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Synthesis of Biologically Active Heterocyclic Compounds via C-H Bond Activation

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Abstract : The isoindoline, indazole and indole heterocycles are ubiquitous structural motif found in heterocyclic compounds as they exhibit biological and medicinal applications. For example, isoindoline motif is present in molecules that act as endothelin-A receptor antagonists and dipeptidyl peptidase inhibitors. Moreover, isoindoline derivatives are very crucial constituents in the field of materials science as attractive candidates for organic light-emitting devices. However, compounds containing the indazole motif are known to exhibit to a variety of biological activities, such as estrogen receptor, HIV protease inhibition and anti-tumor activity. The prevalence of indazoles and indoles has led to the development of many useful methods for their preparation. Thus, isoindoline, indazole and indole heterocycles can be new candidates for the next generation of pharmaceuticals. Therefore, the development of highly efficient strategies for the formation of these heterocyclic architectures is an area of great interest in organic synthesis. The past years, transition-metal-catalyzed C−H activation followed by annulation reaction has been frequently used as a powerful tool to construct various heterocycles. Herein, we describe our recent achievements about the transition-metal-catalyzed tandem cyclization reactions of N-benzyltriflamides, 1,2-disubstituted arylhydrazines, acetanilides, etc. via C−H bond activation to access the corresponding bioactive heterocylic scaffolds.

Keywords : biologically active, C-H activation, heterocyclic compounds, transition-metal catalysts
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