Metabolic enzymes in seasonally acclimatized and cold acclimated rufous-collared sparrow inhabiting a Chilean Mediterranean environment

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Due to the higher energy requirements of birds during winter, it is predicted that the activities of metabolic enzymes (e.g., citrate synthase, CS and cytochrome C oxidase, COX) should increase in tandem with increases in rates of energy expenditure (e.g., basal metabolic rate, BMR). However, there is mixed support for the hypothesis of enzymatic acclimatization. Furthermore, there is little information about the effect of ambient temperature on energetics and tissue enzyme activity levels in passerines inhabiting seasonal Mediterranean environments. In this study we evaluated the interplay between BMR and enzyme activities of freshly caught individuals of the passerine Zonotrichia capensis in winter and summer in a Mediterranean environment from central Chile, and also in warm (30 °C) and cold (15 °C) lab-acclimated birds. The results revealed a lack of seasonal variation in BMR, thermal conductance and in the activity of CS and COX. However, we found higher BMR and lower thermal cond