Pre-treatment of acupuncture stimulation of ST36 (Zusanli) significantly attenuates CAT-2, CAT-2B and GTPCH transcription in septic rat lungs.

Lao HC, Huang CL, Tsai PS, Yan LP, Ze XH, Huang CJ.

Department of Anesthesiology, Mackay Memorial Hospital, Taipei, Taiwan, ROC.

BACKGROUND: The isozymes of type-2 cationic amino acid transporter (including CAT-2 and CAT-2B) and guanosine triphosphate cyclohydrolase I (GTPCH) constitute part of the down-stream regulatory pathways that regulate nitric oxide (NO) production mediated by inducible NO synthase (iNOS). We sought to evaluate the effects of acupuncture stimulation of ST36 (Zusanli) on the expression of CAT-2, CAT-2B, and GTPCH in lipopolysaccharide (LPS)-stimulated rat lungs. METHODS: Sixty rats were randomized into 6 groups (n = 10 in each group): 1) LPS, 2) Normal saline (N/S), 3) LPS + ST36, 4) ST36, 5) LPS + Sham, and 6) Sham groups. Manual acupuncture stimulation of ST36 (designated as "ST36") or a "nonacupoint" (designated as "Sham") was performed in lightly immobilized rats for 30 minutes. Then, LPS injection was performed to induce the expressions of iNOS, CAT-2, CAT-2B, and GTPCH in rat lungs. Rats were sacrificed 6 hours after LPS injection and the expressions of these enzymes were assayed. RESULTS: Reverse transcription and polymerase chain reaction (RT-PCR) data revealed that the expressions of iNOS, CAT-2, CAT-2B, and GTPCH in N/S-stimulated rat lungs were low. Exposure to LPS significantly induced the expressions of iNOS, CAT-2, CAT-2B, and GTPCH. In addition, the pre-treatment of ST36 acupuncture significantly attenuated the LPS-induced expressions of iNOS, CAT-2, CAT-2B, and GTPCH in stimulated rat lungs. CONCLUSIONS: Pre-treatment of acupuncture stimulation of ST36 had significantly inhibitory effects on LPS-induced iNOS, CAT-2, CAT-2B, and GTPCH expressions in septic rat lungs.