Changes in the Behavior Patterns of Laying Hens with Increasing Pecking Activity

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Hens in cages are said to spend more time feeding than those in pens, and to spend considerable time just playing with feed. We are of the opinion that hens spend much time in food tampering and that the drive for this activity is the same as that for pecking or preening activity. In the present research, an examination was made of the effects of increasing the pecking activity on the behavior patterns, especially food tampering, of hens.

Materials and Methods

Eight White Leghorn hens (Shaver Starcross 288, 6 months old, 1.5-1.6 kg B.W.) were placed in separate cages lined up in a single row within an environment-controlled chamber (KOITO-TRON EA-Special Type, 12m²) exposed to light for 14 hours (06:00-20:00) each day. The temperature was maintained at 20±1°C without humidity control (60-65% of relative humidity). The six hens in the middle of the row of cages were divided into two groups, A and B, with three hens each. At 10:00 A.M., each was provided with 150 g of pelleted feed (Nippon Formula Feed Manufacturing Co., CP 17%; ME 2830 kcal/kg, φ3 mm, 44±3 mg/particle). The experiments were carried out according to switch-back design: group A, control period (C)→experimental period (E)→C; group B, E→C→E. In the preliminary experiment to determine the object in the cage causing the pecking activity, hens pecked at paper more frequently than other objects, such as a ping-pong ball, button, and an on-off light. Consequently, rolled paper was crumpled into a ball (5 m/hen) and placed in each cage 4 times per day (08:00-, 11:00-, 14:00-, 17:00-), 1 hour each time, during the E period. The interval between each E and C period was two days. The hens were reared under the same conditions as those of the control period during each of these two-day intervals. Daily feed intake was measured and the behavior of each hen was observed for all C and E periods using the VTR-system. Water was available ad libitum in each cage.

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Results and Discussion

Daily feed intake in the C and E periods was 106.0 ± 8.5 and 99.3 ± 7.0 g, respectively. Differences in the amounts were little and not significant.

The proportion of each activity in the light period (06:00-20:00) is shown in Fig. 1. Though the time spent eating reflected individual differences, the mean value in E (8.8%, 74 min) was significantly less than in C (13.8%, 116 min). Pecking increased from 16.9% in C to 25.4% in E, about half being directed to the rolled paper in E. Other activities were not affected by rearing conditions. The total time engaged in activities using the beak was 40-50%, the same for all hens under both rearing conditions, as was also confirmed by the data of our previous reports. The number of pecks per min was assumed to be about 100, and the number of pecks at feed in C and E was 11600 and 7400, respectively. That for actual eating was calculated as about 2400 (daily feed intake/mean pellet weight = 106.0/0.044) in C and 2300 (99.3/0.044) in E. The number of pecks in food tampering decreased from 9200 in C to 5100 in E.

Though the amount of feed intake did not change by the presence of the rolled paper, the time spent pecking increased significantly and the time spent eating, pecking
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at feed, decreased. It is thus apparent that food tampering decreased with increasing pecking activity and that the greater part of the food tampering has the same drive as that of pecking activity.

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