Effect of valproic acid in comparison with vorinostat on cell growth inhibition and apoptosis induction in the human colon cancer SW48 cells in vitro

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AIM:

Acetylation levels of histones are the result of the balance between histone acetyltransfrases and histone deacetylases activities, which plays an important role in chromatin remodeling and regulation of gene expression. Histone deacetylases inhibitors such as valproic acid, vorinostat have attracted interest because of their ability to induce differentiation and apoptosis of cancer cells. The current study was designed to assess the effect of valproic acid in comparison to and in combination with vorinostat on cell growth inhibition and apoptosis induction in the human colon cancer SW48 cells.

MATERIALS AND METHODS:

The colon cancer SW48 cells were seeded and treated with various doses of valproic acid and vorinostat and MTT assay and flow cytometric assay were done to determine cell viability and cell apoptosis, respectively.

RESULTS:

All concentrations of both agents reduced viability significantly in a dose- and time-dependent fashion (p < 0.004). Both compounds, either single or combined agents, induced apoptosis significantly, whereas the ratio of the apoptotic cells treated with combined agents was more significant than the single.

CONCLUSION:

Our findings suggest that vaproic acid and vorinostat can significantly inhibit cell growth and induce apoptosis in colon cancer SW48 cells.