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Diversity-oriented approach to natural product inspired pyrano-carbazole derivatives: Strategic utilization of hetero-Diels–Alder reaction, Fischer indolization and the Suzuki–Miyaura cross-coupling reaction

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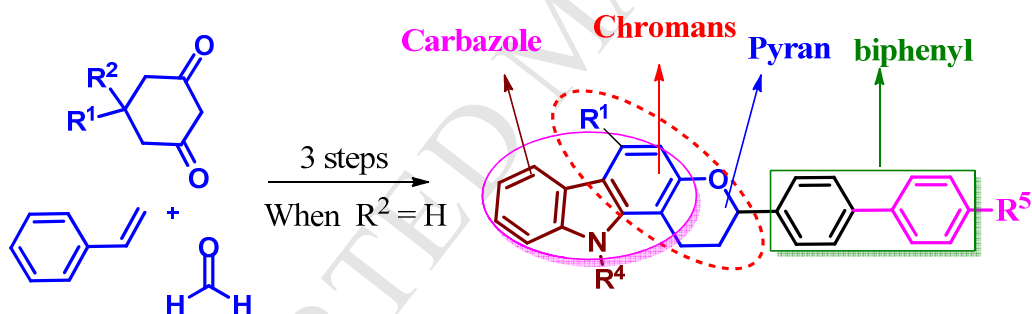
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ABSTRACT: A variety of natural products inspired pyrano-carbazole derivatives have been assembled *via* hetero-Diels–Alder reaction and Fischer indolization (FI) under operationally simple reaction conditions. Later, the scope of this methodology has been expanded through Suzuki–Miyaura cross-coupling reaction involving different boronic acids. This simple strategy can be useful to generate a variety of medicinally important carbazole derivatives.

Graphical abstract



1. Introduction

Generating a library of architecturally complex frameworks with minimum number of steps in a diversity-oriented fashion¹ is an important tactic for assembling “drug-like” small molecules.² The pioneering work in this area has been done by Schreiber and co-workers to establish a diverse collection of nitrogen-containing small molecules with the applications in drug discovery and chemical genetics.³ Among the heterocycles, nitrogen containing compounds are considered as privileged core structural units present in many natural products,⁴ medicinally relevant substances⁵ and organic materials.⁶ Amongst these nitrogen containing compounds, carbazoles, isolated first from coal tar in 1872 by Graebe and Glazer⁷ are important class of hetero-aromatics and are embedded in several pharmaceuticals⁸ as well as materials⁹ with broad range of activities.¹⁰ Therefore, in recent years synthesis of

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