Fit for transport? Broiler chicken fitness assessment for transportation to slaughter

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Abstract

EU legislation stipulates that unfit broilers may not be transported, but no guidelines for fitness-for-transport assessment are provided. Moreover, the impact of pre-slaughter conditions (eg crate stocking density) may depend on broiler fitness. We aimed to evaluate a fitness-assessment method and test physiological responses to the pre-slaughter phase with different stocking densities. Broilers (41 days; n = 1,939) were transported for 45 min at 'high' (160 cm² per kg), 'medium' (190 cm² per kg) or 'low' (220 cm² per kg) stocking density, and were subjected to a commercially representative pre-slaughter phase duration of ≈16 h. Pre-loading, lameness, illness, hock burns, foot-pad dermatitis, lesions, physical defects, cleanliness and cachexia were scored on a sample, for categorisation as fit (n = 49) or unfit (n = 25). Blood was collected before and after the pre-slaughter phase for determination of plasma levels of corticosterone (CORT), lactate, glucose and thiobarbituric acid-reactive substances (TBARS). Lameness, foot-pad dermatitis, lesions, illness, defects, and cachexia scores were, or tended to be, correlated with ≥ 1 physiological stress indicators. Unfit chickens tended to show or showed lower pre-transport glucose and lactate levels than fit chickens. Post-lairage, unfit chickens had higher TBARS and lower lactate levels compared to fit chickens. At high and low stocking densities, unfit chickens showed higher CORT levels than fit chickens. Furthermore, CORT levels of unfit chickens increased more at low stocking density. The results show that our method potentially identifies chickens experiencing additional stress during the pre-slaughter phase, due to poor physical condition. High and low stocking density proved a stressor for all, and especially for unfit chickens, with detrimental implications for their welfare.

Keywords: animal-based welfare measure, animal welfare, broiler chicken, fitness-for-transport assessment, physiological stress, pre-slaughter phase

Introduction

According to EU legislation (EU Council Regulation no 1/2005 annex I) “no animal shall be transported unless it is fit for the intended journey, and all animals shall be transported in conditions guaranteed not to cause them injury or unnecessary suffering”. The Regulation defines “animals unfit for transport” as animals that are injured or that show physiological weaknesses, especially when: i) they are unable to move independently without pain or to walk unassisted; or when ii) they have a severe open wound. Furthermore, the regulation states that sick or injured animals may be transported only when this does not cause any additional suffering.

To ensure acceptable animal welfare during transportation, and the complete pre-slaughter phase (from catching on-farm until end of lairage), an evaluation of the animals’ fitness for transport should be performed beforehand (European Food Safety Authority [EFSA] 2011). This applies to all species of production animals, including broiler chickens (Gallus gallus domesticus). In current broiler production practice, this evaluation of fitness commonly entails the producer to sign a form stating the flock is fit for transport. However, variation in fitness within the flock is apparent. It can be expected that within a flock some individual birds may be unfit to be transported while others are fit, which calls for assessment of fitness at an individual level in order to comply with EU legislation. For many other production animals, such as pigs, sheep and cattle, individual assessment is generally accepted as best practice.

For several production animals, including Equidae (World Horse Welfare et al 2015), adult bovines (Eurogroup for Animals et al 2012), and cattle and pigs (van Dixhoorn et al 2010), guidelines have been developed for fitness assessment at the level of the individual animal, some with pictures or illustrations of...