

TITLE

Large doxorubicin loaded lactoferrin nanoparticles: Treatment of hepatocellular carcinoma in rats induced by diethylnitrosamine

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Hepatocellular carcinoma (HCC), a highly incident malignancy. Doxorubicin is one of the effective chemotherapeutic agents for treating HCC. This problem is addressed in the present study based on an effort to enhance the efficacy of the drug through improvement of bioavailability and reduction of the cardiotoxicity of doxorubicin when intra venously (I.V) administered. Doxorubicin loaded lactoferrin nanoparticles (Nano-doxo) were prepared by sol-oil chemistry. HCC was induced in rats by feeding drinking water containing 100 mg/l diethylnitrosamine for 8 weeks. Doxorubicin (Doxo) and Nano-Doxo (2 mg of drug/kg body weight) were administered intra venously. The results showed that Nano-Doxo is preferentially localized in liver and plasma as compared to that in heart, kidney and spleen suggesting advantage of using Nano-doxo in treatment of the liver cancer due to its higher bioavailability. The efficacy and safety of the Nano-Doxo and Doxo was further evaluated in terms of nodules formed on the liver. The results showed that the incidence of tumour is significantly decreased in Nano-Doxo treated rats compared to Doxo treated rats. The higher efficacy of Nano-Doxo compared to Doxo is further confirmed by the levels of tumour specific gene markers p53, sstr2, sstr3, and VEGFR1. The drug induced toxicity is evaluated in terms of cardiotoxicity by catalase and troponin-T, liver toxicity by SGPT and SGOT, kidney toxicity by creatinine and blood urea. In conclusion, Nano-Doxo, with its increased bioavailability and with reduced toxicity effects, is a safe and efficacious IV formulation for treatment of liver cancer.

Biography

Golla Kishore has completed his M.Sc at the age of 25 years from Andhra University and doing PhD in department of biochemistry from University of Hyderabad, School of Life Sciences. He has published 2 papers in reputed journals.