



## **Circulating microparticles from septic shock patients exert differential tissue expression of enzymes related to inflammation and oxidative stress**

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Titre	Circulating microparticles from septic shock patients exert differential tissue expression of enzymes related to inflammation and oxidative stress
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Auteur	Mastronardi, Maria Letizia [1], Mostefai, Hadj Ahmed [2], Meziani, Ferhat [3], Martinez, Maria Carmen [4], Asfar, Pierre [5], Andriantsitohaina, Ramarason [6]
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Résumé en anglais

Objective: Septic shock is characterized by hypotension and multiple organ failure after infection of microorganisms. Septic shock patients display high levels of circulating microparticles. These are small vesicles released from the plasma membrane of activated or apoptotic cells. Here, we have investigated the effects of in vivo injection of microparticles from nonseptic or septic subjects on protein expression in mouse tissues. Design: Prospective, controlled experiments. Setting: Animal basic science laboratory. Subjects: Male Swiss mice were randomly assigned to one of two groups: 11 animals injected with microparticles isolated from healthy subjects and 15 animals injected with microparticles isolated from septic patients. Interventions: Microparticles were extracted from whole blood of septic and nonseptic subjects and were intravenously injected in mice. After 24 hrs, mice were killed and heart, lungs, liver, and kidneys were isolated for Western blot assays. Organs were also used for direct measurements of nitric oxide and superoxide anion production by electron paramagnetic resonance. Measurements and Main Results: In heart and lungs, microparticles from septic shock patients increased the expression of endothelial and inducible nitric oxide synthases, cyclooxygenase-2, and nuclear factor- $\kappa$ B. However, extracellular superoxide dismutase was only increased in the heart. These effects were associated either with a greater oxidative or nitrative stress in heart and lungs, without affecting nitric oxide production. The liver exhibited an increase in oxidative stress linked to decreased endothelial nitric oxide synthase and manganese superoxide dismutase expression. However, cyclooxygenase-2 expression and I $\kappa$ B $\alpha$  phosphorylation were decreased. Septic microparticles did not change superoxide anion and nitric oxide productions in kidneys. Conclusions: Results suggest that microparticles from septic shock patients exert pleiotropic and differential effects depending on target tissues with regard to the expression of proinflammatory proteins related with nitrative and oxidative stresses. Thus, microparticles might participate in organ dysfunction observed in septic shock patients.

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Titre abrégé

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