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Title:	Metal-free Transformations of para-Quinone Methides (p-QMs) to Oxygen-Containing Heterocycles and Carbazoles
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Abstract:	<p>Oxygen and nitrogen-containing heterocycles such as benzo[b]furan, dihydrobenzofuran, coumarins, chromenes, and carbazoles are important scaffolds and widely found in many natural products and biologically active molecules, and several of them display various impressive pharmacological activities such as anti-cancer, anti-allergic, anti-HIV, cytotoxic, etc. Due to their fascinating and diverse range of applications in material science as well, numerous synthetic techniques have been documented to access these heterocycles, but most of them require pre-functionalized starting material(s), poor substrate scope, lack of regioselectivity, and an expensive metal catalyst. Therefore, developing practical and metal-free protocols to access these derivatives is highly desirable and advantageous. In the recent past, para-quinone methide chemistry has been widely explored for the synthesis of various organic frameworks such as heterocycles, carbocycles, spiro-cycles, etc. In the present work, we have utilized the para-quinone methides (p-QMs) as a 1,6-conjugate acceptor for the synthesis of oxygen and nitrogen-containing heterocycles under metal-free reaction conditions. The first chapter of this work involves the synthesis of 2,3-diaryl benzo[b]furans, dihydrobenzofurans, 3,4-diaryl coumarins, and chromenes by the reaction of 2-hydroxyphenyl substituted para-quinone methides with suitable coupling partners under acidic/basic conditions. The second chapter describes the [3+3] annulation of 2-indolylmethanols with para-quinone methides for the formation of tetrahydroindolo[2,3-b]carbazoles. Further, this work has been extended to synthesize different isomers of tetrahydrothieno carbazoles.</p>
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