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QUALITY OF PRODUCTS OF ANIMAL ORIGIN

OCCURRENCE OF VACCINE OR DRUG REACTIONS IN BOVINE CARCASS

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Abstract

The present study aimed to evaluate the occurrence of abscesses from vaccine or drug reactions in the muscle tissue of bovine carcasses and to establish the location of these abscesses in half-carcasses, in a slaughterhouse located in the northwest of the State of São Paulo, under the supervision of the State Inspection Service (SISP). It was possible to identify that 13.50% of the half-carcasses evaluated had vaccine abscesses and of these 91.46% were in the forequarter, 52.50% of these affected the neck, and 27.50% fell. Currently, there is still the presence of abscesses in bovine carcasses from vaccine and drug reactions, which are found in greater proportion in the forequarter, due to the recommendations of this region for the application of vaccines and medications.

Keywords

condemnation, medicines, slaughterhouse.

OCORRÊNCIA DE REAÇÕES VACINAIS OU MEDICAMENTOSAS EM CARCAÇA BOVINA

Resumo

O presente trabalho teve por objetivo avaliar a ocorrência de abscessos provenientes de reações vacinais ou medicamentosas no tecido muscular de carcaças bovinas e estabelecer a localização desses abscessos nas meias-carcaças, em abatedouro-frigorífico localizado no noroeste do Estado de São Paulo, sob fiscalização do Serviço de Inspeção Estadual (SISP). Foi possível identificar que 13,50% das meias-carcaças avaliadas apresentaram abscessos vacinais e destes 91,46% apresentavam-se no quarto dianteiro, sendo 52,50% localizados no pescoço e 27,50% na região do acém. Atualmente ainda existe a presença de abscessos em carcaças bovinas provenientes de reações vacinais e medicamentosas, sendo estas encontradas em maior proporção no quarto dianteiro, provavelmente devido às recomendações desta região para aplicação de vacinas e medicamentos.

Palavras-chave

abatedouro-frigorífico, condenação, medicamentos.

INTRODUCTION

With a favorable climate, large tracts of land for extensive cattle breeding and low production costs, Brazil provides the national and international market with an attractive price for beef, making the country a major exporter of beef. (CALEMAN and CUNHA, 2011). The constant productivity of the animals is partly guaranteed by the use of medicines and vaccines in the cure and prevention of diseases, which, although essential, can cause undesirable reactions such as the formation of a nodule at the application site (ASSUMPÇÃO et al., 2011).

Inflammatory reactions resulting from the use of these products are a cause of concern among ranchers and businesspeople operating in the meat segment, due to the significant economic losses (FRANÇA FILHO et al., 2006). Care in the application of medicines and vaccines is essential and relatively old. Among the necessary precautions are the maintenance of the medication at refrigeration temperature; and use of disposable syringes and needles, and the needles should not touch any place before being introduced into the animal's skin (LAZZARINI NETO, 1995).

Costa et al. (2006) believe that the main cause of the appearance of these injuries is related to inefficiency in management. In addition, a close correlation with the adjuvants used as vehicles, the routes of inoculation, the place of application, type of needle and contamination of equipment. These vaccine adjuvants are capable of inducing a good immune response, but they have a high toxicity that ultimately cause vaccine reactions. An example is the mineral oil used in vaccines for foot-and-mouth disease (ASSUMPÇÃO et al., 2011).

Lusa et al. (2016), reported that vaccine abscesses are major factors in condemning bovine carcasses. These condemnations can result in economic losses that compromise the profitability of slaughterhouses and slaughterhouses and of the rural producers themselves.

Brazilian legislation establishes the destination of carcasses, parts of carcasses and organs that present abscesses, depending on the location, spread and whether there is an impact on the general condition of the carcass (BRASIL, 2017). In general, post-mortem inspection aims to remove meat unfit for consumption from the food chain, thus protecting the consumer (ALTON et al., 2010).

In view of the above and considering the relevance of the theme, the present

study aimed to assess the occurrence of injuries from abscesses resulting from vaccine or drug reactions in the muscle tissue of bovine carcasses and establish the location of these abscesses in half-carcasses.

MATERIAL AND METHODS

The present work was carried out from March to April 2020, in a slaughterhouse located in the northwest of the State of São Paulo, submitted to inspection by the State Inspection Service (SISP). The slaughterhouse has a slaughtering capacity of 500 animals/day. The analyzes were carried out in the establishment itself.

Four samplings were carried out with an interval of 15 days. The samplings were randomized by batch of animals subjected to humane slaughter, regardless of sex, race or age, which totaled 564 carcasses evaluated, which corresponded to 1128 half-carcasses. Carcass corresponds to slaughtered, bled, skinned, gutted, devoid of head, feet, oxtail, mammary gland (in the female), lint and testicles (in the male) and for half-carcasses the division of the carcasses with the removal of the kidneys, fat perirenal and inguinal, "bleeding wound", spinal cord and diaphragm (BRASIL, 1988).

Post-mortem handling variables

The assessments of injuries caused by vaccine or medication reactions were performed visually by the assistants of the State Inspection Service on line H of routine carcass inspection (examination of the medial and lateral faces of the caudal part of the half-carcass) and line I of carcass routine inspection (examination of the medial and lateral faces of the cranial part of the half-carcass) identified by visualizing and palpating the location of the abscess and finally removed as required by law. Abscesses were considered as vaccine or drug reactions.

Specification of injuries by commercial cuts

During slaughter, each half carcass was evaluated and numbered in an individual form, in which the occurrence and location of the vaccine or medication reactions in the cuts were delimited. The presence of reactions in commercial cuts standardized for the domestic market was evaluated by Law SIPA nº 5, of 08/11/1988 (BRASIL, 1988). The following commercial cuts of the forequarter were evaluated: palette with its shovel subdivisions and fore muscle and forehead without palette with

its subdivisions in neck, chuck, fore rib, chest and termite. The following commercial cuts of the hindquarter were also evaluated: loin, rump, leg, back rib and empty (flank).

For the evaluation of the results, a descriptive analysis was performed by the absolute and percentage frequencies referring to the identified abscesses and the affected cuts. Statistical analysis was performed using the SPSS Statistics software, using the chi-square method of independence ($p < 0.05$), to verify the existence of significant differences between the cuts and the number of lesions observed.

RESULTS AND DISCUSSION

Of the 1128 half-carcasses evaluated, 13.50% (152 half-carcasses) had characteristic vaccine or drug reactions and eight of them had reactions in two different locations, thus totaling 160 vaccine or drug reactions.

Dian et al. (2020), evaluated 1.600 male bovines destined for slaughter in the State of Amazonas, 13,653 male bovines destined for slaughter in the State of Pará and 714 male bovines destined for slaughter in the State of Roraima and identified values higher than the present study, where 94.81%, 98.67 % and 96.64% of cattle slaughtered in the states mentioned, respectively, presented losses due to vaccine abscesses.

In Figure 1, it can be seen that 146 half-carcasses (91.25%) had vaccine or drug reactions characterized by abscesses in the forequarter and 14 half-carcasses (8.75%) the reactions were in the hind quarter.

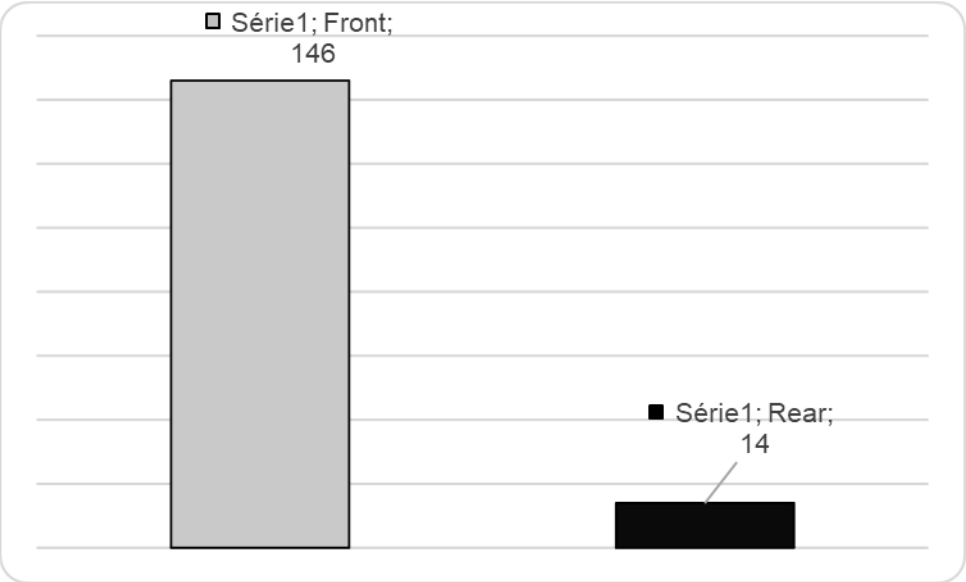

Figure 1: Number of half-carcasses with abscesses of vaccine or medication reactions as to the location in the fore and hind quarters.

According to the manual of good practices for vaccination and immunization of cattle, vaccines and medications are recommended for this animal species in the region of the neck board, in order to prevent damage to the carcass, such as bruises and abscesses, in noble cuts (GASPAR et al., 2015). The higher occurrence of reactions identified in the forequarter in this study, may be related to the guidelines regarding the place of choice for the application of vaccines and medications.

Some precautions are established by the aforementioned manual, such as the use of only a needle to remove the vaccine from the vial, which is not used in animals, thus minimizing contamination of its contents and the spread of pathogenic microorganisms when applying vaccines or medications.

The abscess is a circumscribed collection of pus that forms in different tissues, usually in response to the development of pyogenic bacteria. After the abscess is formed, a fibrous tissue capsule is developed that isolates neighboring tissues. The mineral oil present in some vaccines and medications can be the main catalyst in the formation of abscesses (AMORIM et al., 2009).

Saponin is used as an adjuvant in some vaccines and medications. This adjuvant, when administered intramuscularly, can lead to the formation of abscesses, including those considered aseptic (which do not have external contaminants), but due to the saponin's ability to cause reactions in peripheral tissues (BEEF POINT, 2017; DARSIE et al., 2001).

In Table 1, it is possible to observe that 12.33% of the abscesses were found in the forequarter, presented in the should clod region. Of these, 6.85% affected the cut called shovel and 5.48% the forequarters muscle. In the forehead without a should clod, where 87.67% of abscesses were identified, 57.53% affected the cut called neck and 30.13% in chuck and blade. In addition, the cuts of the forehead without a palette differed statistically between themselves and among the others, with no differences between the cuts of the should clod.

Table 1: Results in absolute and relative values when the occurrence of vaccine or drug reactions in the forequarter and its respective subdivisions.

CARCASS	SUBDIVISION	VALUES		SUBDIVISION	VALUES	
		ABSOLUTE	RELATIVE		ABSOLUTE	RELATIVE
Front	Should Clod	18	12.33%	Clod	10	6.85%[b]
				Chuck	8	5.48%[b]
	Front without palette	128	87.67%	Neck	84	57.53%[c]
				Chuck and Blade	44	30.14%[a]

Different letters in the same column indicate a significant difference for p (<0,05).

In the hind quarter, all 14 half-carcasses that showed injuries were found in the rear saw (100%) and, of these, 92.86% affected the loin and 7.14% the round, as shown in table 2. Cuts of the rear saw also differed statistically from each other. The other cuts specified in the front and hind quarters were not identified as abscesses.

Table 2: Results in absolute and relative values when the occurrence of vaccine or drug reactions in the hind quarters and their respective subdivisions.

CARCASS	SUBDIVISION	VALUES		SUBDIVISION	VALUES	
		ABSOLUTE	RELATIVE		ABSOLUTE	RELATIVE
Hind	Rear saw	14	100.00%	Loin	13	92.86%[b]
				Round	1	7.14%[a]

Different letters in the same column indicate a significant difference for p(<0,05).

Monte et al. (2018) evaluated the occurrence of vaccine abscesses in bovine carcasses, slaughtered in a slaughterhouse under federal supervision, and identified that 94.89% of the lesions were located in the neck region, 3.76% in the rib region and 1.35% in the region termite.

It is estimated that the rancher has a loss of approximately 2 kg of meat in the carcasses of animals slaughtered due to vaccine injuries. In a consideration referring to the year 2016, when the slaughter of 30 million bovine heads occurred, the estimated loss is 70 thousand tons of discarded meat (CNA, 2017).

The price of the bovine forequarter in September 2020 was US$72.80 per kilo (SCOT CONSULTORIA, 2020), therefore, the economic loss obtained in the condemnation of the abscesses of the 146 half-carcasses was US$4004.37. Dollar exchange rate on September 1, 2020 at $ 5.37.

CONCLUSION

Based on the study, it was possible to conclude that in the animals slaughtered in the slaughterhouse located in the northwest of the State of São Paulo, the presence of abscesses in bovine carcasses from vaccine and drug reactions were identified, which are found in greater proportion in the forequarter.

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