

167. Knowles, T.G. and Broom, D.M. 1993. Effect of catching method on the concentration of plasma corticosterone in end-of-lay battery hens. *Vet. Rec.* 133, 527-528.

Effect of catching method on the concentration of plasma corticosterone in end-of-lay battery hens

T. G. Knowles, D. M. Broom

Veterinary Record (1993) **133**, 527-528

IN a recent survey by Gregory and Wilkins (1989) it was found that 29 per cent of live, end-of-lay, battery hens had broken bones after being transported to slaughter. Many of the breaks had occurred when the birds were caught in their cages and carried from the hen house to be crated on the lorry. End-of-lay hens from battery cages have particularly fragile bones (Knowles and Broom 1990, Knowles and others 1993). Broken bones are likely to be very painful and any practice which results in broken bones will compromise the welfare of the hens. A further study by Gregory and others (1993) looked at the effect of alternative methods of catching and crating battery hens on the incidence of broken bones. Another aspect of the welfare of battery hens is their physiological response to these practices. The study described below investigated the effect of some of the catching methods

T. G. Knowles, D. M. Broom, Department of Clinical Veterinary Medicine, University of Cambridge, Madingley Road, Cambridge CB3 0ES
Dr Knowles' present address is School of Veterinary Science, University of Bristol, Langford, Bristol BS18 7DY



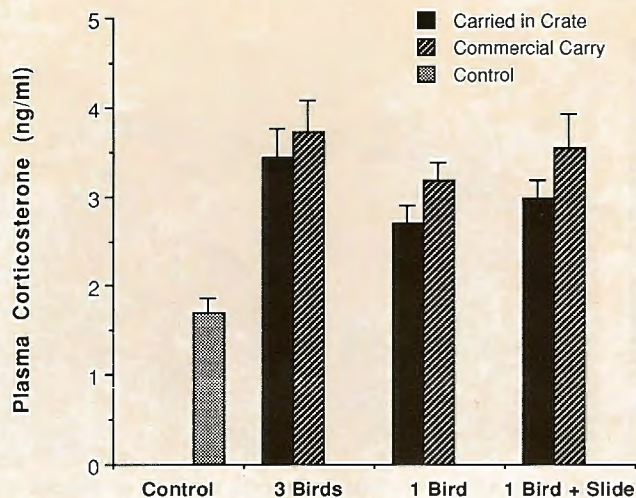


FIG 1: Mean \pm sem plasma corticosterone concentrations in 20 control birds and in the six groups of 20 birds removed from their cages in three different ways and either carried from the house by hand or in a crate (second trial)

used by Gregory and others (1993) on the concentration of plasma corticosterone in end-of-lay hens after catching and crating. The concentration of plasma corticosterone has been shown to be related to the magnitude of an emergency response in laying hens (Beuving and Vonder 1978).

In the first trial each bird was removed individually from the cage by both legs and then either crated and taken from the house in the crate with other birds or carried from the house with another bird and then crated outside. Once outside a blood sample was collected by venepuncture. Each treatment was carried out on 20 birds. Control samples were collected from 20 birds which were sampled immediately after being removed carefully from their cages.

The birds in the second trial were from the same flock and the same house as those used by Gregory and others (1993) and they were used to compare the effect of catching and removing the birds one at a time by both legs, or catching and removing the birds one at a time by both legs, using a breast slide, or catching and removing three birds at a time by one leg. Twenty of the 40 birds allocated to each of these three treatments were crated directly and 20 were carried from the house and then crated, as in the first trial. Once outside the house a blood sample was collected by venepuncture. Control samples were collected from 20 birds which were sampled immediately after being removed carefully from their cages. In both trials care was taken to ensure that all the non-control blood samples were obtained at a similar time after the bird had been removed from its cage, so that the plasma corticosterone concentrations were comparable between birds and between treatments. Plasma corticosterone was assayed as described by Knowles (1990) and the results were analysed by analysis of variance. In both trials, birds carried from the house were carried inverted, held in one hand, by the legs as is normal commercial practice.

In the first trial the mean (\pm sem) concentrations of plasma corticosterone were 1.55 ± 0.201 ng/ml in the control birds, 1.97 ± 0.103 ng/ml in the birds crated inside the house, and 2.68 ± 0.157 ng/ml in the birds that were carried normally and crated outside the house; the differences between the three treatments were significant ($P < 0.05$). Fig 1 shows the results from the second trial. A two-way analysis of variance of the effects of method of removal and method of carrying showed no significant difference in plasma corticosterone concentrations due to the method of removal from the cage ($P = 0.12$) but a significant difference due to the method by which the hens were carried from the house ($P = 0.013$). A one-way analysis of variance of all seven treatments showed that the plasma corticosterone concentrations in the control birds were lower than in the birds from all the other treatments ($P < 0.01$) and that the concentrations in the birds removed from the cages three at a time and carried from the house were higher than in the birds removed individually, without the use of a slide, and crated directly ($P < 0.05$).

The lower plasma corticosterone concentrations observed in both trials when the hens were crated as soon as they were removed from their cages indicated that this procedure was less traumatic than the normal commercial method of carrying birds from the house. However, Gregory and others (1993) found no benefit, in terms of a reduction in broken bones, from crating the hens in the house. In the second trial there was a trend for the birds pulled from the cage in groups of three to have higher plasma corticosterone concentrations than the birds which were removed individually. When birds were removed individually from the cage, the use of a breast slide did not appear to affect the concentrations of plasma corticosterone. These two results from the second trial appear to support the findings of Gregory and others (1993) in terms of the severity of each treatment. Their work showed that catching and removing birds from the cage one at a time by both legs resulted in the lowest incidence of broken bones (4.6 per cent of birds), removing one bird at a time by one leg resulted in 13.8 per cent of breaks, and removing three birds at a time by one leg resulted in 10.8 per cent. The use of a breast slide in the feed trough had no significant effect on the incidence of breaks, whatever the method of removal.

Placing hens directly into crates appeared to reduce the trauma of the process for the birds, but the method of carrying from the house did not affect the incidence of broken bones. There was evidence that catching and removing hens individually by both legs was less traumatic and this method did reduce the incidence of broken bones. The use of a breast slide did not appear to have any effect.

Acknowledgements. — We thank the staff at Gleadthorpe Experimental Husbandry Farm for their help with the study. T. G. K. was funded by a Ministry of Agriculture, Fisheries and Food studentship.

References

- BEUVING, G. & VONDER, G. M. A. (1978) *General and Comparative Endocrinology* **35**, 153
 GREGORY, N. G. & WILKINS, L. J. (1989) *British Poultry Science* **30**, 555
 GREGORY, N. G., WILKINS, L. J., ALVEY, D. M. & TUCKER, S. A. (1993) *Veterinary Record* **132**, 127
 KNOWLES, T. G. (1990) PhD thesis, University of Cambridge
 KNOWLES, T. G. & BROOM, D. M. (1990) *Veterinary Record* **126**, 354
 KNOWLES, T. G., BROOM, D. M., GREGORY, N. G. & WILKINS, L. J. (1993) *Research in Veterinary Science* **54**, 15

