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Preparation of glycosyl thiourea derivatives from glycosyl azides using sulfamic acid and sodium iodide in one-pot

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Abstract: Novel one-pot reaction conditions have been developed for the preparation of glycosyl thiourea derivatives directly from glycosyl azides mediated by a combination of sulfamic acid and sodium iodide. The reaction conditions were clean, non-toxic and the products were isolated in good to excellent yield.

Keywords: Carbohydrate; azide; thiourea; reduction; sulfamic acid; sodium iodide; isothiocyanate.

1. Introduction

Thiourea derivatives are important class of molecules having versatile chemical and biological applications.[1] They have been used in therapeutics as antioxidant,[2] anti-bacterial,[3] anti-inflammatory,[4] anti-parasitic,[5] anti-HIV,[6] anti-tubercular,[7] rodenticide,[8] anti-cancer agents,[9] anti-fungal agents[10] etc. Thiourea derivatives have been used as agrochemicals such as insect growth regulator,[11] and herbicides.[12] They have also wide applications in the chemical synthesis of heterocycles and other organic molecules.[13,14] In the recent past, thiourea derivatives have been applied as organocatalysts and ligands in a variety of asymmetric organic reactions.[15,16] In addition, they have been applied as chemical sensors for the detection of heavy metals[17] and in polymer synthesis.[18]