The efficiency of TiO_2 nanoparticles synthesized from *Aloe vera* leaves extract compared to liposomes as delivery system for doxorubicin: *In vivo* study using Erlich solid tumor model

Doaa A. Abdelfadeel

Cairo University, Egypt

Doxorubicin (Dox) is well known for its broad spectrum anticancer activity , however it suffers from sever toxicity. The primary goal of loading Dox in different nanodelivery systems is to decrease nonspecific organ toxicity.

Dox encapsulated liposome (Doxil) has been approved by FDA for ovarian cancer and Kaposi's sarcoma treatment in United States. However, the researches are still going on to optimize the liposomes and to compare them to other types of nanoparticles.

Titanium dioxide nanoparticles (TiO2NPs) have been the focus of many promising applications due to their unique properties, low cost, availability and biocompatibility. This study illustrates a simple, safe, low cost and ecofriendly technique for green synthesis of TiO2NPs from *Aloe Vera* leaves extract at different pH values. Doxorubicin was loaded in liposomes and conjugated to greenly synthesized TiO2NPs.Both formula were fully characterized then they have been injected in mice bearing Ehrlich tumor and compared to aquous solution of Dox.Tumor volume measurments and histopathological examinationwere conducted. The results reveled that both formula of Dox were more efficient than aqueous Dox solution, however, Dox encapsulated in liposomes showed more efficiency in treatment of tumor.