Platonin attenuates LPS-induced CAT-2 and CAT-2B induction in stimulated murine macrophages.

Chen CC, Lee JJ, Tsai PS, Lu YT, Huang CL, Huang CJ.

Nursing and Management College [corrected] Taipei, Taiwan.

Erratum in:

- Acta Anaesthesiol Scand. 2007 Feb;51(2):269.

BACKGROUND: Platonin, a cyanine photosensitizing dye, is a potent immunomodulator that suppresses acute inflammation. Platonin not only inhibits interleukin (IL)-1beta, IL-6, and tumor necrosis factor (TNF)-alpha production but also improves circulatory failure in septic rats. In addition, platonin reduces plasma nitric oxide (NO) formation during sepsis. However, the effects of platonin on inducible NO synthase (iNOS) and cationic amino-acid transporter (including CAT-2, CAT-2 A, and CAT-2B) expressions during sepsis remain uninvestigated. METHODS: Five groups of confluent murine macrophages (RAW264.7 cells) were randomly allocated to receive a 1-h pretreatment of one of five doses of platonin (0.1 microM, 1 microM, 10 microM, 100 microM, or 1000 microM) followed by lipopolysaccharide (LPS; 100 ng ml(-1)). For negative, positive, and platonin control, three other groups of cell cultures were randomly allocated to receive phosphate-buffered saline, LPS, or platonin (1000 microM). The cultures were harvested after exposing them to LPS for 18 h or a comparable duration in those groups without LPS. NO production, L-arginine transport, and expression of the relevant enzymes were then evaluated. RESULTS: Platonin significantly attenuated LPS-induced up-regulation of iNOS expression and NO production in stimulated murine macrophages in a dose-dependent manner. Platonin also significantly inhibited up-regulation of CAT-2 and CAT-2B expression as well as L-arginine transport in LPS-stimulated murine macrophages in a dose-dependent manner. In contrast, CAT-2 A expression in murine macrophages was not affected by LPS and/or platonin. CONCLUSIONS: Platonin attenuates NO production and L-arginine transport in LPS-stimulated murine macrophages possibly through inhibiting iNOS, CAT-2, and CAT-2B expression.