

Chemistry of Hypervalent Iodine: Heterocycles and Pseudoheterocycles.

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The chemistry of hypervalent iodine has recently gained a significant attention in organic synthesis. The hypervalent iodine reagents found a wide application as reagents of choice for various synthetically useful oxidative transformations, Suzuki-type cross - coupling, radical initiators and functionalization of organic compounds. Among these reagents several heterocyclic systems incorporating iodine(III) or iodine(V): benziodazoles **1** and benziodoxoles **2**, the cyclic tautomeric forms of 2-iodosylbenzoic acid (IBA) and 2-iodoxybenzoic acid (IBX), were found to be particularly attractive mostly due to their enhanced stability compare to non-cyclic analogs and their unique oxidizing ability. In particular, IBX (2-iodoxybenzoic acid) **3** and Dess-Martin periodinane **4** are widely used for the selective oxidation of primary and secondary alcohols and for a variety of other important oxidations. Recently discovered class of pseudobenziodoxoles: IBX-amides **5** and IBX-esters **6** significantly extended the research area of pentavalent iodine compounds. In the current presentation the preparation, structure, and reactivity of various new benziodazoles, benziodoxoles, benziodoxathioles, pseudo-benziodoxoles and pseudo-benziodoxazines will be reviewed. Particularly interesting and potentially useful are the new pseudo-cyclic systems of IBX-amides, IBX-esters, and N-(2-iodylphenyl)acylamides (NIPA), which are stable and soluble compounds with unique and synthetically valuable oxidizing properties.

