

Zinc oxide nanoparticles impair host pulmonary immune system in response to nontypeable *Haemophilus influenzae* infection

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The extensive development of nanoparticles (NPs) and their widespread employment in daily life have led to an increase in environmental concentrations of substances that may pose a biohazard to humans. Inhalation of NPs via the respiratory tract may induce immune-suppressive effects, impairing macrophage functions and attenuating host defenses against bacterial infection. Our aim was to examine the effects of zinc oxide nanoparticles (ZnO-NPs) on host pulmonary immune system response to nontypeable *Haemophilus influenzae* (NTHi) infection. A murine infection model was employed to assess pulmonary inflammation and bacterial clearance in response to exposure to ZnO-NPs. Treatment with ZnO-NPs impaired macrophage activation, leading to a delay in NTHi clearance in the bronchial alveolar lavage fluids (BALFs) and lungs. Exposure to ZnO-NPs followed by NTHi challenge decreased levels of nitric oxide (NO) compared to NTHi infection alone. The effects of ZnO-NPs involved down-regulation of NTHi-activated expression of inducible nitric oxide synthase (iNOS) and the translocation of active NF- κ B into the nucleus. These results demonstrate that exposure to ZnO-NPs can impair innate immune responses and attenuate macrophage responses to bacterial infection.

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必填資料-----

※ 論文性質：

- AM (應用微生物) BM (基礎微生物)
 CM (臨床微生物) V (病毒)

※ 發表方式： Oral Poster

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