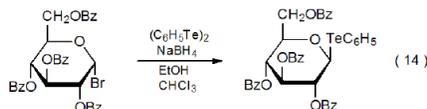
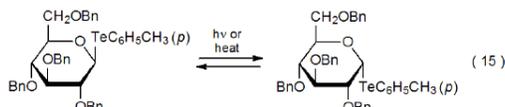


III. Tellurides

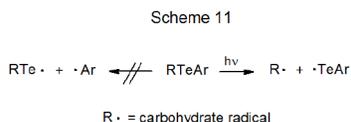
The organotellurium compounds that are used as radical precursors in carbohydrate chemistry usually are synthesized by a nucleophilic displacement reaction such as that pictured in eq 14.⁷⁹



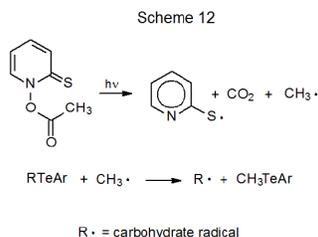
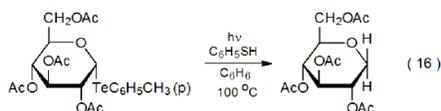
The majority of compounds prepared in this way are anomeric tellurides. Furanosyl tellurides are relatively unstable and tend to decompose within a few days,^{80–82} but although their pyranosyl counterparts can exist unchanged in the solid state for months,⁷⁹ heating or exposing pyranosyl tellurides to UV light causes epimerization (eq 15).⁸³



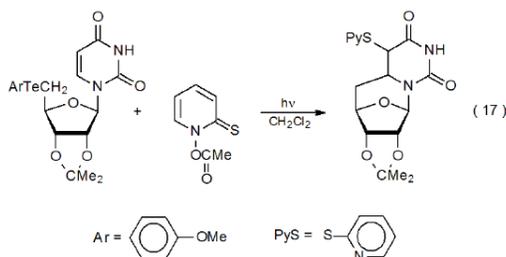
Two procedures, both of which involve **photolysis**, cause radical reaction of carbohydrate tellurides. The first of these is photochemical homolysis of a carbon–tellurium bond, a reaction that generates the more stable of the two possible, carbon-centered radicals (Scheme 11).



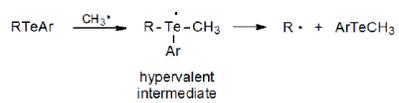
An example of reaction brought about in this way is found eq 16.⁸³ The second procedure for radical formation from a carbohydrate telluride calls for photochemical decomposition of *N*-acetoxy-2-thiopyridone to produce a methyl radical that then reacts with the telluride (Scheme 12).



Equation 17 describes a cyclization reaction initiated in this way.⁸⁴ Reactions of carbohydrate radicals formed from tellurides include cyclization,^{84,85} addition,^{86–89} reduction,⁸³ and group migration.⁸³ It is reasonable to assume that reaction of a carbohydrate telluride with a methyl radical involves, as molecular orbital calculations indicate, formation of an intermediate with a hypervalent tellurium atom (Scheme 13).⁹⁰



Scheme 13



This page titled [III. Tellurides](#) is shared under a [All Rights Reserved \(used with permission\)](#) license and was authored, remixed, and/or curated by [Roger W. Binkley and Edith R. Binkley](#).