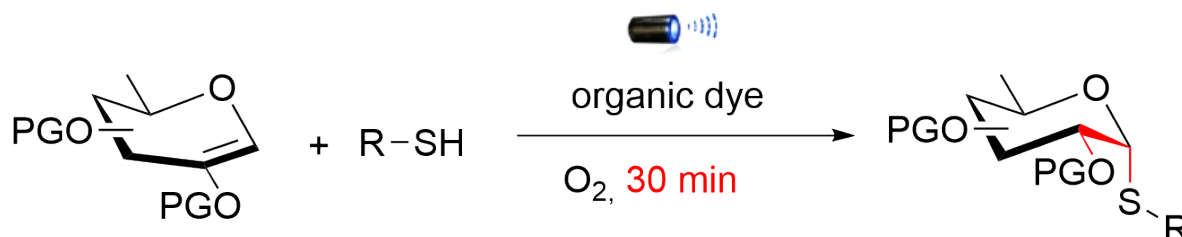
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Due to their participation in various vital recognition processes in living systems, carbohydrates have received growing attention in drug<sup>1</sup> and vaccine<sup>2</sup> development. To enhance the drug-like characteristics of carbohydrates, several types of modifications have been introduced, leading to a group of compounds called glycomimetics.<sup>3,4</sup> S-Glycosides, in which the native O-glycosidic linkage is replaced by an S-glycosidic bond, are especially valuable glycomimetics because of their enhanced chemical stability and resistance to glycosidases.<sup>5</sup> One of the major complications inherent in the construction of an S-oligosaccharide/glycoside is control of the stereochemistry of a newly formed anomeric linkage.

Herein, we report the synthesis of various 1,2-cis- $\alpha$ -thioglycosides using a popular visible-light initiated thiol-en coupling reaction of 2-substituted glycols catalysed by an organic dye. The advantage of this photocatalyzed anti-Markovnikov hydrothiolation reaction initiated by visible-light is that this approach can be realised under mild conditions (low temperature, low loading of photocatalyst) with excellent regio- and stereoselectivity.

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- high regio- and stereoselectivity
- metal-free
- moderate to good yields
- broad substrate scope
- mild conditions
- fast reaction

### Bibliographic references:

1. Ernst, B. Magnani, J. L. (2009), *Nat. Rev. Drug Discovery* (8) 661-677.
2. Astronomo, R. D. Burton, D. R. (2010) *Nat. Rev. Drug Discovery* (9) 308-324.
3. Hevey, R. (2019) *Pharmaceuticals* (12) 55.
4. Koester, D. C. Holkenbrink, A. Werz, D. B. (2010) *Synthesis* 3217-3242.
5. Romanó, C. Jiang, H. Boos I. Clausen, M. H. (2020) *Org. Biomol. Chem.* (18) 2696-2701.