Samarium diiodide induced ketyl-(het)arene cyclisations towards novel N-heterocycles.

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Abstract

In this tutorial review we discuss recent advances in the field of ketyl-(het)arene cyclisations promoted by samarium diiodide and related processes. Couplings of samarium ketyls with carbon-carbon multiple bonds are perhaps the most useful reactions to create carbocycles and heterocycles of various ring sizes. They have also successfully been exploited for the synthesis of biologically active compounds or natural products. In this article we intend to summarise our diversity orientated approaches towards nitrogen heterocycles and emphasize other approaches with SmI(2) as well as electrochemical cyclisation methods providing similar N-heterocycles. We also briefly discuss our recently published formal total synthesis of strychnine employing a new samarium diiodide induced cascade reaction as key step. All these examples demonstrate the high synthetic potential of samarium ketyl-(het)arene cyclisations for the preparation of various types of important heterocyclic compounds.

Involved units

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