Welfare requirements and meat quality

Njari, B., M. Mikovic, L. Kosanovic, V. Dobranci, N. Zdolec, I. Filipovic, I. Mikulic
A report from a professional conference

Summary
More than 260 million of cattle, sheep and pigs are killed every year in the European Union, which is about one million every working day, or about 40 animals per second (Humane Slaughter Association, 2004). These numbers indicate to a growing consumption of products of animal origin and consequently indicate to the need of conducting welfare in the entire process of red meat production. It is also necessary to differentiate the perception of welfare by science, ethics and legislation. Welfare in science measures the consequences on animals due to different situations and different environment from the point of view of stress and tries to make objective conclusions (Kozačinski, 2011). Ethics in welfare deals with the way people should treat the animals, whereas legislation in welfare gives rules of how people must treat the animals, the laws are most frequently minimum standards that must be fulfilled, so in this case as well.

Implementation of welfare in red meat production
Because of the knowledge that meat is softer if the animal was stressed before the slaughter, it was a common practice in history to let the dogs which would attack the animals and cause the appearance of pale, soft and watery (PSE) meat (Gregory, N. G., 2007). Which are then possible ways of implementing welfare in the production of red meat? The first step in introducing welfare in slaughterhouses is to identify the stages of slaughterhouse treatment of animals and to carry out the best manner of slaughter and protection of animal welfare through each stage. It is necessary to include the loading of animals on the farm, as well as transport to these stages of slaughterhouse treatment, as it is necessary to conduct welfare measures with quality and create the entire process of red meat production. The first step in conducting welfare is to identify the stages in slaughterhouse treatment of animals and to carry out the best ways of protecting animal welfare through each stage. It is important to implement loading in animals on the farm with transport to these stages of slaughterhouse treatment to improve the appearance of the meat. Animals well treats to these rituals in one of two possible ways - by fighting or accepting. Different ways of animal treatment must be tackled just as part of the problem that is most frequently studied in animals. How the treatment is performed plays an important role in ensuring the quality of meat.

Importance of animal welfare in meat production (Cerjak et al., 2011)

Introduction
More than 260 million of cattle, sheep and pigs are killed every year in the countries of the European Union, which is about one million every working day, or about 40 animals per second (Humane Slaughter Association, 2004). These numbers indicate to a growing consumption of products of animal origin and consequently indicate to the need of conducting welfare in the entire process of red meat production. It is also necessary to differentiate the perception of welfare by science, ethics and legislation. Welfare in science measures the consequences on animals due to different situations and different environment from the point of view of stress and tries to make objective conclusions (Kozačinski, 2011). Ethics in welfare deals with the way people should treat the animals, whereas legislation in welfare gives rules of how people must treat the animals, the laws are most frequently minimum standards that must be fulfilled, so in this case as well.

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- Unloading
- Deposit
- Handling of animals
- Restraint
- Starving
- Picking up
- Bleeding

Stress perception
Even though the word “stress” is understandable by itself, it is hard to be defined in a few words or sentences. Maybe the most simple stress definition in English speaking areas is at the same time the best one:

- Situations
- Distress
- Emergency
- Signals
- Survival

This definition is clear enough to explain how important stress really is for an animal, for its survival in nature and how hard it is to avoid it. Namely, with each change in the daily routine, environment, the people who handle animals, food, etc., the animal reacts in one of two possible ways: by fighting or escaping. Most farm animals react by exiting, whereas animals in a depot, where we encourage animals to move by entering their flight zone. Our interaction with animals stimulates the activity of hormonal regulation of stress which encourages the organism to prepare itself and induce effects the meaning stress and food safety.

Keywords: welfare, stress, food safety

Graph 1: Importance of animal welfare in meat production (Cerjak et al., 2011)

Development of patho- logical condition

Pre-pathological condition

Organized biological response

Biological re- response (influence biological regulation...)

Stress perception

Impaired biological functions

Normal biological functions

Imbalanced hormone system

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After the primary stress perception, there appears an organization of a biological response of the organism – changes in behavior, adrenalin and corticosteroids. The consequence of the activity of these hormones is a short-term decrease in the glycogen level before the slaughter and a long-term influence of corticosteroids to an organism, there appears a complete use of glycogen reserves, so there is a significantly decreased production of lactic acid quantity post-mortem, pH value in such meat doesn’t decrease to a desirable 5.5 in the stage of maturing. It is known that pH can even increase (Furny et al., 2005). The color of such meat is markedly dark, so such meat is known to be DFD – dry, firm and dark meat.

Result
There are many examples on the connection of stress at slaughter and the quality of meat, but it doesn’t mean that all animals subjected to stress produce meat of low quality, nor that low quality is always a consequence of stress. Still, it is considered that better handling of animals reduces the stress and results in a better final product in average. That will become very important in a growing market competition (Petak and Millik, 2009). In today’s industrial animal production practices it is almost impossible to avoid the appearance of PSE and DFD (dry and firm dark, DFD) meat. Still, some measures of welfare improvement can be taken during the production process in order for stress to be reduced to the lowest possible level, so thereby the appearance of such meats is decreased too. It is necessary to stick to these rules, but one must always know that legislation prescribes minimum standards that need to be satisfied.
It is noticeable from both works that most respondents find animal welfare important and that consumers are not informed enough on conditions of keeping animals. Consumers' interest in animal welfare and quality of products of animal origin has been growing in the world in the last years. Therefore, the countries of the EU accepted a new approach in food production which takes consumer needs into account, the so-called “fork to farm” approach (Mikuš and Petak, 2010). The interest of meat consumers in Croatia in animal welfare has also increased because those who want to export to the EU market must meet the regulations that apply to EU territory. The most important factor that determines whether animal welfare is ensured in slaughter facility is the attitude of whether animal welfare is ensured important factor that determines that apply to EU territory. The most important factor that determines whether animal welfare is ensured in slaughter facility is the attitude of whether animal welfare is ensured important factor that determines that apply to EU territory.

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* The paper was presented at January 2011, Stockholm, Hotel Solna, 20 – 29 October 2011

Received: December 12, 2011

Accepted: January 27, 2012

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Meso

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