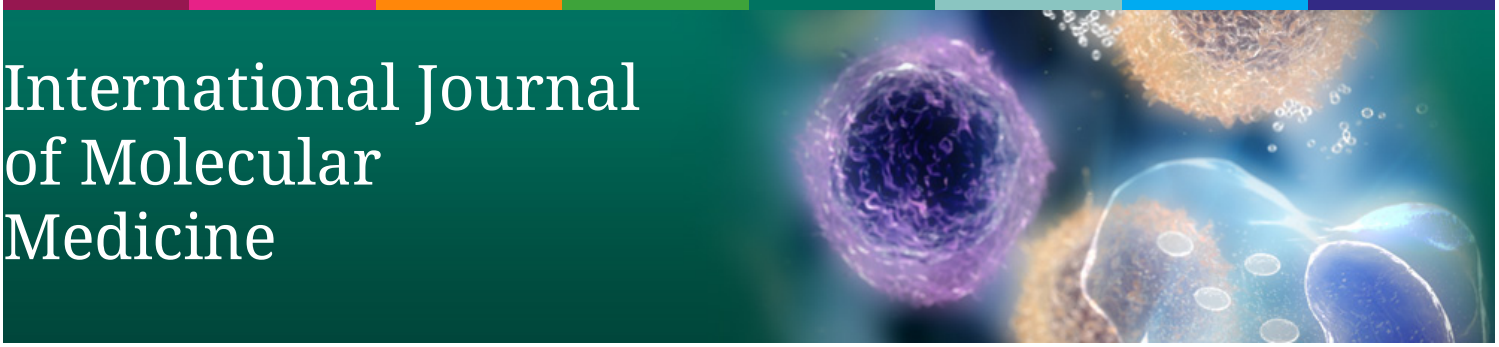

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Apoptotic potential of the concentrated effective microorganism fermentation extract on human cancer cells

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Published online on: Wednesday, February 1, 2006

Pages: 279-284

DOI: 10.3892/ijmm.17.2.279

Abstract

The effective microorganism fermentation extract (EM-X, the first generation) was claimed to possess strong anti-oxidation property. On the other hand, we have shown that the second generation of the effective microorganism fermentation extract (EM-X2) possessed growth inhibition on human cancer cells involving MDA-MB231 breast cancer and K-562 chronic myelogenous leukaemia cells. Elevation of super oxide dismutase activity from EM-X2 treated cancer cell extract was observed. However, the possible anti-cancer activity of the first generation of the EM-X was not reported. Here we demonstrate that the concentrated form of the EM-X from its original fluid also possess antiproliferation ability together with induction of apoptosis on the human cancer cell lines including Hep3B hepatocellular carcinoma (HCC) and KG1a acute myelogenous leukaemia (AML). Similar effect could also be demonstrated on primary

februari 2006
Volume 17 Issue 2
Print ISSN: 1107-3756
Online ISSN:1791-244X
2013 Impact Factor: 1.88
Ranked #27/122 Medicine Research and Experimental (total number of cites)
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cultured bone marrow samples isolated from patients with AML. Morphological inspection revealed that common apoptotic feature was found on these concentrated EM-X treated cancer cells. Both the anchorage-dependent clonogenicity assay on Hep3B HCC and methyl-cellulose colony formation assay on KG1a cells and bone marrow cells from AML patients further revealed the ability of the concentrated EM-X on reducing their colony formation ability. Incubating KG1a with concentrated EM-X readily induced apoptosis as demonstrated by flow cytometric analysis. Interestingly, few growth inhibition effect of the concentrated EM-X was observed on both the SV40 transformed THLE-2 liver epithelial cells and primary cultured non-malignant haematological disordered bone marrow. Collectively, this concentrated EM-X is effective in inducing cell death and reducing the regeneration potential of both Hep3B HCC and KG1a AML cells in vitro.

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