# Effect of liposome encapsulation of tea catechins on their accumulation in basal cell carcinomas.

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## Abstract

BACKGROUND: (-)-Epigallocatechin gallate (EGCG), the main active polyphenol in green tea, is associated with antioxidant and anticancer activities. OBJECTIVE: The aim of this study was to evaluate the feasibility of using liposomes for intratumor distribution of EGCG and its derivative, (+)-catechin. METHOD: Liposomes containing egg phosphatidylcholine, cholesterol, or anionic surfactant in the presence of 15% ethanol were prepared. The physicochemical characteristics including vesicle size, zeta potential, drug entrapment, and drug release of liposomal formulations were determined. The liposomes containing EGCG were injected into basal cell carcinomas (BCCs), melanomas, and colon tumors to examine the tumor uptake of the drug. Liposomes were also incubated with a given number of BCC cells, and the cell viability was estimated. RESULT: Almost no drug molecules were observed when free EGCG was administered to BCCs. EGCG encapsulated in liposomes with deoxycholic acid (DA) and ethanol increased drug deposition by 20-fold as compared to the free form. The larger vesicle size of this formulation was suggested to be the predominant factor governing this enhancement. The liposomes without ethanol showed low or negligible enhancement on EGCG uptake in BCCs. Liposomes protected EGCG from degradation, resulting in the induction of greater BCC death compared to that by free EGCG at lower concentrations. CONCLUSION: These results suggest that the intratumor injection of liposomes containing EGCG with moderate modification is an effective approach for increasing EGCG deposition in BCCs.