

# **Long-term continuous exposure to static magnetic field reduces lipopolysaccharide-induced cytotoxicity of fibroblasts**

黃豪銘

Lin CT;Lee SY;Chen CY;Chen CA;Lin CP;Huang HM

## **Abstract**

**Purposes:** Lipopolysaccharide (LPS) is one of the major substances initiating the immune host response in microbial infections that results in cytotoxicity. In terms of treatment of the immune response, research has been conducted on physical environments that can reduce LPS-induced damage. In this experiment, a long-term continuous static magnetic field (SMF) was used as a physical resource to reduce LPS-induced immune host response.

**Materials and methods:** Cultured fibroblasts were challenged with LPS to initiate an inflammatory reaction. Cell viability and various proinflammatory cytokine levels were detected and compared between SMF and sham-exposed groups.

**Results:** Our in vitro study revealed that, with LPS challenge, fibroblasts continuously exposed to a 0.4-T SMF for 12 h demonstrated higher cell viability compared to unexposed analogs. From cytokine test, the levels of LPS-induced interleukin-1 $\beta$  (IL-1 $\beta$ ) in the SMF-exposed groups were significantly lower relative to their unexposed counterparts ( $p < 0.05$ ). By contrast, SMF exposure tended to increase the level of LPS-induced IL-1 receptor antagonist (IL-1Ra) and IL-6.

**Conclusions:** Our results suggest that SMF stimulation inhibits LPS-induced cytotoxicity through reduction of proinflammatory cytokines and increase in anti-inflammatory cytokines of NIH-3T3 cells.