Accepted Manuscript

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

Sambasivarao Kotha, Rashid Ali, Mohammad Saifuddin

PII: S0040-4020(15)30072-7

DOI: 10.1016/j.tet.2015.09.044

Reference: TET 27141

To appear in: *Tetrahedron*

Received Date: 1 July 2015

Revised Date: 1 September 2015

Accepted Date: 21 September 2015

Please cite this article as: Kotha S, Ali R, Saifuddin M, 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, *Tetrahedron* (2015), doi: 10.1016/j.tet.2015.09.044.

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

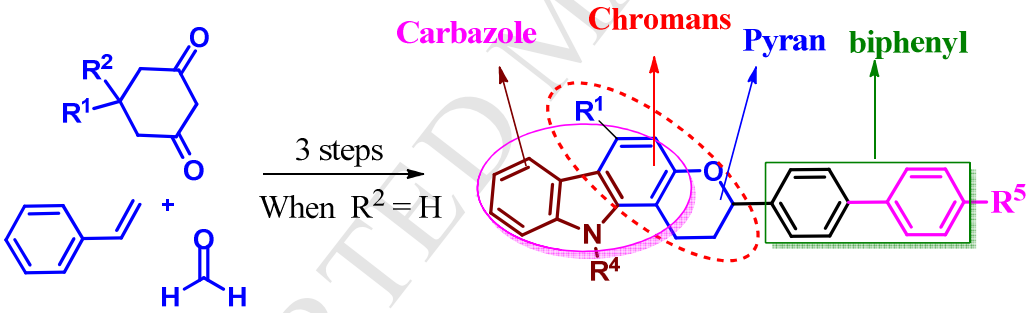
Sambasivarao Kotha,* Rashid Ali and Mohammad Saifuddin

Department of Chemistry, Indian Institute of Technology-Bombay, Powai, Mumbai-400076 India, Phone: +91-22-2576 7160, Fax: +91(22)-2572 7152; E-mail: srk@chem.iitb.ac.in

Keywords: 1,3-Diketones, Fischer indolization, Hetero-Diels–Alder reaction, Pyrano-carbazoles, Styrenes, Suzuki–Miyaura cross-coupling reaction

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 fashion[1] 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 substances[5] and organic materials.[6] Amongst these nitrogen containing compounds, carbazoles, isolated first from coal tar in 1872 by Graebe and Glazer[7] are important class of hetero-aromatics and are embedded in several pharmaceuticals[8] as well as materials[9] with broad range of activities.[10] Therefore, in recent years synthesis of