

Introduction: Regulation of food intake and nutritional status is mediated by complex interactions of regulatory peptides of the central nervous system, gastrointestinal tract and adipose tissue. These systems are connected by feedback loops which inform the centre about amount of ingested food and energy reserves in the organism. Dysfunction of any of these regulatory areas may lead to changes in nutritional status of the organism.

Methods: We used radioimmunoassay to measure plasma levels of orexin A, total ghrelin and serum levels of leptin and enzyme immunoassay to measure serum levels of adiponectin in healthy subjects and in children with obesity, anorexia nervosa, Crohn's disease and celiac disease and we evaluated the influence of nutritional therapy on these levels. Moreover, we evaluated relationship of these regulatory peptides to other biochemical and anthropometrical factors of nutritional status. We also measured plasma levels of total and unreduced amylin by enzyme immunoassay with immunofluorescence detection in adult patients with osteoporosis, type II diabetes mellitus and in the control group.

Results: During reduction of body weight in obese children and adolescents, there were statistically significant changes of plasma orexin A levels and total ghrelin levels, but we haven't seen any changes in serum levels of adiponectin. In girls with anorexia nervosa during realimentation, statistically significant changes of all three analytes occurred. Plasma levels of orexin A in patients with Crohn's disease and celiac disease were significantly higher than in healthy controls. In adult patients with osteoporosis, there were significantly lower levels of unreduced amylin in comparison with type II diabetic patients and the control group.