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Ehrlich tumor inhibition using Doxorubicin containing liposomes

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Ehrlich tumors were grown in female balb mice by subcutaneous injection of Ehrlich ascites carcinoma cells. Mice bearing Ehrlich tumor were injected with saline, DOX in solution or DOX encapsulated within liposomes prepared from DMPC/CHOL/DPPG/PEG-PE (100:100:60:4) in molar ratio. Cytotoxicity assay showed that the IC50 of liposomes containing DOX was greater than that DOX only. Tumor growth inhibition curves in terms of mean tumor size (cm^3) were presented. All the DOX formulations were effective in preventing tumor growth compared to saline. Treatment with DOX loaded liposomes displayed a pronounced inhibition in tumor growth than treatment with DOX only. Histopathological examination of the entire tumor sections for the various groups revealed marked differences in cellular features accompanied by varying degrees in necrosis percentage ranging from 12% for saline treated mice to 70 % for DOX loaded liposomes treated mice. The proposed liposomal formulation can efficiently deliver the drug into the tumor cells by the endocytosis (or passive diffusion) and lead to a high concentration of DOX in the tumor cells. The study showed that the formulation of liposomal doxorubicin improved the therapeutic index of DOX and had increased anti-tumor activity against Ehrlich tumor models.

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