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Antitumor Activity of Gold Nanorods against Mammary Gland and Skin Carcinoma in Dogs and Cats

Authors : Abdoon A.S., El Ashkar E.A., Kandil O.M., Wael H. Eisa, Shaban A.M., Khaled H.M., El Ashkar M.R., El Shaer M., Hussein H., Shaalan A.H., El Sayed M.

Abstract : Cancer is a major obstacle to human health and development worldwide. Conventional strategies for cancer intervention include surgery, chemotherapy, and radiation therapy. Recently, plasmon photothermal therapy (PPTT) was introduced as a promising treatment for the management of cancer and several non-cancerous diseases that are generally characterized by overgrowth of abnormal cells. The present work was conducted to evaluate the cytotoxic efficacy and toxicity of gold nanorods (AuNRs) in dogs and cats suffering from spontaneous mammary gland. AuNRs was injected intratumoral (IT, n=10, dose of 75 p.p.m/kg body weight) or by using spray method after surgical removal of cancer tissue (n=2) in dogs and cats. Then exposed to laser light after 60 min. Treated animals were observed every 2 days and the morphological changes in tumor size and shape were recorded. Blood samples were collected before and after treatment for checking CBC, liver and kidney functions. Results revealed that AuNRs successfully treat mammary gland tumor in dogs and cats (adenocarcinoma type 1 to IV). AuNRs induced sloughing of carcinogenic tissue within 5 to 15 days. AuNRs have no toxic effect on blood profile and the toxicity studies still under evaluation. Conclusion, AuNRs can be used for treatment of mammary gland carcinoma in dogs and cats.

Keywords : pet animals, mammary gland tumor, AuNRs, photothermal therapy, toxicity studies
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