Abstract

Experimental malnutrition models have been useful to study the effects of malnutrition at early ages. Substantial evidence exists that malnutrition in critical stages of development could result in chromosomal damages. The effect of nutritional rehabilitation with soymilk as a complement of a restricted diet, on plasma and muscle proteins, chromosomal integrity, and unspecific and mucosa immune responses, was studied. Adult male and female Wistar rats (5 weeks old) were assigned to different nutritional conditions: a) 14 days on protein restricted diet (corn flour and water), followed by 14 days in which water was replaced by soymilk, as nutritional rehabilitation; b) the same conditions above but periods of 28 days of a protein restricted diet, and 28 days of nutritional rehabilitation and c) age-matched malnourished (protein restricted diet without nutritional rehabilitation) and normally nourished controls. After both nutritional rehabilitation periods, the weights reached were significantly higher (p < 0.001) than the malnourished control values, but lower than the normal control ones. Plasma protein concentrations were similar in all groups. Muscle proteins that were diminished during the restricted diet, reached normal control values after both rehabilitation periods. The protein restricted diet, produced numeric and structural chromosomal abnormalities. Nutritional rehabilitation was only partially able to revert these abnormalities. The phagocytic activity and gut mucosa IgA-secreting cells were significantly reduced (p < 0.001) during the restricted diet; both nutritional rehabilitation periods induced a significant increase of both, phagocytic activity and IgA secreting cells. These values were similar to controls. Our results show that the supplementation of a protein-restricted diet with soymilk improved tissue protein content, as well as unspecific and gut mucosa immune responses, even though it was not able to reinstate fully normal body weight and a normal chromosome karyotype.

Keywords

Malnourish, Soymilk, Chromosome abnormalities, Mucosa immunity, IgA.