

Gold Nanoparticles inhibits cytokine release and alleviates sepsis through of MAPK and NF κ B activation

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Gold nanoparticles have several biochemical advantageous properties and some of them show anti-inflammatory properties. However, whether gold nanoparticles exhibit its anti-inflammatory effect in septic disorder treatment is not clear. The anti-inflammatory activity of gold nanoparticles was examined by ELISA to measure the pro-inflammatory cytokines production in lipopolysaccharide (LPS)-stimulated RAW264.7 cells, peritoneal macrophages and in mice. The effect of gold nanoparticles for MAPK kinase molecules phosphorylation in LPS-stimulated RAW264.7 macrophage. The in vivo efficacy of gold nanoparticles was also demonstrated in cecal ligation and puncture (CLP) mouse model. In the present study, we found that gold nanoparticles exhibit anti-inflammatory effects inhibit tumor necrosis factor- α (TNF- α)/interleukin-6 (IL-6) releasing and LPS-stimulated phagocytes migration without affect cell growth. In addition, the MAPK kinase molecules phosphorylation in LPS-stimulated RAW264.7 macrophage was inhibited by gold nanoparticles. The phosphorylation of NF κ B subunit p65 and I κ B α were also decreased after gold nanoparticles treatment. Furthermore, gold nanoparticles attenuates the cytokine production in CLP-induced septic mice.