

Abstract

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Dietary glutamine supplementation affects macrophage function, hematopoiesis and nutritional status in early weaned mice.

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BACKGROUND & AIMS: To investigate the effect that early weaning associated with the ingestion of either a glutamine-free or supplemented diet has on the functioning of peritoneal macrophages, hematopoiesis and nutritional status of mice.

METHODS: Swiss Webster mice were early weaned on their 14th day of life and distributed to two groups, being fed either a glutamine-free diet (-GLN) or a glutamine-supplemented diet (+GLN). Animals belonging to a control group (CON) were weaned on their 21st day of life.

RESULTS: The -GLN and +GLN groups had a lower lean body mass, carcass protein and ash content, plasma glutamine concentration and lymphocyte counts both in the peripheral blood and bone marrow when compared to the CON group ($P < 0.05$). Dietary supplementation with glutamine reversed both the lower concentrations of protein and DNA in the muscle and liver, as well as the reduced capacity of spreading and synthesizing nitric oxide, hydrogen peroxide, TNF- α , IL-1 beta and IL-6 in cultures of peritoneal macrophages obtained from the -GLN group ($P < 0.05$).

CONCLUSION: These data indicate that the ingestion of glutamine modulates the function of peritoneal macrophages in early weaned mice. However, a glutamine-supplemented diet cannot substitute maternal milk in respect to immunological and metabolic parameters.

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