

Curcuminoid derivatives enhance telomerase activity in an in vitro TRAP assay.

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Abstract

The length of telomeres controls the life span of eukaryotic cells. Telomerase maintains the length of telomeres in certain eukaryotic cells, such as germline cells and stem cells, and allows these cells to evade replicative senescence. Here, we report for the first time a number of curcuminoid derivatives that enhance telomerase activity in an in vitro TRAP assay. A preliminary analysis of structure-activity relationships found that the minimal requirement for this enhanced telomerase activity is a curcuminoid core with at least one n-pentylpyridine side chain, while curcuminoids with two such side chains exhibit even greater activity. The finding here might lead to a new class of telomerase activators that act directly or indirectly on telomerase, rather than through the reactivation of the telomerase reverse transcriptase (TERT) gene associated with other telomerase activators found in the literature.

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KEYWORDS:

Cell senescence; Curcuminoid derivatives; Telomerase; Telomerase activator

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