Chemospecific arylation of protected hydroxylamines and sulfonamides with Aryl(TMP)iodonium salts

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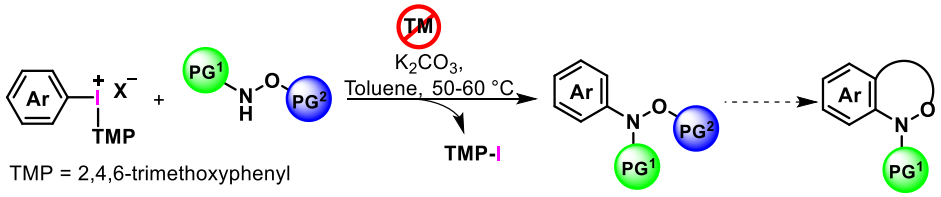
Arylation of *N*-containing compounds is a valuable process in synthetic and medicinal chemistry. Transition metals were extensively employed to catalyze such transformation, e.g., copper salts were used by Ullmann, Goldberg, Chan and Lam to construct C-N bonds. [1] However, these reactions require high temperatures and stoichiometric amounts of copper salts. Palladium catalyzed *N*-arylation of amines was established by Hartwig-Buchwald to overcome the drawbacks of the former copper chemistry.[2] More transition metals are also participated in the arylation of amines. Despite the broad applications of these processes, these metal-catalyzed reactions showed several drawbacks, i.e. limiting substrates, high cost, toxicity, purification problems, harsh conditions, etc. Therefore, development of metal-free green transformations has become a rapidly growing area of great interest.

Diaryliodonium salts are highly stable, non-toxic, readily available or easy to synthesize, and eco-friendly arylating reagents with chemical reactivity similar to transition metals. The similarities between diaryliodonium salts and transition metals inspired the chemists to develop myriad new synthetic routes using diaryliodonium salts as green alternatives to the heavy metals. Herein, aryl(TMP)iodonium salts[3] were introduced as efficient electrophilic *N*-arylating reagents of protected hydroxylamines and sulfonamides. This green and sustainable methodology was fully investigated and the incorporation in the construction of *N*-heterocyclic skeletons is in our ongoing program.



Scheme 1. Coupling of aryl(TMP)iodonium salt with functionalized *N*-nucleophiles

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