Taurine chloramine decreases cell viability and cytokine production in blood and spleen lymphocytes from septic rats submitted to sepsis

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Abstract

Introduction: Attention has been paid in recent years to studies showing immune cell death mechanisms during the course of sepsis in response to pro-inflammatory and anti-inflammatory mediators that are involved in its pathophysiology. Taurine (Tau) is an abundant amino acid in polymorronuclear leucocytes (PMN) that reacts with hypochlorous acid to form taurine chloramine (TauCl) under inflammatory conditions. Objective: In this context, we investigated potential interactions between lymphocytes and TauCl in rats submitted to cecal ligation and perforation (CLP), analyzing cell viability and cytokine secretion profile (TNF-α, IFN-γ, IL-6, IL-17A, IL-23 and IL-10).

Methods: Adult male rats were divided in two groups: sham and CLP that were killed 24 or 120 hours after sepsis induction to isolate lymphocytes from blood and spleen. Lymphocytes (> 95,0% purity determined by differentiation with Giemsa staining) were
cultured for 24 hours at a concentration of $1 \times 10^6$ cells/mL and activated by 2 mg/mL concanavalin A (Con-A). After 24 hours, Tau and TauCl were added at concentrations of 0.1, 0.2, 0.3, 0.4 and 0.5 (mM) for 1 hour. After this time, cells were incubated with MTT (500 μg/mL) for 3 hours to evaluate cell viability and supernatants were used to determine cytokines concentration. **Results:** Tau-treated cells exhibited better viability than those treated with TauCl, in both time and organs. TauCl, in a time and dose-dependent ratio, decreased cytokines secretion when compared to untreated cells. **Conclusion:** These findings show a possible impairment in lymphocytes function promoted by TauCl, correlated with immunosuppression and cell death characteristic of the late stages of sepsis.

**Keywords:** lymphocyte, sepsis, taurine, taurine chloramine, viability.

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