

題名:Effects of dietary glutamine supplementation on lung injury induced by lipopolysaccharide administration

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摘要:Acute lung injury (ALI) is a critical syndrome associated with respiratory dysfunction, and neutrophils are considered to be central to the pathogenesis of ALI. This study investigated the effects of glutamine (Gln) on neutrophil recruitment in a model of lipopolysaccharide (LPS)-induced ALI. C57BL/6 mice were fed a standard diet either with casein as the nitrogen source or with 25% of total nitrogen replaced by Gln. After 10 days, intratracheal instillation of LPS was used to induce ALI. Mice were killed at 0, 6, 12, and 24 h after LPS administration (n = 10/group). Bronchoalveolar lavage fluid and lung tissues were collected for further analysis. The results showed that, compared with the control group, lipid peroxide levels in the lungs were higher at 12 and 24 h after LPS administration in the Gln group. CXC chemokines as well as tumor necrosis factor- were significantly elevated and reached peaks at 6 h in the Gln group, which was earlier than in the control group. Histopathological findings showed that the thickening of alveolar septal space was extensive in the Gln group 24 h and 2 wk after LPS. Also, greater amounts of collagen had accumulated in lung tissue in the Gln group. This study indicates that dietary Gln administration resulted in higher inflammatory cytokine production, with more neutrophils recruited at the early stage of ALI. These results were consistent with the histopathological findings that Gln supplementation causes more severe interstitial inflammation and fibrosis in a model of ALI induced by LPS.