Effects of dietary peptides and amino acids on biochemical parameters in rats

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During digestion, dietary protein can be absorbed as amino acids, di-and tri-peptides. Peptides derived from whey protein were demonstrated to modulate carbohydrate metabolism, in vitro. The action of these peptides in vivo is unknown. The aim of this study was to investigate the effect of specific peptides derived from whey protein on biochemical parameters in rats. The animals received the oral solutions containing either: glucose (30%), glucose plus dipeptide (30% glucose plus 40mg/mL of either leucinyl-isoleucine or isoleucinyl-leucine), or the glucose plus a mixture of the two free amino acids in amounts equivalent to that present in the peptide form). Serum insulin levels were measured with ELISA. Biochemical parameters in serum were determined: glucose, total protein, albumin, aspartate amino transferase (AST), alanine aminotransferase (ALT), creatine kinase (CK) and lactate dehydrogenase (LDH) by standard methods. The results showed that serum glucose was higher in rats fed only glucose (142.23±16.0 mg/dL) but not statistically different compared to the peptides leucinyl-isoleucine (116.03±10.80 mg/dL) and isoleucinyl-leucine (105.71±8.27 mg/dL), whereas the amino acids mixture resulted in lower values (90.87±9.58 mg/dL). Serum insulin was higher in rats that consumed the peptide leucinyl-isoleucine (3.41±0.93 ng/mL), followed by amino acids mixture (2.24±0.55 ng/mL), peptide isoleucinyl-leucine (2.16±0.40 ng/mL) and finally glucose (1.79±0.16 ng/mL). No significant differences between groups were observed in the remainder biochemical parameters. The results suggest that addition of these peptides and their amino acids to carbohydrate increased insulin response, without affecting biochemical parameters used as health biomarkers.