Evaluation of indicators to support risk-based meat inspection in poultry

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Introduction and Objectives

Meat inspection is essential to food business operators compliance with regulatory requirements regarding protection of human and animal health and animal welfare. Practical arrangements for *post mortem* inspection of poultry are defined in article 25 of the Implementing Regulation 2019/627. *Post mortem* inspection procedures should be risk-based, with necessary additional procedures when there is reason to suspect that the meat from the inspected birds concerned could be unfit for human consumption.

The main objective of this study was to assess the usefulness of potential indicators that may assist the Official Veterinarian in implementing a risk-based *post mortem* inspection.

Materials and Methods

In this study, during meat inspection, were analysed 499518 broilers from 78 batches. From those, data that are routinely registered by the Official Veterinarian was collected: age, weight, cumulative mortality rate and deaths on arrival. Statistical analysis was used to evaluate their possible correlation with the total condemnation by disease.

Results

Table 1 resumes the results found regarding the official data collected as well as the limits imposed by Competent Authority (DGAV, 2011) for some of the parameters analysed. By analysing this tables it is possible to observe that the maximum value found for cumulative mortality rate exceed the animal welfare maximum limit, however this only occurred in 1 batch. Furthermore, the criteria deaths on arrival cross the animal welfare maximum limit in 6 batches (7,7%). All the flocks were in agreement with the maximum limit in the parameter total condemnation by disease.

The principal causes of total condemnation (figure 1) were peritonitis (21%), myopathies (21%), abnormal colour (12%), cellulitis (7%) and “febrile” carcasses (6%).

This study identified a positive association between age (r=0.271; p=0.016), weight (r=0.276; p=0.014), cumulative mortality rate (r=0.282; p=0.013), deaths on arrival (r=0.314; p=0.005) with the total condemnation by disease. Of these parameters, the cumulative mortality rate, which is registered in the Food Chain Information, and can be seen before the slaughter of each flock, appears to be a very useful as an indicator to be used under a risk-based meat inspection approach. The worse the cumulative mortality rate, the more time the Official Veterinarian must dedicate to the *post mortem* inspection of that flock. The deaths on arrival, despite showing a higher statistical value correlation, it is not practical to use as the Official Veterinarian only receives the true value of this parameter after the flock is slaughtered. However, it can be used as a good indicator to evaluate the animal welfare at farm level.

Parameter	Medium	Minimum	Maximum	Maximum animal welfare limit (%)
Age (d)	37,026	29	49	---
Weight (kg)	1,928	1,287	2,712	---
Cumulative mortality rate (%)	2,858	0,390	7,380	6
Deaths on arrival (%)	0,195	0	1,1	0,5
Total condemnation by disease (%)	1,326	0,200	3,400	4

Table 1. Medium, minimum, maximum values of the studied parameters and maximum animal welfare limit according with DGAV (2011) .

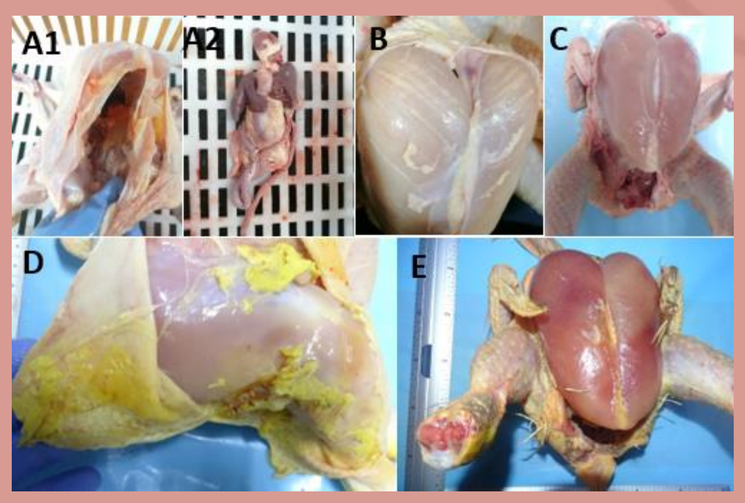

Figure 1. Most commun total condemnation lesions. A1, A2 – peritonites; B-myopathies; C – abnormal colour; D – cellulitis; E – “febrile” carcass.

Conclusions

This work highlights the importance of meat inspection in monitoring the animal welfare and the need to revaluate the importance of various animal welfare indicators that can be analysed in the course of this activity.

These results suggest that further studies should be conducted for more accurately assessment of the usefulness of using the cumulative mortality rate as an indicator for risk-based *post mortem* inspection due to its strong association with total condemnation by disease.

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