Research article

Long transport times for HatchCare chicks: a cause for concern?

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Introduction

The majority of day-old-chicks have to be transported for prolonged periods of time from the hatchery to reach the poultry house and have access to feed and water. It is sometimes suggested that a prolonged period of time without feed and water is more detrimental to the health and performance of chicks that had received early feeding and water between hatching and pull than for traditional chicks. This implies that it is better not to provide early feeding and water to chicks that are likely to spend a long time in transport. However, little data is available on the true effect of prolonged transport times after early feeding and water on health and performance, and whether a prolonged transport duration without feed and water is more detrimental to early fed and watered chicks than to traditional chicks.

HatchTech's Research team designed an experiment to study the effect of a short or long period without feed and water after pull on the performance of broilers that had received early feeding and water or were deprived in the hatchery. In total, 1,300 Ross 308 eggs of a breeder flock with an age of 55 weeks were used. The eggs were transferred to HatchCare on incubation day 18 with 90 eggs per basket. Half of the eggs were placed in normal HatchCare baskets with access to feed and water (the two "Early fed" treatments; Table 1). The other half of the eggs were placed in HatchCare baskets without feed and water (the two "Deprived" treatments).

After pull, 480 male chickens were transported to the grow-out facility where they were divided over 6 pens per treatment (20 chicks per pen). All chicks were deprived of feed and water for 3 hours between pull and placement in the broiler house as they were being processed and transported. Upon placement, the 240 chicks in the two Short transport treatments (Table 1) were treated normally, with feed and water available at placement but without bedding. The 240 chicks in the two Long transport treatments were additionally deprived of feed, water, and bedding for 24 hours after placement in the broiler house to simulate a prolonged transport period without feed and water. 27 hours after the chicks had been pulled from HatchCare, all pens received bedding and the Long transport pens received feed and water.

Table 1. Overview of the four treatments.

Treatments	Hatching	Time without feed in transport phase
Early fed – Short transport	Access to feed and water	3 hours
Deprived – Short transport	No feed and water	3 hours
Early fed – Long transport	Access to feed and water	27 hours
Deprived – Long transport	No feed and water	27 hours

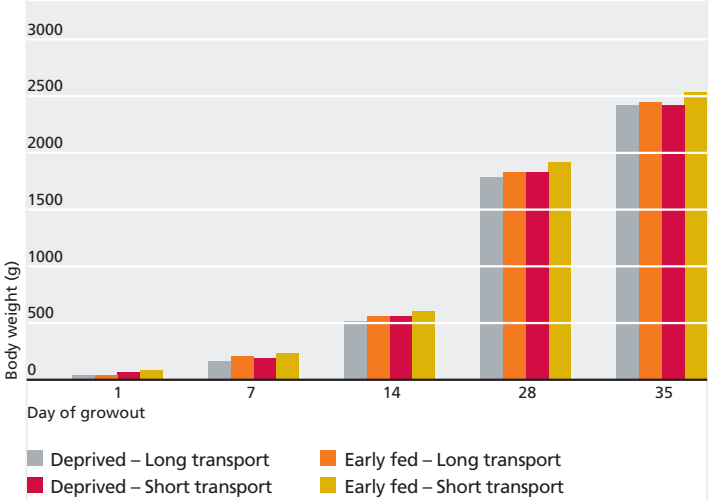
Broilers were weighed in bulk per pen on day 1 (after the 27 hours of feed deprivation period for the Long transport treatments), 7, 14, 28, and 35. Residual feed was weighed per pen on day 7, 14, 28, and 35. Feed intake and feed conversion ratio were calculated per pen. Daily mortality was noted per pen. On day 36, all broiler chicks were slaughtered.

Results

Twenty seven hours after leaving HatchCare (day 1), Early fed – Short transport chicks had the highest body weight at 68.1g, followed by Deprived – Short transport chicks at 58.5g (Figure 1). This was to be expected, as the Short transport chicks had been able to eat and drink and continue to grow for the past 24 hours. Early fed – Long transport chicks had lower body weight (48.3g) than the Short transport chicks, but a higher body weight than Deprived – Long transport chicks (43.1g).

From day 1 onward, all chicks had unlimited access to feed and water and the Early fed – Long transport chicks showed compensatory growth. Body weight gain between day 1 and 7 was 26.1g for Early fed – Short transport, 25.1 g for Early fed – Long transport, and 22.5g for both Delayed treatments. The same pattern could be seen up till slaughter: Early fed chicks were heavier than Deprived chicks, both for short and long transport durations. On day 35, Early fed – Long transport chicks were 42g heavier than Deprived – Long transport chicks. They were similar to Deprived – Short transport chicks with a difference in body weight of only 16g.

Figure 1. Body weights of chicks that received feed and water immediately after hatching or that were deprived, and were then off feed and water for a short (3h) or long (27h) time simulating different transportation periods.



All increases in growth were accompanied by a matching increase in feed intake, resulting the same feed conversion ratio between treatments over the whole growout period of 1.54. When feed conversion ratio was calculated to an average body weight of 1500g, statistical analysis showed that it also did not differ significantly. Feed conversion ratio calculated to 1500g body weight was 1.13 for Early fed – Short transport, 1.17 for Early fed – Long transport, and 1.18 for both Deprived treatments.

In total, 11 chicks died or were culled by day 35 (2.3% of total); 4 in both Early fed – Short transport and Deprived – Long transport, 2 in Early fed – Long transport, and 1 in Deprived – Short transport. These numbers are too small to draw clear conclusions on the effect of transport time and early feeding and water on mortality.

Conclusions

The results of the present experiment showed that early feeding and water immediately after hatching is always advantageous for growth, even when they have to be transported for long periods afterwards. Chicks that had received early feeding and water in the hatcher and were then feed deprived for 27 hours to simulate a prolonged transportation time performed better than chicks that were feed and water deprived in the hatcher and then deprived for an additional 27 hours. The long term positive effect of providing early feeding and water in the hatcher was stronger than the long term negative effect of prolonged transportation times.

One thing to keep in mind when transporting early fed chicks is that their heat production per chick may be almost twice as high as that of deprived chicks. This increases the risk of overheating in suboptimal climate conditions for chicks that received early feeding and water. It is therefore very important to use a transportation device with adequate temperature control and high cooling capacity.

Prolonged transportation times are never beneficial to the newly hatched chick. To use the full potential of HatchCare chicks, it would be best if chicks can continue to feed and drink while being transported, allowing uninterrupted continuation of their development. In the HatchTraveller for HatchCare chicks, chicks have access to feed and light. We furthermore continue to develop our Traveller in hopes of being able to provide water in transit in the future. This way, we can guarantee the most optimal conditions for our newly hatched chicks: allowing uninterrupted growth and development, both in the hatchery and during transportation.