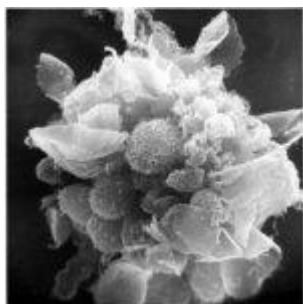


Can wearing silver damage your health?



Many consumer products made of silver nanoparticles (AgNP) could increase susceptibility to infectious pathogens. Systemic uptake of AgNP by macrophages can lead to alterations in their antimicrobial innate immune function.

In the November 18th edition of PLoS One, a multi-country study examined the effects of AgNP exposure on the cellular toxicity and innate immune responses against *Mycobacterium tuberculosis* (*M.tb*) using experimentally induced macrophages. The authors found that AgNP exposure can impair the ability of macrophages to make immune signals after being challenged *in vitro* to a strain of *M.tb*. The impaired pathway was via Toll Like Receptor signaling and was specific to being exposed to silver nanoparticles.

In addition, AgNP exposure also induced heat shock protein (Hsp) 72 formation within macrophages, resulting in inhibition of the NF- κ B pathway. This pathway is critical for the ability of immune cells to synthesise cytokines and would explain the observation that several innate cytokines were suppressed after exposure to AgNP.

The authors state that “our findings clearly establish that AgNP exposure confers a suppressive effect on *M.tb*-induced immune responses that in large part is due to the physicochemical properties of the AgNP...” As silver nanoparticles are used more and more in multiple consumer

products, human exposure may alter inflammatory immune responses that are important for protecting against bacterial infections, such as *M.tb*.

[Sarkar, S. et al. 2015. Modulation of Human Macrophage Responses to Mycobacterium tuberculosis by Silver Nanoparticles of Different Size and Surface Modification. PLOS.](#)