Title:	Regio- and diastereoselective construction of a new set of functionalized pyrrolidine, spiropyrrolidine and spiropyrrolizidine scaffolds appended with aryl- and heteroaryl moieties via the azomethine ylide cycloadditions
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Abstract:	Highly regio- and diastereoselective syntheses of a new set of functionalized pyrrolidines, spiro-pyrrolidine/pyrrolizidine oxindoles, spiroacenaphthylenolyl-pyrrolidines/pyrrolizidines and spiro-1,3-indandionolyl-pyrrolidines/pyrrolizidines appended with various aryl- and heteroaryl moieties via the azomethine ylide cycloaddition reaction are reported. The Ag-catalyzed [3+2] cycloaddition of azomethine ylides derived from N-benzylideneiminoglycinates with various arylidene/heteroarylidenemalononitriles gave C-3,C-5-aryl/heteroaryl substituted C-4,C-4-dicyanopyrrolidine-2-carboxylate scaffolds with good regio- and diastereoselectivity. Further, the [3+2] cycloaddition of azomethine ylides derived from the decarboxylative reactions of different 1,2-dicarbonyls and α-amino acids with the indole/pyrrole-based dipolarophiles were investigated. In the context of enriching the library of functionalized spiropyrrolidine- and spiropyrrolizidine scaffolds, these reactions have led to the assembling of various spiro-pyrrolidine/pyrrolizidine oxindoles, spiroacenaphthylenolyl-pyrrolidines/pyrrolizidines and spiro-1,3-indandionolyl-pyrrolidines/pyrrolizidines appended with the indolyl- and pyrrolyl moieties at the C-3 position of the spiro-pyrrolidine/pyrrolizidine rings. The stereochemistry of the cycloadducts was assigned based on the single crystal X-ray structures of representative major diastereomers 8c, 8d, 9b, 9c, 17a, 17b, 17c, 18a, 18e and 19a obtained from the azomethine ylide cycloaddition reactions.
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