褪黑素在光照影響鵝生殖之徑路中所扮演之角色

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摘 要

本研究之目的乃在探討褪黑素在光照影響鵝生殖之徑路中所扮演之角色。選擇健康成熟白羅曼雌鵝45隻與雄鵝21隻，逢機平均分爲三組：NP組爲對照組，暴露於自然光照期；16L 組每日暴露於16 hr 光照；16L + M 組亦暴露於16 hr 光照期，並於每日15:30時餵予褪黑素500 ε g/鵝。試驗期爲自三月起至翌年七月底止。每日記錄產蛋性狀，每個月採集雄鵝精液並評估其性狀，每隔二週採集雄鵝血液樣本一次，以放射免疫鑑定法分析血漿中睪固酮含量。結果顯示，NP 組雌鵝產蛋於5月26日停止，顯著較16L 組(5月2日) 與16L + M 組(4月28日) 爲遲($P < 0.05$)，但後兩組之間並無差異。NP 組雌鵝自翌年一月開始再進入產蛋季節，而16L 組與16L + M 組則在10 月至2月間零星產蛋。在五月，NP 組全部雄鵝可採得精液，唯品質不良，16L 組與16L + M 組則全部無法採得精液。6-9月所有雄鵝皆無法採得精液。在所有採精時間，精液性狀在16L 組與16L + M 組之間皆無差異。雄鵝血漿睪固酮含量三組皆在試驗開始後即逐漸下降，但NP 組雄鵝自翌年一月即開始上升，而16L 與 16L + M 組在試驗結束時仍維持於低水平。綜合上述，長光照可使鵝提早結束生殖季節，並抑制生殖，且其作用不被褪黑素給予所廢止，顯示褪黑素並非光照影響鵝生殖之主要媒介。

關鍵詞：白羅曼鵝、褪黑素、
光照週期、生殖

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The Role of Melatonin in the Action Pathway of Photoperiod Effect on the Goose Reproduction

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Abstract

This study was conducted to discover the role of melatonin in the action pathway of photoperiod on the goose reproduction. Forty-five female and 21 male White Roman geese were randomly allotted into three groups. Geese in group natural photoperiod (NP) were exposed to natural photoperiod. Geese in group long days (16L) were exposed to long photoperiod (16L) from early March to July of next year. Geese in group long days plus melatonin (16L + M) were also exposed to 16L and fed 500 μ g/bird/day at 15:30 from early March to July of next year. Egg production was recorded every day. Blood samples were collected biweekly. Semen samples were collected and evaluated at intervals of 1 month. Plasma testosterone levels were determined with radioimmunoassay. The results showed that the egg production ceased significantly later in group NP (May 26) than in groups 16L (May 2) and 16L + M (April 28) ($P < 0.05$). The date of ending of laying was not significantly different between groups 16L and 16L + M ($P > 0.05$). In May, all ganders in group NP could be collected semen, but none in other 2 groups could. None of ganders in each group could be collected semen in June, July, August and September. All parameters of semen in all occasions never differed between groups 16L and 16L + M. It was concluded that long photoperiod causes earlier cease of laying, and the effect can not be abolished by melatonin feeding. It implies that melatonin does not mediate the effect of photoperiod on the reproduction in geese.

Key words: White Roman geese, Melatonin, Photoperiod, Reproduction