The Condor
Volume 104, Number 3
August 2002 C.E.
Abstracts

FEATURE ARTICLES

USING A COMMERCIALLY AVAILABLE RADIOIMMUNOASSAY TO QUANTIFY CORTICOSTERONE IN AVIAN PLASMA

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Abstract. Using a commercially available corticosterone I^{125} double-antibody radioimmunoassay, we developed and validated an assay procedure for determining corticosterone levels in small-volume (≤30 µL) avian plasma samples. We evaluated this procedure's utility by measuring plasma corticosterone levels in Indigo Buntings (*Passerina cyanea*), American Goldfinches (*Carduelis tristis*), Red-eyed Vireos (*Vireo olivaceus*), and Mourning Doves (*Zenaida macroura*). Standard biochemical validations (e.g., parallelism, recovery of exogenous corticosterone) demonstrated that the assay accurately and precisely measured corticosterone in avian plasma. We used a stress capture protocol to physiologically validate the assay's ability to determine biologically important changes in corticosterone levels. Males and females from four bird species exhibited a significant increase in plasma corticosterone in response to capture, handling, and restraint. Baseline and stress-induced corticosterone levels in our study were similar to reported values for other passerine species using other radioimmunoassay procedures. Our results suggest that this radioimmunoassay procedure is very effective for determining corticosterone levels in small-volume avian plasma samples and is sensitive enough to detect biologically important changes in the adrenocortical activity of birds. Thus, this assay has considerable utility for measuring stress levels and stress responses in small birds (<15 g), from which only small volumes of plasma (≤30 µL) can be collected.

Key words: Columbiformes, corticosterone, Passeriformes, plasma, radioimmunoassay, stress.