Aloe vera: Aloina outra substância anticâncer presente na babosa

Em células do melanoma foi mostrado os efeitos da hidroxiantraquinona (aloe-emolin), outro elemento anticâncer presente no Aloe vera, provocando diminuição da proliferação celular, aumento da diferenciação e menor invasividade e metástases. Antraquinonas presentes nas folhas do Aloe vera: aloe, aloe-emolin e barbaloin

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Synthesis of cytotoxic and antioxidant Schiff's base analogs of aloin.


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Abstract

Aloin (10-glucopyranosyl-1,8-dihydroxy-3-hydroxymethyl-9(10H)-anthracenone), a bioactive compound in Aloe vera, although known to have an anticancer effect, has not been used in current drug research. Optimization of the lead structure could enhance the utility of this compound. Hence, aloin was modified using natural amino acids to produce Schiff's base, a potential pharmacophore, and its corresponding glycones. The synthetic derivatives exhibited significant enhancement in their efficacy toward antioxidant (DPPH radical scavenging) and cytotoxic activities than those of the parent compound, aloin showing promise for application in cancer treatment.

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Antitumor properties and modulation of antioxidant enzymes' activity by Aloe vera leaf active principles isolated via supercritical carbon dioxide extraction.


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Abstract

The aim of this study was to evaluate the potential anticancer properties and modulatory effect of selected Aloe vera (A. vera) active principles on antioxidant enzyme activities. Thus, three antraquinones (Namely: aloe, aloe-emodin and barbaloin) were extracted from A. vera leaves by supercritical fluid extraction and subsequently purified by high performance liquid chromatography. Additionally, the N-terminal octapeptide derived from verectin, a biologically active 14 kDa glycoprotein present in A. vera, was also tested. In vivo, active principles exhibited significant prolongation of the life span of tumor-transplanted animals in the following order: barbaloin> octapeptide> aloe> aloe-emodin. A. vera active principles exhibited significant inhibition on Ehrlich ascite carcinoma cell (EACC) number, when compared to positive control group, in the following order: barbaloin> aloe-emodin > octapeptide > aloe. Moreover, in trypan blue cell viability assay, active principles showed a significant concentration-dependent cytotoxicity against acute myeloid leukemia (AML) and acute lymphocytes leukemia (ALL) cancerous cells. Furthermore, in MTT cell viability test, aloe-emodin was found to be active against two human colon cancer cell lines (i.e. DLD-1 and HT2), with IC(50) values of 8.94 and 10.78 microM, respectively. Treatments of human AML leukemic cells with active principles (100 microg ml(-1)) resulted in varying intensities of internucleosomal DNA fragmentation, hallmark of cells undergoing apoptosis, in the following order: aloe-emodin> aloe> barbaloin> octapeptide. Interestingly, treatment of EACC tumors with active principles resulted in a significant elevation activity of key antioxidant enzymes (SOD, GST, tGPx, and LDH). Our data suggest that the tested A. vera compounds may exert their chemo-preventive effect through modulating antioxidant and detoxification enzyme activity levels, as they are one of the indicators of tumorigenesis. These findings are discussed in the light of the potential of A. vera plant extracts for developing efficient, specific and non-toxic anticancer drugs that are affordable for developing countries.

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