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## Chemotherapeutic activity of silybin liposomes combined with Doxil in TUBO breast cancer cell bearing mice

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ccording to different studies, high intake of natural products is associated with reduced cancer risk. It is suggested that A the specific concentrations of phytochemicals may have cancer chemo-preventive effects without causing significant levels of toxicity. Nowadays, there is an increasing emphasis on combination chemotherapy using cytotoxic and natural chemotherapeutic agents. The successes of combination chemotherapy suggested that all cancers could be treated by providing the correct combination of drugs at the correct doses and correct intervals of administration. Silvbin is the active ingredient of Silybum marianum that has been used in traditional medicine because of its liver protective effects in different countries. It can also modulate imbalance between cell survival and apoptosis through interference with expressions of cell cycle regulators and proteins involved in apoptosis. In present study, nano-liposomal formulations containing silybin have been prepared and their anti-tumor activities alone and in combination with doxil were assessed in a mouse TUBO breast tumor model. After injection of liposomes, tumor size and survival were monitored on 3 occasions a week for 100 days. The results of *in vivo* studies showed that anti-tumor efficacy of silybin liposome formulations alone in treated mice were not significantly more than control animals on day 27. In the other two groups, the efficacy of doxil and doxil-silybin (p<0.001) liposomes were significantly more than control animals. Also according to our data, even 100 days after inoculation, 83% animal survival was observed in doxil-silybin liposome were used simultaneously but in case of doxil alone, the survival percentage reached to almost 40% and for silybin liposomes alone reached to 20%. Therefore there is a significant difference between survival percent in control group with doxil alone (p<0.001) and doxil-silvbin liposomes combination (p<0.001). The survival percent of the control group reached to zero, on around 40 days after tumor inoculation. In conclusion, these results indicated that combination therapy using Doxil and silybin can induce improvement in chemotherapy of treated mice.

## **Biography**

Fatemeh Gheybi is currently an Assistant Professor at Mashhad University of Medical Sciences in Iran. She has completed her MS degree in Nutrition and Biochemistry and her PhD in Medical Nanotechnology from Tehran University of Medical Science. She has her expertise in liposomal drug delivery systems and targeted cancer therapy. Her work leads to development of a new method for incorporation of polyphenols into the liposomes. She has over 10 publications and 3 patents in the field of liposome technology.

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