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## Development of Epigenetic Nanoparticulate Drug Formulations for Cancer

**Duc P Do**<sup>a</sup> "Chicago State University College of Pharmacy, USA

The development of oral anticancer drug formulations is highly desired. The main objective of the present research was to develop modified-release oral capsule formulations containing histone deacetylase inhibitor (HDACI)-encapsulated albumin nanoparticles. Nanoparticles were prepared by spray drying using bovine serum albumin as the polymer and were evaluated as a potential drug delivery system for providing extended-release of oral drug formulations. HDACIs, which are epigenetic agents, have emerged as a promising class of drugs. Instead of altering the primary DNA sequence, HDACIs reverse aberrant epigenetic changes in cancer cells. Our talk will present recent data on the potential of using capsules containing biodegradable albumin microspheres as a platform technology for the oral extended-release delivery of HDACI for breast cancer.

ddo@csu.edu

## A comparative study on biologically and chemically synthesized silver nanoparticles induced Heat Shock Proteins on fresh water fish *Oreochromis niloticus*

**Girilal M**ª °SB College, India

Which a wide range of applications with various nanoparticles, our exposure to it has been increasing each day. Nanoparticles are released into aquatic environments in various stages of production processes, applications and during the disposal of the nano-wastes. Since the nanoparticles behave entirely different from its corresponding bulk material, a better understanding of their environmental impacts in aquatic ecosystems is inevitable. Our study focused on a comparative stress physiology analysis of commercially available chemically synthesized silver nanoparticles and biogenic silver nanoparticles. Half maximal inhibitory concentration of biologically synthesized and chemically synthesized nanoparticles were found out and compared. The Heat Shock Protein (HSP70) secretion was analysed in the fresh water fish *Oreochromis niloticus* after exposing to different concentrations of biologically and chemically synthesized silver nanoparticles along with the silver in its ionic form. The intense immune-histochemical staining of fish tissues analyzed proportionately reflected the stress created. The colour intensity was directly proportional to the stress created or the stress protein released. High level of HSP70 expression was observed in all of the fish tissues exposed to silver ions and chemically synthesized silver nanoparticles, when compared to that of biologically synthesized. The immediate effect of the metal nanoparticles exposure is the aquatic organisms, which is the main gateway for the entry of nanoparticles in more living systems. The study demonstrated the effect of metal nanoparticles in different tissues like muscle, liver and kidney which plays a major important role in detoxification process in higher mammals and humans.

girilal@gmail.com