Noscapine provoca apoptose no glioblastoma

Noscapine induces apoptosis in human glioma cells by an apoptosis-inducing factor-dependent pathway.


Source

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Abstract

Previously, we identified noscapine as a small molecule inhibitor of the hypoxia-inducible factor-1 pathway in hypoxic human glioma cells and human umbilical vein endothelial cells. Noscapine is a nontoxic ingredient in cough medicine currently used in clinical trials for patients with non-Hodgkin’s lymphoma or chronic lymphocytic leukemia to assess antitumor efficacy. Here, we have evaluated the sensitivity of four human glioma cell lines to noscapine-induced apoptosis. Noscapine was a potent inhibitor of proliferation and inducer of apoptosis. Induction of apoptosis was associated with activation of the c-jun N-terminal kinase signaling pathway concomitant with inactivation of the extracellular signal regulated kinase signaling pathway and phosphorylation of the antiapoptotic protein Bcl-2. Noscapine-induced apoptosis was associated with the release of mitochondrial proteins apoptosis-inducing factor (AIF) and/or cytochrome c. In some glioma cell lines, only AIF release occurred without cytochrome c release or poly (ADP-ribose) polymerase cleavage. Knock-down of AIF decreased noscapine-induced apoptosis. Our results suggest the potential importance of noscapine as a novel agent for use in patients with glioblastoma owing to its low toxicity profile and its potent anticancer activity.

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