RISKS (ODDS RATIOS) OF BRUISES ON CATTLE CARCASSES IN DIFFERENT ANIMAL CATEGORIES: PRELIMINARY RESULTS

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Abstract – The objective of this study was to calculate the risks (odds ratios) of occurrence of bruises on cattle carcasses in different animal categories. The study was conducted in a slaughterhouse plant, located at São Paulo state, Brazil. Data collection was carried out during one year, assessing 22234 cattle carcasses. To calculate the risk (odds ratios) of bruises occurrences on cattle carcasses the GENMOD procedure of SAS was used, considering logistic regression models. The results showed significant variations among all classes of animal category, with cows having the higher risk of bruises occurrences . According to these results is possible to assume that cows had higher risk of bruises occurrences in their carcasses; probably due to their physical characteristics and higher reactivity, increasing their susceptibility to be bruised during handling. A possible strategy to minimize this risk would be the implementation of training programs, looking for the promotion of good practices in the routines of pre-slaughter handling.

I. INTRODUCTION

There are many studies showing that cattle are usually exposed to a high risk of bruising, mainly when facing bad conditions during transport and pre-slaughter management (1). This is a recurrent problem, which may affect up to 90% of the cattle slaughtered in various countries around the world (2, 3, 4, 5) and may result in meat loses (6).

Despite the seriousness of this problem in Brazil, there are few studies addressing bruises in cattle carcasses, and usually these studies were carried out with a small number of animals and under specific situations (7, 8). The objective of this study was to calculate the risks (odds ratios) of the occurrence of bruises on cattle carcasses in different animal categories.

II. MATERIALS AND METHODS

The study was conducted in a slaughterhouse plant, under the inspection of the Federal Veterinary Service, located in São Paulo state, Brazil. Data collection was carried out during one year (from January 2011 to January 2012), assessing 22234 cattle carcasses, being 14243 young bulls (YB), 4379 steers (ST), 116 old bulls (OB), 1199 heifers (HE), and 2297 cows (CW). The numbers of carcasses with bruises were recorded. Bruises were characterized according to the Australian Carcass Bruise Scoring System that consist in a visual measure of the bruises considering the lesion severity, the local and color (9).To calculate the risk (odds ratios) of bruises occurrences on cattle carcasses the GENMOD procedure of SAS was used, considering logistic regression models, assuming binomial distribution of the dependent variable (occurrence of bruises on cattle carcasses). The models included the animal categories as fixed effects (in classes). The odds ratios (OR) were estimated considering CW as the reference class, for all variables.

III. RESULTS AND DISCUSSION

There were significant variations between the odds ratios of cows and all other categories, with cows having the higher risk of bruises occurrences, followed by heifers, steers, old bulls and young bulls, respectively (Table 1).

Table 1. Percentages of bruised carcasses, odds ratios (OR) and confidence intervals of total bruises (TB) on cattle carcasses, according to the classes of animal categories.

AnC	% of bruised carcasses	OR	95% C.I.	χ^2

YB	62.2	0.31	0.28 - 0.35	377.88*
ST	71.8	0.45	0.40 - 0.52	139.73*
OB	69.0	0.41	0.27- 0.63	17.63*
HE	79.8	0.73	0.61- 0.88	11.29*
CW	83.8	1.00	RC	RC

* P < 0.001, AnC = Animal categories, RC = reference class,YB = young bulls, ST = steers, OB =old bulls,HE = heifers; CW = cows, OR = odds ratios, C.I.= Confidence interval, χ^2 =Chi-Square.

IV. CONCLUSION

According to these results we can assume that cows had higher risk of bruises occurrences in their carcasses; this is probably due to their physical characteristics and higher reactivity, which would increase their susceptibility of being bruised due to handling problems. A possible strategy to minimize this riskwould be the implementation of training programs, looking for the promotion of good practices of handling in the routines of pre-slaughter handling.

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