Asiatic acid induces apoptosis in SK-MEL-2 human melanoma cells

Abstract:

Asiatic acid (AA) is a pentacyclic triterpene found in Centella asiatica. In the present study, the mechanism of anticancer effect of AA on skin cancer was investigated. AA decreased viability and induced apoptosis in human melanoma SK-MEL-2 cells in a time- and dose-dependent manner. AA also markedly increased intracellular reactive oxygen species (ROS) level and enhanced the expression of Bax but not Bcl-2 protein in the cells. In addition, AA-induced activation of caspase-3 activity in a dose-dependent manner. Pretreatment with Trolox, an antioxidant, significantly blocked the induction of Bax and activation of caspase-3 in AA-treated cells. Furthermore, Ac-DEVD-CHO, a specific caspase-3 inhibitor, and Trolox prevented the AA-induced apoptosis. AA did not elevate p53 nuclear protein levels that are present in a mutant form in SK-MEL-2 cells. These results suggest that AA-induced apoptosis may be mediated through generation of ROS, alteration of Bax/Bcl-2 ratio and activation of caspase-3, but p53-independent. These results further suggest that AA may be a good candidate for the therapeutic intervention of human skin cancer.