

## **Melatonin excretion in photoperiodic mammalian and bird species: chinchilla and Japanese quail.**

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Photoperiod is a powerful synchronizer of seasonal changes in physiology and behavior. Melatonin (Mel) is considered a zeitgeber for seasonal photoperiodic changes and plays a role in energy expenditure and body mass regulation. Our studies are focused to explore the possible influence of Mel in stress and reproductive responses to environmental cues, in photoperiodic species such as chinchilla (*Chinchilla lanigera*) and Japanese quail (*Coturnix coturnix japonica*). Therefore, in order to develop a reliable non-invasive method to monitor pineal function, our experiment was designed to generate basic information about melatonin excretion, determining its main route and time course of excretion. Labeled Mel (<sup>125</sup>I-Mel; 5µCi/male) and unlabeled Mel (25µg / 100g b.w.) were intraperitoneally injected to separately housed males (n=3 in each group). Excretes were collected from each individual before (-24h) and after <sup>125</sup>I-Mel injection (every 2 h during the first day and every 12 h until 96 h were reached). Samples were stored at -20 °C until processing. After <sup>125</sup>I-Mel administration in chinchilla, a radioactive peak appeared in the first urine samples (range: 2-6 h post-excretion) and rapidly decreased; in feces, maximum radioactivity exhibited a median of 8 h post-administration (range: 6-34 h). Most of the radioactive metabolites were recovered in urine (median 92.65 ± 2.64%). In quail, peak excretion occurred at 3 h (range 2- 4 h). In all birds, a second smaller peak was observed between 8 and 12 h; total recovery was 90.57 ± 5.57%. In conclusion, the excretion pattern was similar in males of both photoperiodic species. Chinchilla employed mainly urine as a route to excrete melatonin. Quail exhibited two radioactive peaks in excreta, presumably representing urine and feces excretion. Future research is necessary to characterize excreted metabolites of endogenous melatonin in order to develop and/or choose the appropriate immunoassay.