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Validation of histological and visual scoring systems for foot-pad dermatitis in broiler chickens

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Abstract

In this study, an appropriate visual scoring system for foot-pad dermatitis was validated, considering the histologically measured depth of the inflammation zone and the histopathological grade (no lesion, mild lesion, ulcer). The aim being to evaluate whether the visual, macroscopic scoring of foot-pad dermatitis can represent the histological, microscopic findings. Two hundred Ross 308 broiler chicken feet (birds aged 39–42 fattening days) were collected at a slaughterhouse and scored macroscopically according to a modified version of the Welfare Quality® Assessment Protocol for Poultry. Afterwards, 200 histological slides (one per foot) were prepared, the extent of the inflammation measured and all slides scored by veterinarian pathologists using Michel et al*'s modified scheme. The statistical relationship between microscopic and macroscopic score and depth of inflammation were estimated via regression models. Increasing macroscopic score was found to be linked with an increase in microscopic score and the depth of inflammation. In particular, feet without lesions and feet with ulcers were identifiable using the macroscopic score. Macroscopic scoring of foot-pad dermatitis can mirror histological findings once certain limitations are taken into account (superficial lesions were not clearly identifiable). Foot-pad dermatitis is considered a useful indicator of animal welfare and our findings suggest that visual, macroscopic scoring could be a practicable assessment tool.*

Keywords: *animal welfare, animal welfare indicator, broiler, foot-pad dermatitis, histological validation, poultry*