

Potential Impact of Sodium Salicylate Nanoemulsion on Expression of Nephryn in Nephrotoxic Experimental Rat

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Abstract : Drug nephrotoxicity is still a problem for patients who have taken drugs for elongated periods or permanently. Ultrasound-assisted sol-gel method was used to prepare hollow structured poroussilica nanoemulsion loaded with sodium salicylate as a model drug. The work was extended to achieve the target of the current work via investigating the protective role of this nanoemulsion model as anti-inflammatory drug or ginger for its antioxidant effect against cisplatin-induced nephrotoxicity in male albino rats. The results clarify that the nanoemulsion model was synthesized using ultrasonic assisted with small size and well stabilization as proved by TEM and DLS analysis. Additionally, blood urea nitrogen (BUN), Serum creatinine (SC) and Urinary total protein (UTP) were increased, and the level of creatinine clearance (Crcl) was decreased. All those were met with disorders in oxidative stress and downregulation in the expression of the nephryn gene. Also, histopathological changes of the kidney tissue were observed. These changes back to normal by treatment with silica nanoparticles loaded sodium salicylate (Si-Sc-NPs), ginger or both. Conclusions oil/water nanoemulsion of (Si-Sc NPs) and ginger showed a protective and promising preventive strategy against nephrotoxicity due to their antioxidant and anti-inflammatory effects, and that offers a new approach in attenuating drug induced nephrotoxicity.

Keywords : sodium salicylate nanoencapsulation, nephryn mRNA, drug nephrotoxicity, cisplatin, experimental rats

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