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Breast cancer treatment by the means of liposomes

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Liposomes are one of the best candidates for Paul Ehrlich's concept of a 'Magic Bullet', as their structure is similar to this of cell membranes, they are non-toxic or of low toxicity, they are small, and it is relatively easy to direct them at a selected molecular target using antibodies, peptides, folic acid or other ligands. The use of liposomes results in a prolonged drug circulation life, reduced drug toxicity (by bypassing healthy tissues) and often increased efficacy of a therapy. Liposomal epirubicin (EPI) is expected to have a very strong potential in the treatment of several human cancer types including breast, ovarian, prostate and pulmonary cancers. In our studies, 2 novel formulations on EPI have been assessed as anti-breast cancer agent. The method involved EDTA ion gradient giving faster drug release rate following the liposome accumulation within tumor tissue, and thus better drug efficacy than the method based on ammonium sulfate gradient (used for Doxil®). For example, low drug release rate in the tumor, was reported as a drawback of Doxil®. The second liposomal formulation of EPI was based on vitamin C ion gradient method. In this case, the ability of the ascorbate to generate the ion gradient for active drug loading and additionally to increase the cytotoxic abilities of the anticancer drugs towards cancer cells was utilized. Both liposomal constructs were tested against human MDA-MB-231 and murine breast 4T-1 cancers in vitro and in vivo models. Obtained results indicate that liposomal EPI exhibited excellent pharmacokinetics with remarkably increased antitumor activity and reduced toxicity for animals.

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Breast cancer screening barriers among Arab women in the United States and Israel

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Breast cancer (BC) is the second most common cancer among women worldwide and in the US (CDC, 2012). Among Israeli and Arab women in Israel, BC is the most common malignancy, and between 1996 and 2007, BC mortality decreased significantly among Israeli women but remained stable among Arab women. Delayed diagnosis contributes to BC mortality among women in Middle Eastern countries (WHO, 2006), as well as in the US. A number of studies have suggested that cancer is diagnosed at later stages for Arab Americans and that prevention efforts should be better understood. Arab American women in Detroit were significantly less likely to receive a mammogram compared to all women in Michigan. Psychosocial factors associated with BC screening among Arab women includes fear of the screening process, fear of negative results, embarrassment and stigmatization, language barriers, lack of knowledge, transportation and economic barriers, cultural and religious barriers. There are no known studies comparing BC screening barriers for Arab women in Israel and the US. The current study compares cultural barriers to BC screening and cancer screening adherence among Arab women in the US and Israel. The sample consisted of 416 women- 77% (N=360) were Arab Israeli and 23% (N=90) were Arab American. Not only cultural barriers are significantly different among Arab American women compared to Israeli Arab women, but breast cancer cultural barriers are also significantly associated with adherence to screening guidelines.

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