**RESUMO**

A carne de bovino é muito valorizada e preferida no panorama das espécies pecuárias. É, desta forma, necessário que chegue ao consumidor nas melhores condições higio-sanitárias. A saúde humana depende, em boa parte da qualidade e salubridade dos alimentos, podendo estes constituir um potencial risco sanitário. Tratando-se de carne, é o matadouro o maior responsável pela sua qualidade.

Este trabalho visa estudar os efeitos da optimização efectuada na linha de abate de bovinos da Santacarnes, os quais se basearam em alterações de estrutura da linha de abate, diminuindo o tempo entre o atordoamento e a sangria, aumentando o tempo entre as tarefas seguintes e consequentemente melhorando as condições de trabalho dos operadores e higiene ao longo de todo o processamento, verificando-se uma diminuição da conspurcação visível da carcaça, reflectindo-se nos resultados dos indicadores de gestão analisados.

Esta optimização foi testada mediante a avaliação do controlo do processo produtivo, das boas práticas de produção, do processo de higiene e organização dos utensílios de corte, do controlo dos níveis de higiene das carcaças e do perfil bacteriológico das superfícies e utensílios de corte.

Neste estudo os resultados microbiológicos relativos à carcaça e às superfícies antes e depois da optimização da linha de abate, reflectiram uma diminuição dos valores tanto em Microrganismos aeróbios mesófilos a 30ºC, como em *Enterobacteriaceae* e *Salmonella*. Esta melhoria a nível microbiológico é um bom indicador da eficácia da higienização ao longo do processo produtivo e das melhorias efectuadas na tecnologia de abate, originando carne de extrema qualidade.

Palavras-Chave: tecnologia de abate, carne de bovino, segurança alimentar, microrganismos indicadores de higiene, qualidade da carne.

**ABSTRACT**

Beef meat is highly valued and preferred when it comes to livestock species. It is therefore necessary that it reaches the consumer in the best hygienic and sanitary conditions. Human health depends, to a great extent, on the quality and healthiness of the food, as these can constitute a potential sanitary risk. Regarding meat, it is the slaughterhouse which is greatly responsible for its quality.

The aim of this work is to study the effects in the slaughter line, reducing the time between the stunning and the bleeding, increasing the time between the next tasks and consequently improving the working conditions of the operators and the hygiene throughout the process, noticing a decrease in the spoilage of the carcass, which has a reflection in the results of the management indicators analysed.

This optimization was tested by the evaluation of the control of the productive process, good practices of production, the process of hygiene and organization of the cutting utensils, the level control of the carcass hygiene and the bacteriologic profile of the surfaces and cutting utensils.

In this study, the microbiologic results relating to the carcass and the cutting utensils before and after optimization of the slaughtering line, reflected a decrease in values not only in aerobic mesophilic micro-organisms 30ºC, but also in *Enterobacteriaceae and Salmonella.* This improvement at a microbiological level is a great indicator of the efficiency of the hygiene process along the productive process and the improvements undergone in the slaughtering technology, resulting in high quality meat.

KeyWords: slaughterhouse technology, beef meat, food safety, micro-organism indicators of hygiene, meat quality.

## EXTENDED ABSTRACT

Beef meat is highly valued and preferred when it comes to livestock species. It is therefore necessary that it reaches the consumer in the best hygienic and sanitary conditions. Human health depends, to a great extent, on the quality and healthiness of the food, as these can constitute a potential sanitary risk. Regarding meat, it is the slaughterhouse which is greatly responsible for its quality.

With its evolution, humans looking for food quality. The definition of meat quality is complex and subjective. Includes all the features that satisfy the consumer, provided nutritional, technological, hygienic and organoleptic characteristics. Meat is a food that is seen as a reservoir for pathogens, providing a means of development due to their characteristics. For this reason, if not wielding their processing can cause foodborne illness when ingested. Therefore it is essential to understand what are organisms that can modify the normal characteristics of the meat, making it unfit for consumption. Microorganisms that can influence the characteristics of the meat, being transmitted when we eat, are gram-negative bacteria (responsible for the decomposition of the flesh), and gram-negative pathogens. When the values of microorganisms responsible for decomposition of the flesh come close to $10^{7.5}$ cfu / g odors come first. The color changes appear from $10^{8.5}$ cfu / g. During slaughter operations carcasses can be contaminated and this depends on the efficiency of contamimação hygienic measures chosen.

Based on research mesfilos aerobic microorganisms at 30 ° C, Enterobactereaceae and Salmonella can be seen how effective these measures or hygienic facilities, both of the surfaces and equipment, whether at the hands of food handlers. Hence the importance, during the slaughter process, there is a hygiene plan and that it be served daily. Santacarnes the slaughterhouse, located in Santarem, a unit of slaughter is certified to comply with all requirements to be an example in the food sector. The slaughter process goes through various stages until they reach the final product. The restructuring carried out in line for slaughter, in 2010, has optimized this technology and there are positive changes that contributed to getting a good product presentation. This change in the slaughter line was the basis for the realization of this stage and this work.

The aim of this work is to study the effects in the slaughter line, reducing the time between the stunning and the bleeding, increasing the time between the next tasks and consequently improving the working conditions of the operators and the hygiene throughout the process, noticing a decrease in the spoilage of the carcass, which has a reflection in the results of the

management indicators analysed.

This optimization was tested by the evaluation of the control of the productive process, good practices of production, the process of hygiene and organization of the cutting utensils, the level control of the carcass hygiene and the bacteriologic profile of the surfaces and cutting utensils.

In this study, the microbiologic results relating to the carcass and the cutting utensils before and after optimization of the slaughtering line, reflected a decrease in values not only in aerobic mesophilic micro-organisms 30ºC, but also in *Enterobacteriaceae and Salmonella.* This improvement at a microbiological level is a great indicator of the efficiency of the hygiene process along the productive process and the improvements undergone in the slaughtering technology, resulting in high quality meat.

The criteria used was sufficient to conclude that the change in the technology company's cattle slaughter Santacarnes, SA was an asset and a way to get meat of excellent quality and safe for all who use it. It is one flesh with her attractive appearance, free of visible conspurcações and free of microorganisms that may alter its organoleptic and nutritional structure.

It is proposed, why this unit slaughter continue to make a continuous assessment based on these criteria, proceed to verification of the corrective measures, where necessary, so that the consumer is the main beneficiary when they eat beef processed here. In the future it would be interesting to perform to the study of other parameters that would enable a more thorough knowledge of the quality level of the beef slaughtered in this unit of slaughter.

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**LISTA DE ABREVIATURAS**

ASAE - Autoridade de Segurança Alimentar e Económica

BPPH - Boas Práticas de produção/Higiene

CAQs - Compostos de amónio quaternário

$^{o}$C - Grau Celsius

CE - Comissão Europeia

EEB- Encefalopatia Espongiforme Bovina

EPI's - Equipamentos de Protecção Individual

Food and Agriculture Organization (FAO)

HACCP - Hazard Analysis and Critical Control Points

ISO - International Standard Organization

M1- Matéria de Risco Especificado

M2 - Matéria de Alto Risco

M3 - Matéria não destinada a consumo humano

NC - Não conformidade

NP- Norma Portuguesa

OMS - Organização Mundial de Saúde

PPROp´s - Pré-requisitos operacionais

PCC'S - Pontos críticos de controlo

UFC/g - Unidades Formadoras de Colónias por grama

UV- Ultravioleta

União Europeia (UE)

WHO/FAO World Health Organization/ Food and Agriculture Organization