

Test of the adaptive modulation hypothesis in rodents: Dietary flexibility and enzyme plasticity

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The phenotypic response of digestive enzymes was assessed in two species of rodents with different food habits. Species were *Phyllotis darwini* (omnivorous) and *Octodon degus* (herbivorous). The activity of sucrase, maltase and aminopeptidase-N were determined in vitro in animals feeding two contrasting diets. No effect of dietary chemistry on sucrase and maltase activities was observed. Nevertheless, aminopeptidase-N showed a reversible response to diet in *P. darwini* but not in *O. degus*. Through Principal Component Analysis we separated the specific and non-specific modulation of the enzymes. The analysis showed that aminopeptidase-N activity is up-regulated by dietary protein in *P. darwini*. Differences in the phenotypic response of this species apparently reflect the historic levels of specific substrates of the natural diets for this enzyme, linking dietary flexibility and digestive plasticity in an evolutionary context.