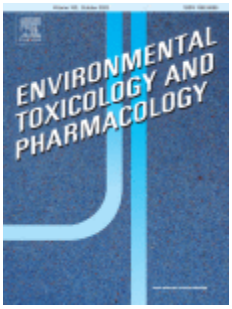
Environmental Toxicology and Pharmacology

Volume 104, November 2023, 104319



Impact of gold nanoparticles (AuNPs) in human neutrophils *in vitro* and in leukocytes attraction *in vivo*: A sex-based analysis

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Abstract

Some differences exist between the male and female immune systems. Despite this, a sex-based analysis is not frequently performed in most studies. Knowing that inflammation is a common undesired effect observed resulting from nanoparticle (NP) exposure, we investigate here how gold NPs with a primary size of 20 ($AuNP_{20}$) and 70 nm ($AuNP_{70}$) will alter the biology of polymorphonuclear neutrophil cells (PMNs) isolated from men and women as well as their potential pro-inflammatory effect in vivo in male and female mice. We found that $AuNP_{20}$ significantly delay apoptosis only in PMN isolated from men. The production of interleukin (IL)− 8 by PMNs was increased by both AuNPs regardless of sex although significance was only observed in $AuNP_{20}$-induced PMNs. Using the murine air pouch model of inflammation, AuNPs did not induce a neutrophilic infiltration regardless of sex. In conclusion, AuNPs could differently alter the biology of PMNs according to sex.