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P73. GOLD NANOPARTICLES INDUCE CYTOTOXICITY: A REVIEW OF IN VITRO AND IN VIVO STUDIES

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Over the last decades, there has been a rapid development in nanotechnology area.These developments lead to promising candidatesfor many biological and biomedical applications which can be used in drug delivery, chemical sensing, biological imaging, and cancer treatment.Nanomaterials are characterized as substances between 1 and 100 nm.In thissense, gold, nickel, carbon, and silverbased nanomaterials are often used in many forms such asspheres, wires, tubes, and rods.Gold nanoparticles (AuNPs) are arising as promising substances from which to establish nanoscale therapeutics and therapeutic delivery systems.As the range of AuNPs,types and their applications continue to improve, there is insufficientinformation on their health effects and no regulatory safety and guidelines relating their properties to toxicities. This review, therefore, focuses on cytotoxicity effect ofAuNPsexperienced so far and their interactions with biological systems. According to literatures, in vivo and in vitro cytotoxicity assays show that the toxicity mechanism of these nanoparticules (NPs) is based on oxidative stress due to free radical formation capacity and cause DNA damage, decrease in cellular growth or apoptosis induction whichare directly associated with physical dimensions like size, shape, coating, concentration, cellular uptake and time.The safety of AuNPsis a subject which receives much attention in recent years. Therefore, for sustainable development of nanotechnology and safety, understanding the effects of AuNPs, characteristics on cellular and biological processes could help in designing AuNPs that are efficient but also nontoxic.