THE OPTIMAL DOSE OF INTRAPERITONEAL HEAT SHOCK PROTEIN (HSP70) TO PREVENT DEATH IN SEPSIS MICE MODEL WITH MULTIPLE ORGAN DYSFUNCTION SYNDROME

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ABSTRACT

Background: In theory, heat shock protein (HSP70) can reduce the expression of Cyt. C, Bax, and Caspase 3, in apoptosis ofmultiple organ dysfunction syndrome (MODS), and thereby can prevent death. Previous researchers used 226 μg/KgBW/intraperitoneal (ip) of HSP70. There is a lack of studies which used the lowest effective dose of HSP70. This study aimed to determine the lowest effective dose of HSP70 to prevent death in sepsis mice model with MODS.
Subjects and Method: This was a randomized control trial conducted at PAU Universitas GadjahMada, Yogyakarta, from April 1 to 21, 2017. The study subjects were Balbs/c strain mice. The drug used to induce death was Lipopolysaccharides (LPS) from SIGMA L2880-10MG Lot #025M4040V from Escherichia coli 055:B5 purified by phenol extraction.The drug used to prevent death in this study was Rat Heat Shock Protein (HSP70) Lot#L16020515. A sample of 25 mice was randomized into 5 groups with each consisting of 5 mice: (1) control group with NaCl; (2) experimental group receiving LPS injection of 0.25mg/kgBW/ip; (3) experimental group receiving LPS injection of 0.25mg/kgBW/ip with HSP70 injection of 100 μg/kgBW/ip; (4) experimental group receiving LPS injection of 0.25mg/KgBW/ip with HSP70 injection of 200 μg/kgBW/ip; and (5) experimental group receiving LPS injection of 0.25mg/kgBW/ip with HSP70 injection of 300 μg/kgBW/ip. The percent of live mice between groups was compared by chi square.
Results: Three days after intervention, the number of live mice 13(86.7%) in the experimental group with ≥100 μg/kgBW/ip HSP70 was greater than the number of live mice 2 (40%) in the experimental group with <100 μg/kgBW/ip HSP70, with p= 0.037. In addition, all mice receiving ≥200μg/kgBW/ip HSP70 in the experimental group were alive three days after intervention.
Conclusion: The lowest effective dose of HSP70 to prevent death in sepsis mice model with MODS is 100μg/kgBW/ip. All mice are alive three days after receiving ≥200μg/kgBW/ip HSP70.

Keywords: lipopolysaccharide, heat shock protein, multiple organ dysfunction syndrome, dose

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