Responses to abrupt changes in feeding and illumination in laying hens

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Abstract:

This study aimed to investigate the responses to abrupt changes in feeding and illumination during the egg laying period. Six hens were housed individually in cages under constant environmental conditions, with a photoperiod of 15 h (0400-1900) and ad libitum access to food for 10 days. Then the same hens were subjected to a feed withdrawal trial (between 1200 and 0830), followed by a 5-h reduction in the photoperiod (0400-1400). The heart rate (HR), body temperature (BT), and locomotor activity (LA) of the laying hens were measured continuously using radiotelemetry, with simultaneous recording of the time of oviposition. Behavioral responses to sudden changes in the management program during the pre- and post-laying periods were also recorded. Hens with restricted access to food had significantly lower HR, BT, and LA during the pre- and post-laying periods than hens given unrestricted access to food. In the pre-laying period the behavioral activity counts for cage pecking and preening were significantly higher, and feeding and drinking counts were significantly lower in the hens with restricted access to food than in the hens given unrestricted access to food. During the post-laying period the behavioral activity count in preening was significantly higher in the hens with restricted food access than in those given unrestricted access to food. Experimental hens subjected to a reduced photoperiod had significantly higher HR and BT during the prelaying period than those under the normal light regime. During the pre- and post-laying periods hens subjected to light reduction had significantly lower LA than the hens subjected to the normal light regime. In the pre-laying period the behavioral activity count for circling was significantly lower and the preening count was significantly higher in the hens subjected to light reduction than in the hens subjected to the normal light regime. The post-laying period occurred during the light period and thus the behavioral activities were similar in the hens subjected to light reduction and those under the normal light regime. Mean onset of egg laying in all groups exposed to food withdrawal or darkness was delayed by 34 min in the food reduction trial and by 11 min in the light reduction trial, as compared to the hens during the control period. These results suggest that changes in the management program might lead to stress and impair the welfare of hens.

Key words: Body temperature, egg laying, heart rate, laying hens, locomotor activity.
Effect of surgery for cannula implantation into the hypothalamus on the behaviour and neural activity of broiler chicks

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Abstract

1. The effects of a surgical operation, to implant a guide cannula in the chick hypothalamus for microdialysis, on behavioural responses and neural activity in broiler chicks are described.

2. General behavioural activities (feeding, preening, sitting, drinking, cage pecking and beak wiping), open field and locomotor activity tests were conducted to evaluate the effects related to surgery in the immediate 4 d following this procedure. Perfusion of Ringer solution with high K⁺ after 4 d of guide cannula implantation was used to estimate the neural activity resulting from surgery through stimulation of monoamine release by in vivo brain dialysis.

3. The results of direct behavioral observations indicated that the stress provoked by surgical guide cannula insertion caused behavioural alterations that are particularly evident in the immediate days following this procedure. Open-field tests on day 4 after surgery showed that, compared to the intact control chickens, the treated chicks had a shorter latency to ambulate and defeate, with more vocalisation. Locomotor activity was less in the treated chicks than in the controls.

4. After 4 d of guide cannula implantation, the serotonin concentration started to increase 30 min after the onset of perfusing high-K⁺ Ringer solution. It reached its highest value at one hour, suggesting that the 4 d after surgery is enough to alleviate some neurochemical dysfunction resulting from surgery. The results of behavioural observations, open-field and locomotor activity tests indicate that the surgical operation caused stress and fear in chicks which persisted up to 4 d.
Do Horses Prefer Certain Substrates for Rolling in Grazing Pasture?

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Abstract

We assessed whether rolling damage by grazing horses could be reduced by constructing areas assigned for rolling. A group of horses were enclosed in a paddock with and without rolling areas made of dry soil, sand, and straw. Their behavior was recorded for 1 week in the paddock without any treatment (control paddock). Then the horses were moved to another paddock with the rolling areas (rolling paddock). After a 3-week familiarization period, horses were observed for 1 week. In the rolling paddock, the frequency and time spent rolling were significantly greater in rolling areas than in non-rolling areas. Horses significantly preferred the soil rolling area than sand and straw (P < .05). Although rolling was considered the most relevant body care behavioral element, the effects of the substrate in rolling areas on other body care behavioral activities, such as mutual and self-grooming, also were investigated. The frequency and duration of mutual grooming and the duration of self-grooming decreased significantly in the rolling paddock compared with the control paddock (P < .05). Hence, offering a rolling area encourages horses to roll in these areas and keeps the pasture in good condition; therefore, grazing time can be increased, with less reliance on supplementary feed.
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Keywords: Grazing horses; Mutual grooming; Rolling; Self-grooming
Some behavioral aspects and proximate causes associated with emigration of young female Misaki feral horses

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Abstract

An investigation was carried out on 28 Misaki young female feral horses living in Misaki Island, Japan to explore the behavioral patterns, and proximate causes of emigration of these females when they left their natal band or mothers. All young females emigrated between 1 and 4 years of age. The age of emigration was significantly higher ($P < 0.02$) when the dam parity was lower. At the time of emigration, six behavior patterns of young females were observed. All the female offspring of mothers with lifetime stability (remained with the stallion permanently) had lifetime stability after their emigration. Hence, young females who lived in a stable band emigrated at an early age, which avoided mating with their sire, which would result in inbred offspring. Also the young females which had lifetime stability gave birth at an earlier time than unstable ones. Furthermore, these stable young females began their lifetime stability at the same age or earlier than their mothers. This suggests that the mothers have effective influence on their female offspring before and after their emigration. Of the young females, 28% emigrated because of the birth of a sibling. However, another 72% of the young females were forced to emigrate during their estrous period, or when they became pregnant and were close to parturition, or due to the death of their mothers. Therefore, if it was a clear external cause, this could be attributed to other causes such as the age of the young females, dam parity and dam stability at the time of emigration. These results provide a partial indication of which factor or combination of factors is necessary or sufficient to explain the emigration patterns.
Keywords: Emigration behavior, feral horse, lifetime stability, young female
Variation in Fecal Testosterone Hormone Concentration with Season and Harem Size in Misaki Feral Horses

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Abstract
On Misaki peninsula, Japan, fecal samples were collected from 14 Misaki stallions at monthly intervals for 12 consecutive months. The fecal testosterone concentration was measured by radioimmunoassay. We examined monthly fecal testosterone hormone patterns and the relationship between fecal testosterone concentration and breeding season and later harem size. Marked monthly variations in fecal testosterone concentration were observed. The fecal testosterone concentration began rising in March; the highest mean monthly concentration, 2.87 ± 0.18 ng/g, was found in April, and the level remained elevated until the end of August and thereafter decreased. A significant correlation was found between the fecal testosterone concentrations and harem size in both the breeding and non-breeding season among the 14 stallions. It is therefore possible that the testosterone levels in feces, instead of blood, correlate very well with harem size in Misaki stallions. Our findings emphasized that the fecal testosterone concentration can be a powerful indicator for monitoring of endocrine status in wild stallions.

KEYWORDS: fecal testosterone level, feral horse, harem size, radioimmunoassay.