Corticosterone responses to handling and effects of corticosterone injections in the Japanese quail (*Coturnix coturnix japonica*)

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ABSTRACT

These studies examined the effects of corticosterone on the reproductive system, investigated the relationship between plasma and faecal corticosterone levels and defined corticosterones response to handling in the Japanese quail (*Coturnix coturnix japonica*). Six days of daily corticosterone injections decreased the area of the cloacal protuberance in both seven week old and six month old male quail. However, plasma testosterone levels 24 hours after an injection were only decreased in the six month old birds. There was a strong correlation between basal plasma and faecal corticosterone concentrations in the six month old birds.

The effects of corticosterone during the 24 hours after an injection were then examined before and after six days of corticosterone injections in male quail. Corticosterone injections decreased plasma testosterone levels three-fold for 6-12 hours both after a single corticosterone injection and after six days of treatment. However, there were no changes in plasma luteinising hormone levels during the 24 hours after an injection. This result is consistent with corticosterone acting directly on the testes to decrease testosterone release. The rate of corticosterone removal from the blood after an injection increased after six days of corticosterone injections.

Handling female Japanese quail for 15 minutes resulted in increased plasma corticosterone levels for less than 30 minutes. Mean corticosterone response curves were almost identical when the same birds were handled on three occasions. Although corticosterone response curves were similar during the early afternoon and during the night, basal corticosterone levels and the area under the corticosterone response curves were lower at night. Plasma corticosterone levels 0 and 15 minutes after the initiation of handling were more than twice as high in birds with large gonads than birds with small gonads.

This study provides the first information in birds of a decrease in plasma testosterone levels within three hours of a corticosterone injection, independent of changes in plasma LH levels. It is also the first study in a domestic species to show larger corticosterone responses in female birds with large gonads than in birds with small gonads.

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