

BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA



INSTITUTO DE FÍSICA
“Luis Rivera Terrazas”



SEMINARIO
“DR. JESUS REYES CORONA”

“Biological experimental models for the study of new properties promoted by silver nanoparticles. Implications in the nano toxicological evaluation.”

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The convergence of nanotechnology and medicine has generated a new expectation in the field of pharmaceutical therapy. The silver nanoparticles (AgNPs) are widely used in medicine and chemistry industry due to their antimicrobial properties. However there is a lack of information about their new biophysical properties, functions and effects at different levels of biological organization, and their impact on human health. The aim of the current presentation is show the recent advances that our laboratory has been investigate, related with the effects that confer the AgNPs at different biological targets, and their potential toxic or beneficial implications in the cardiovascular (CVS), respiratory (RS) and nervous systems. We observed in coronary and aortic blood vessels, that these NPs induced dual effects, at low concentrations, induced vasoconstriction; at high concentrations, stimulated vasodilation mediated by the activation of endothelial nitric oxide synthase (eNOS), which produces low concentrations of nitric oxide (NO), an important vasodilator and antihypertensive agent. However in the RS; in trachea, we shown that AgNPs, induced toxic effects, when modified the contractile action in presence of the endogenous contractile molecule, acetylcholine (ACh), inducing hyper-reactivity mediated by the inducible nitric oxide synthase (iNOS), promoting large amounts of NO related with allergic mechanisms. Meanwhile in central nervous system (CNS) AgNPs promote promising effects in the combat of brain cancer and modulate the properties of this structure. These data suggest a specific and selective mechanism of action induced by AgNPS depending on the biological target. Further studies are needed to elucidate the signaling pathways responsible to promote their toxic or beneficial effects in the CVS, RS and CNS.

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