

INFLUENCE OF PRE-SLAUGHTER PROCEDURES IN BEEF QUALITY

Elisângela Cristina de Almeida

lihalmeida017@gmail.com

Profa. Dra. Soraya Regina Sacco

TRANSLATION: Profa. Gilcéia Goularte de Oliveira Garcia

Fatec Itapetininga - SP.

ABSTRACT: For a quality final product, the slaughter of pigs in slaughterhouses takes several fundamental processes. These processes are divided into pre-slaughter; slaughter and shipping. They range from the live animal fasting to shipping the final product. Loading, transport, unloading, waiting in the fridge, the spray bath and desensitization part of the pre-slaughter and are extremely important; these well-executed processes facilitate the continuity of work. The pre-slaughter is a great stage of importance in the production of pork. This phase has proved increasingly responsible for the result achieved in the final product. Consisting of steps aimed at animal welfare and care for their physical integrity so that there is the least possible damage to the carcass. The consumer demand caused some factors to gain emphasis to seek an increasingly healthy, tasty and tender meat. The aim of this study is to highlight the importance and the benefits a pre-slaughter and well-performed stage can bring and make it clear that correctly done, it reduces the damage caused to the pork industry and satisfy the end consumer.

Key-words: Carcass. Porcine. Fasting. Transport.

1 INTRODUCTION

Pork is the most widely meat consumed worldwide, due to its characteristics as a suitable protein content and the combination of all essential amino acids. It is also rich in vitamins and minerals, low saturated fat and low cholesterol. It leads consumption per capita worldwide, followed by chicken and beef which is in third place. In Brazil, the consumption of pork is limited to 3rd place, which is behind beef and chicken meat. (NORMANDO et al., 2012)

Pig slaughter procedure should go through several processes, starting with the pre-slaughter when animals come to fast on food and water intake and are selected to be loaded, transported and unloaded in the refrigerator. These pigs should be treated in the best possible way, their stress should be avoided.

The pre-slaughter is a determining factor for the quality of the meat produced, the correct handling of its processes is the way to meet the demands of consumers. This phase contributes significantly to an excellent final result, its efficiency results in quality.

Upon reaching the refrigerator the pig is placed in the bay to wait for the slaughter, the density in the bay as well as the trucks that also carry them must be observed and planned so that they have comfort.

The spray bath is critical for proper functioning of the sangria. It is during the pre-slaughter that the animal also goes through the desensitization process. From then it leaves the pre-slaughter process and enters the slaughter process, which executes processes such as bleeding, gutting and hair removal.

Finally it comes to the expedition, responsible for the correct loading and transport of the half carcasses to reach the steak houses and be passed on to the consumer. The final product may also be intended for boning only then be transported and then go on to the consumer.

2 METODOLOGY

A narrative review of literature was performed, regarding the procedures to be used in the pre-slaughter of pigs. The period in which the search of the journals was realised was from January to April 2014; the database used for the search of journals: SCIELO, LILACS; keywords used to search for articles were "Pre slaughter", "Swine" and "Wellness". Thirteen academic articles were used for the development of this work.

3 RESULTS AND DISCUSSION

3.1 PRE-SLAUGHTER

Pre-slaughter operations include all involved management before the animal is slaughtered. All stages psychologically and physiologically stress animals, it generates consequences in the final quality of the meat. This final quality is closely related to animal welfare (GOMIDE et al., 2006).

The pre-slaughter of pigs has as fundamental processes: fasting, loading, transport, unloading in the fridge, waiting bays, spray bath, conducting to desensitization and desensitization. These processes must be performed cautiously, as the animal tends to stress easily and it somehow interferes in the final product. These processes are the basis of slaughter, it is from this base well executed that begins a quality slaughter and with good results (SOUZA, 2011).

3.1.1 Fasting

Fasting pigs during the pre-slaughter management is characterized by the suspension of supply of feed (ration) to pigs, but this time animals should have plenty of water and of good quality. In literature it has been observed a large variation between time between 0 to 72 h, where it is recommended 24 hour fasting pigs on farms, this variation is related to the logistics in agribusiness in each country. In southern Brazil, due to the structure of production systems and logistics of refrigerators it has used an average fasting of 12 hours prior to departure and a minimum of three hours of rest. (DALLA COSTA et al., 2008).

Failure to observe fasting increases the risk of hyperthermia in pigs subjected to intensive management. A minimum fasting 12 hours before loading restricts the risk of mortality during transport. In this situation, fasting is a necessary stress to animal welfare. A very prolonged fasting, greater than 24 hours, causes a loss of approximately 100g / hour (CHEVILLON, 2000).

For this reason it is important that at the slaughterhouse there is one drinking system available in order to rehydrate pigs after unloading, especially in hot seasons (a water cooler for 20 pigs). Studies on this subject can measure the actual effectiveness of the drinking system and the required number of water points considering the stocking rate in the slaughterhouse waiting bays (CHEVILLON, 2000).

The pre-slaughter fasting in swine is relevant to the producer and the abattoir, it contributes to food economy, reducing the mortality rate during transport, ease the process and increase the speed at evisceration, reducing the potential for contamination, reducing the volume of waste and improved standardization of carcass yield and maintain meat quality. (DALLA COSTA et al., 2008).

3.1.2 Loading, Transport and Unloading

The most critical step in the transport of pigs is related to the animals in the truck shipment due to the need of interaction between man and animal and environmental changes. Indeed, the change from a known area (termination cubicle) into the truck and

waiting area in the refrigerator is stressful, even more associated with intense physical activity performed by the animals, which need to walk through the corridors and unknown ramps, making it difficult to manage (FAUCITANO, 2000).

Pre-slaughter management should start 72 hours before shipment of the animals. Once the producer set the time of dispatch of pigs to the slaughterhouse, they must separate lots of animals to be sent to slaughter earlier checking which if they are able to be loaded, transported and slaughtered; they must identify and separate the animals with problems that might hinder the management and that can not be killed on that date (DALLA COSTA et al., 2011).

Loading and transport of pigs for slaughter can cause serious damage to the creator, buyer or refrigerator because weight loss, injuries, decrease in meat quality and loss by death of animals (VENTURINI et al., 2007).

The density of pigs during transport is a key factor to ensure animal welfare and product quality that reaches the abattoir, as both the excess animals, such as the lack thereof, increases the injury rate in the carcass of broken and dead animals (DALLA COSTA et al., 2011).

Determine the appropriate density of finished pigs during transport has become a dilemma, as there is economic pressure to increase capacity, aiming at the maximum profit in this transport because the more pigs shipped, lower cost per animal. However, the mortality rate increases and the meat quality may be affected in very high or very low density (FAUCITANO, 2000).

The transport of these animals is done in trucks; to load and unload the contact man causes stress on the animal, so this process should be executed properly. Another very important thing is the fact that should not be mixed animals "strange", ie, other than the same group in the same compartment (this also applies to the stalls of rest) (VENTURINI et al., 2007).

The losses that may occur during the transport of pigs start at the boarding, persisting along the way to go and ending at the unloading, especially if there is high density, because they cause stress, scratches, bruises, bone fractures, and death of some animals . The low density also causes abrasions and injuries produced by shocks to the body. In both cases, committed to meat quality, efficiency and profitability (BRAUN, 2000).

3.1.3 Waiting bays and spray bath

The ability of the stalls should not exceed the capacity of 40 pigs. The optimum size of the waiting bay is 15 to 20 swine, the equivalent of a truck compartment, in order to limit mixing of animals unloading, reducing the aggression and fights. The density should not

exceed the number two pigs / m² or less than one pig / m². When there is plenty of available area occur many fights and severity of attacks is accentuated (CHEVILLON, 2000).

For Braun (2000, p. 1) "increasingly, society has demanded of the creators, operators and industry, measures to alleviate the stress and suffering of animals".

The animals go through aspersion bath with water at room temperature, in order to remove dirt, reduce animal stress and increase the efficiency of desensitization for slaughter (ROSA et al., 2008).

3.1.4 Conduction to the desensitization

For Venturini et al. (2007, p. 4):

The desensitization is the instantaneous and complete unconsciousness of the pig before slaughter and in Brazil, it is usually made by electric shock of high voltage and low amperage behind the animal's ears (temporal fossa), but it can be performed by sledgehammer, air gun or gas carbonic. The shock is performed for 6 to 10 seconds. Later the animal is trapped by one leg, to one aireo carrier.

All stunning methods require the movement of pigs to the location of stunning and some form of restraint to facilitate this step. Undoubtedly, the pigs are the species of farm animals more easily to stress and cumulative stress associated with these two operations are very important in determining the quality of meat, especially the incidence of PSE (pale pork, soft and exudative) by themselves and can also exacerbate the effect of slaughter methods. The cumulative effect of pre-slaughter and stunning handling depend on the speed of the slaughter line. (RAJ, 2000)

3.2 CARCASS QUALITY

The pre-slaughter management, is certainly one of the most important stages of production, because it can compromise the result of seven months of work, resulting in carcass quality problems with the following features PSE (*Pale, Soft and Exudative*); RSE (*Reddish Pink, Firm and Exudative*) and DFD (*Dark, Firm and Dry*), with large losses in meat quality and welfare of pigs (DALLA COSTA et al., 2005).

The lack of well being frequently leads to production of a lesser quality meat, which ultimately results in production loss or an inferior product presenting problems such as PSE and DFD presenting among other disadvantages conditioning the half-life shelf (FRASER; BROOM, 1990 apud DALLA COSTA et al., 2005).

In pigs, according Faucitano (2000), the PSE defect costs the abattoir about \$ 5.00 per carcass and can take up to 40% of product unmarketable.

The quality of meat is the net result of the effects and long-term interaction of genetics, nutrition, health and management and short-term factors such as the handling of pigs on the farm, shipping, transportation, unloading, resting period in the refrigerator , stunning and slaughter method, varying their patterns from continent to continent (WARRISS, 2000 apud DALLA COSTA et al., 2005)

4 CLOSING REMARKS

A pig slaughter well executed, with all respect to the animal presents a positive result in the termination of this carcass. When the animal does not suffer much stress before slaughter, slaughtering becomes more productive, but when one does a poor job right from the start, everything else tends to be more difficult to implement, since one is totally dependent on result of the other. When the work is the final product quality finishes also gaining in quality, adding value and increasingly pleasing consumers.

Therefore factors such as the period of rest in the bays is essential to a quality slaughter because it decreases the adrenaline that's the animal due to stress. Shortly after the landing of the animal he was already directed to the quality of meat slaughter fall.

Pigs get stressed very easily, they are sensitive to noise and any aggression coming from man. The pre-slaughter takes care that they do not stress, as it is proven that it interferes with the quality of meat. The losses now begin in animal boarding and follow along the path. By picking up these animals should take some care as not to scream, do not use hard sticks and using electric batons with a maximum of two seconds.

Animals should be empty stomach during slaughter, thus the water and fasting animal facilitate the slaughter period and assist in more accurate weighing, are essential to the still live animals no harm pass the transportation by any improper feeding.

The carcass quality is a result of the process that the pig passes from loading until the final product, there are factors that can make all the difference in the product. Pre-slaughtering has a large weight in the final result of this carcass is through a well-designed pre-slaughter meat manages to gain in softness. The key is to not stress the animal.

Finally, the pre-slaughter is nothing more than the first step to reach a final quality product that has been increasingly sought by consumers, freeing the animal as much as possible of any stress that may interfere negatively for this to happen.

REFERENCES

BRAUN, J.A. O bem-estar animal na suinocultura, 2000. Disponível em: <http://www.cnpsa.embrapa.br/sgc/sgc_publicacoes/anais00cv_portugues.pdf>. Acesso em: 10 abr. 2014

CHEVILLON, P.; O bem-estar do suínos durante o pré-abate e no atordoamento, 2000. Disponível em: <http://www.cnpsa.embrapa.br/sgc/sgc_publicacoes/anais00cv_portugues.pdf>. Acesso em: 29 jan. 2014.

DALLA COSTA F. A.; DALLA COSTA O. A.; CIOCCA J. R. P.; LUDTKE C. B. Manejo pré-abate de suínos e suas implicações na qualidade da carcaça suína, 2008 . Disponível em: <<http://webcache.googleusercontent.com/search?q=cache:5z3JrFMqSTkJ:www.ABATE%20E%20OS%20EFEITOS%20NA%20QUALIDADE%20DA%20CARCA%C3%87A%20SU%C3%8DNA.pdf>>. Acesso em: 30 jan. 2014.

DALLA COSTA, O. A.; LUDKE, J. V.; COSTA, M. J. R. P. Aspectos econômicos e de bem estar animal dos suínos da granja até o abate, 2005. Disponível em: http://www.agencia.cnptia.embrapa.br/recursos/publicacao_c7t41d7n_pre_abateID-WyUdT5iwKc.pdf>. Acesso em: 11 abr. 2014.

DALLA COSTA, O. A.; LUDKE, J. V.; COSTA, M. J. R. P.; PELOSO, J. V., COLDEBELLA; TRIQUES, N. Efeito do jejum na granja e condições de transporte sobre o comportamento dos suínos de abate nas baias de descanso e lesões na pele. **Ciência Animal Brasileira**, 2009.

DALLA COSTA, O. A.; LUDKE, J. V.; COSTA, M. J. R. P.; PELOSO, J. V.; DALLA ROSA, D. Efeito das condições pré-abate sobre a qualidade da carne de suínos pesados, 2011. Disponível em: <<http://www.uco.es/organiza/servicios/publica/az/php/articulo.php?codigo=1881>>. Acesso em: 01 mar. 2014.

FAUCINATO, L. Efeitos do manuseio pré-abate sobre o bem-estar e sua influência sobre a qualidade da carne, 2000. Disponível em: <http://www.cnpsa.embrapa.br/sgc/sgc_publicacoes/anais00cv_portugues.pdf>. Acesso em 29 jan. 2014.

GOMIDE, L. A. M; RAMOS, E. M; FONTES, P. R Tecnologia de abate e tipificação de carcaça. Viçosa: UFV, 2006.

NORMANDO, L. M.; BARBOSA FILHO, J. A. D. Núcleo de estudos em ambiencia agricola e bem-estar animal, 2012. Disponível em:<<http://www.diadecampo.com.br/zpublisher/materias/Materia.asp?id=26791&secao=Colunas+e+Artigos>>. Acesso em 17 mar. 2014.

RAJ, M. Efeitos dos métodos do atordoamento e de abate sobre a qualidade da carne de porco, 2000. Disponível em: <http://www.cnpsa.embrapa.br/sgc/sgc_publicacoes/anais00cv_portugues.pdf>. Acesso em 29 jan. 2014.

ROSA, P. L.; SILVA, M. K. C.; SOUZA, V. M.; SILVA, W. F. Abate e processamento de suínos, 2008. Disponível em:<http://scholar.google.com.br/scholar?q=abate++e+processamento+de+suinos&btnG=&hl=pt-BR&as_sdt=0%2C5&as_vis=>> Acesso em 30 jan 2014

SOUZA, A. P.; BARRETO, F.; LORINI, L.; LORENZONI, A.; Manejo pré-abate e os efeitos na qualidade da carcaça suína, 2011. Disponível em:< <http://ebookbrowse.net/aula-4b-estresse-e-manejo-pr%C3%A9-abate-na-qualidade-da-carne-zaz0073-pdf-d532448321>> Acesso em 27 jan 2014.

VENTURINI, K. S.; SARCINELLI, M. F.; SILVA, L. C. Abate de suínos, 2007. Disponível em:<http://www.agais.com/telomc/b01407_abate_suinos.pdf>. Acesso em 29 jan. 2014.