

Recent developments on (–)-colchicine derivatives : synthesis and structure-activity relationship

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ABSTRACT

(–)-Colchicine, an anti-microtubulin polymerization agent, is a valuable medication and the drug of choice for gout, Behçet's disease and familial Mediterranean fever. It has a narrow therapeutic index due to its high toxicity towards normal cells. Nonetheless, numerous (–)-colchicine derivatives have been synthesized and studied for their structure-activity relationship and preferential toxicity. Different functional groups such as amides, thioamides, *N*-arylurea and 8,12-diene cyclic have been incorporated into (–)-colchicine, resulting in derivatives (with moieties) that include electron-withdrawing and electron-donating groups. This review article focuses on recent developments in the chemical synthesis of (–)-colchicine derivatives, the substituents used, the functional groups linked to the substituents, the moieties and biological studies. Moreover, the current classification of derivatives based on the (–)-colchicine rings, namely ring A, B, and C (–)-colchicine derivatives, is discussed. This work demonstrates and summarizes the significance of (–)-colchicine derivatives in the biological field, and discusses their promising therapeutics for the future.

KEYWORDS

(–)-Colchicine; (–)-Colchicine derivatives; Structure-activity relationship

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