

Arsonoliposomes, a Novel Class of Arsenic Containing Liposomes: Effect of Arsonolipid Containing Liposomes on the Viability of Cancer and Normal Cells in Culture

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AIM

Arsonolipid containing liposomes have been recently prepared. The demonstrated antileukemic action of arsenic trioxide prompted us to study their effect on the viability of several types of cancer cells, in order to investigate the possibility of relevant applications.

METHODS

Five different cell types, 3 malignant (HL-60, C6 and GH3) and 2 normal (HUVEC and RAME), were used. Liposomes containing arsonolipids (with different lipid compositions), were incubated with a given number of cells. Cell viability was estimated by the MTT assay, and trypan blue exclusion method. Morphological studies, after staining with acridine orange, were also performed.

RESULTS

Our results reveal that arsonoliposomes cause a dose (initiated at 10^{-6} M) and time dependent

inhibition of survival in all three malignant cell lines studied. No significant effect on the survival of the normal cells studied was observed at these, as well as at 10 fold higher concentrations (with the exception of the liposomes incorporating the arsonolipid with lauric acid chains), although arsenic trioxide was toxic to HUVEC cells at equivalent As concentrations. Microscopy studies reveal that while morphological changes are initiated in HL-60 and C6 cells after incubation with arsonoliposomes, no changes in HUVEC and RAME cells are observed (with the exception of the liposomes incorporating the arsonolipid with lauric acid chains).

CONCLUSIONS

Considering the numerous advantages of liposomal systems in therapeutics, it is concluded that the arsonoliposome system is very interesting and future applications should be exploited by further studies.