

Membrane-bound intestinal enzymes of passerine birds: Dietary and phylogenetic correlates

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Bird species exhibit great diversity in digestive tract morphology and enzymatic activity that is partly correlated with the chemical composition of their natural diets. However, no studies have assessed whether the activities of digestive enzymes of the enterocytes correlate with dietary chemical composition data analyzed as a continuous variable at an evolutionary scale. We used a phylogenetically explicit approach to examine the effect of diet on the hydrolytic activity of three digestive enzymes (maltase, sucrase, and aminopeptidase-N) in 16 species of songbirds (Order Passeriformes) from Central Chile. The total activities ($\mu\text{mol}/\text{min}$) of these enzymes were positively associated with body mass using both conventional least squares regressions and phylogenetically independent contrasts. After removing mass effects, we found a significant negative correlation between the ratio of aminopeptidase-N and maltase to the proportion of seeds found in the gizzard, but this relationship was no