

Dietary glutamine supplementation modulates Th1/Th2 cytokine and interleukin-6 expressions in septic mice

許淳森

Yeh CL;Hsu CS;Yeh SL;Chen WJ

摘要

Abstract

Glutamine (Gln) has been demonstrated to have benefit in the modulation of systemic immunity in sepsis. However, the effects of Gln on local immunity and intra-lymphocyte cytokine expression have not been investigated in mice with gut-derived sepsis. This study evaluated the influence of a Gln-enriched diet on interleukin (IL)-6 expression in organs and Th1/Th2 type cytokine production within lymphocytes in septic mice. Male ICR mice were assigned to control and Gln groups. The control group was fed a semi-purified diet, while in the Gln group, Gln replaced part of the casein. After feeding the respective diets for 3 weeks, sepsis was induced by cecal ligation and puncture (CLP). Mice were sacrificed at 0, 6, 12 and 24h after CLP and their organs were harvested for further analysis. Results showed that IL-6 levels in the liver were decreased, whereas levels were increased in the lungs, kidneys and intestines with the progression of sepsis in both groups. Also, intra-lymphocyte interferon (IFN)-gamma expression decreased and IL-4 expression increased during sepsis. Compared to the control group, the Gln group had higher levels of IL-6 in the liver and lower levels in other organs at various time points. Lymphocyte IFN-gamma expression in the Gln group was higher, and IL-4 levels were lower than those of the control group after CLP. These results suggest that Gln supplementation decreased IL-6 production in non-hepatic organs, while reducing intra-lymphocyte IL-4 and enhancing IFN-gamma expressions. This change may reverse the Th2 type response to a more-balanced Th1/Th2 response during sepsis.