Abstract
The reciprocal interaction between the endocrine and immune systems has been the subject of active research during the last decade, and an important body of evidence has accumulated supporting the role of the GH/IGF axis in immune function. More recently, the GH/IGF axis has been postulated as playing an important role in the modulation of stress conditions, such as catabolic stages, aging-related disorders, immunodeficient aids patients and malnutrition. Whether these effects are exerted through endocrine, autocrine or paracrine mechanisms remains to be determined for different immune cell types and tissues. The aim of the current study was to define which specific subsets of lymphocytes are the primary targets for GH action. In addition, the regulatory role of stress induced by protein restriction was investigated with respect to the relative distribution of GH receptor positive lymphoid cells. Normal growing rats were fed isocaloric diets with variable protein content (0, 4, 8, 12 and 20%) for a period of 14 days. The lymphoid cells were then separated from spleen, lymph nodes and peripheral blood lymphocytes. Flow cytometry analysis measured the binding characteristics of Fluos-rrGH to lymphocytes together with specific PE-labelled mAbs defining CD4+ and CD8+ T cells and B lymphocytes. The pattern of expression of the GH receptor differed among the lymphoid tissues and cell subsets. Spleen was the most responsive organ to protein deprivation with highest GH receptor expression in B lymphocytes, followed by CD4+ T cells. As the protein intake was decreased from 20% to 0%, the percentage of GHR positive cells increased from 12% to 52% in splenic B lymphocytes and from 8% to 17% in CD4+ T cells. In contrast, only 10%-13% of lymphocytes in lymph nodes and 2%-4% in circulation, showed binding sites to GH associated with protein deprivation. In conclusion, the increase in GH receptors on lymphocytes under catabolic stress induced by protein malnutrition gives support to the hypothesis of a modulatory role of the GH/IGF axis in preserving the homeostasis of immune tissues

Keywords
growth hormone receptor, malnutrition, lymphocytes