

Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

European Journal of Medicinal Chemistry

journal homepage: <http://www.elsevier.com/locate/ejmech>

Review article

Colchicine prodrugs and codrugs: Chemistry and bioactivities

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ARTICLE INFO

Article history:

Received 22 September 2017

Received in revised form

6 December 2017

Accepted 7 December 2017

Available online 8 December 2017

Keywords:

Colchicine

Prodrugs

Codrugs

Biological activities

ABSTRACT

Antimitotic colchicine possesses low therapeutic index due to high toxicity effects in non-target cell. However, diverse colchicine analogs have been derivatized as intentions for toxicity reduction and structure-activity relationship (SAR) studying. Hybrid system of colchicine structure with nontoxic biofunctional compounds modified further affords a new entity in chemical structure with enhanced activity and selectivity. Moreover, nanocarrier formulation strategies have been used for colchicine delivery. This review paper focuses on colchicine nanoformulation, chemical synthesis of colchicine prodrugs and codrugs with different linkers, highlights linker chemical nature and biological activity of synthesized compounds. Additionally, classification of colchicine prodrugs based on type of conjugates is discussed, as biopolymers prodrugs, fluorescent prodrug, metal complexes prodrug, metal-labile prodrug and bioconjugate prodrug. Finally, we briefly summarized the biological importance of colchicine nanoformulation, colchicine prodrugs and codrugs.

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