SELECTIVE SYNTHESIS OF CYCLIC ORGANOIODINE(III) WITHOUT CONTAMINATION OF HAZARDOUS PENTAVALENT COMPOUND

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The first report of hypervalent iodine compound in history was 1886, where iodobenzene dichloride (PhICl2, Willgerodt reagent) was accidentally obtained during the attempt of chlorination of iodobenzene by chlorine gas.[1] A century later, hypervalent iodine reagents showing a variety of unique reactivities have received attention as useful oxidant due to their characteristics meeting green chemistry, such as low toxicity, ready availability, and easy handling. Particular noteworthy, they have replaced highly toxic heavy metal oxidants, i.e., lead(IV), mercury(II), and thallium(III) reagents, in modern organic synthesis. The details of their synthetic versatility are well documented in several review articles by key contributors in the fields.[2]

Five-membered hypervalent iodine(III) compounds, such as 2-iodosylbenzoic acids (IBAs), have recently emerged as reagents for developing new synthetic transformations and photo-catalyzed reactions.[3] For the preparation of pure IBAs, we now suggest an improved method not causing formation and contamination of hazardous pentavalent IBXs. The reaction system consistsing of the suitable oxidant[4] smootly produces IBAs under mild conditions,[5] and co-existing catalyst suppresses undesired IBX formations6 derived from disproportionation of IBA compounds.

References
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