Animal welfare assessment in pig abattoir

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conference paper

Summary
The aim of this paper was to develop our own welfare assessment model in an abattoir and determine further steps in the development of this model based on testing. A form developed at the Department of Hygiene and Technology of Animal Foodstuffs contains all important elements of slaughtering process which involves the risk of stress. This manner of assessment was applied to 10 fattening pigs of 95 to 105 kg of body weight. A special emphasis was put on stun to stick interval which has been proved to last longer than permitted. The reasons for that are a weak allocation of workers inside the abattoir and applying electric current for too long.
Key words: *abattoir assessment, stun to stick interval, fattening pigs*

Introduction

Animal welfare assessment at group level is a scientific discipline that is rapidly developing. The interest in welfare assessment systems is based on an ethical concern for the welfare of farm animals (Main et al., 2003). For the last couple of years there has been a progress in scientific knowledge about the feelings of fear and pain in farm animals if they are not treated in good practice, but also in knowledge of methods of humane induction of unconsciousness through the development of technology for stunning, slaughter and killing. The scientific community plays an important role in delivering an appropriate repeatable, valid and feasible framework for these assessments (Main, 2003). Considering the forthcoming accession of the Republic of Croatia to the EU, the Croatian meat producers will have to adjust to Council Regulation (EC) No 1099/2009 on the protection of animals at the time of killing. Since the Regulation comes into force on 1 January 2013, we wanted to make a welfare assessment in an abattoir of smaller capacity and to determine a true welfare condition at site. Therefore we started with the development of our own model of welfare assessment in an abattoir.

Material and methods

Welfare assessment was made according to the form developed at the Department of Hygiene and Technology of Animal Foodstuffs, based on scientific knowledge gained so far (Dalmau et al., 2009). The form consists of seven groups of data which encloses all important elements of slaughtering process that involves the risk of stress. Main parts of the form are based on the sequence of slaughtering process (general facility appearance, unloading, depot, stunning, special requests for stunning by electric current, bleeding out and *post mortem* examination of carcasses). Each activity was assessed by grades as positive (0) or negative (1) and assessor's comment was added. This manner of assessment was applied to 10 fattening pigs of 95 to 105 kg of body weight. A special emphasis was put on stun to stick interval. The abattoir where welfare was assessed is of smaller capacity and services near Zagreb, Croatia.

Results

Welfare assessment was conducted according to the rules of the form. By general examination of the abattoir, it was determined that the facility complies with the basic technical requirements proscribed by national regulations (Anon, 1993) on conditions that must be fulfilled by slaughterhouse. The unloading platform is constructed out of concrete with satisfying declivity and height adjusted to the truck's standard. The unloading platform is also satisfying in terms of rough surface which prevents animals from slipping while unloading. Cattle depot is adjusted to animal species which are allowed to be slaughtered in the abattoir. Animals are located in boxes with sufficient number of proper drinkers. Animals are also given enough food at sufficient number of feeding places. Objections to the depot are the lack of lighting and ventilation systems of higher quality and platform for unloading from the depot. The unloading platform has a satisfying declivity, but it hasn't been worked out so well in terms of construction. Nine out of ten observed pigs were reluctant to come to the platform (they stopped before the platform because of the improper entrance) and six out of ten slipped, so it was all slowing down the slaughtering process. There were determined the following disadvantages in details of organization: the insufficient number of workers at the beginning of slaughter line (one worker) and work places are not satisfyingly separated. Workers are randomly exchanged in individual operations which slow down the slaughtering process. Stunning in the abattoir is conducted according to all professional rules and the producer advice. Pigs are showered before applying electric current so the induction of unconsciousness would be better. The application is performed neatly and the head of an animal is enclosed at recommended spots, so unconsciousness appears momentarily. An objection in this stage is firstly based on an insufficient education of workers who apply electric current for at least 15 seconds (according to the producer's advice) instead of 3 seconds that are recommended to a minimal degree (Anon, 2008). According to our measurements on ten animals, stun to stick interval varies within 31 seconds, i.e. it was 55 seconds minimum to 86 seconds maximum. The average interval length is 69 seconds. Bleeding out was ample and complete and the process on the next animal is not started until all procedures of putting to death were completed on the previous animal. At the end of the production process, in 9 out of 10 pigs there were found skin injuries as the consequence of mutual hurting by bites and scratches by hoofs, and there were subcutaneous petehial and small capillary bleedings as the consequence of prolonged application of electric current.

Figure 1 **Animals hesitate to enter the ramp**

Figure 2 **Panic reaction of animals caused by stockman entering the ramp corridor**

Discussion

Through the results shown, it is easily noticeable that the abattoir complies with all the technical conditions determined by regulations and it employs enough professional workers. But there are certain disadvantages connected to animal welfare which can be easily removed and do not require significant financial expenses. Appropriate handling of farm animals during transportation and the pre-slaughter period should be monitored as part of a quality assurance scheme (von Borell and Schäffer, 2005). It is necessary to install lighting and ventilation systems of higher quality in a cattle depot, so the inspection of animals could be performed without extra lighting fixtures. The ramp from the depot to

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the stunning pen is not completely adjusted to moving of the animals because of smooth iron floor. Rungs were welded transversally, but not near enough, at about 40 cm from each other. The next objection to the platform is the lack of roof which would protect the animals from negative atmospheric conditions. Animal stunning was observed at an individual level, so the biggest objection is a too long stun to stick interval which lasts for 69 seconds on average, with the application of electric current for 15 sec. By relocating workers to critical spots in a slaughter process, the impression of welfare in the abattoir would be improved. The spots short of workers are at the same time the most important spots in terms of animal welfare (animal handling, stunning and slaughtering), therefore this assessment carries a negative tone. The research should be continued after the owners of the abattoir have been pointed out the oversights and after the systematic education of the workers. Namely, except for the regular monitoring through quality assurance scheme, because of the contact with animals it is necessary to educate the workers additionally on animal welfare, and point them out that animals are beings capable of feeling pain and fear. Also, it is necessary to emphasize once more that pre-slaughter stresses which affect the meat quality can be animal handling before coming to an abattoir, unloading in an unknown environment, keeping and inspecting them in a depot, but also incorrectly conducted stunning which has been determined in our case (Petak and Mikuš, 2010). All these factors affect the final appearance and quality of inspected carcasses.

It is suggested that new researches are conducted on a larger number of animals, but it can be assumed that if a good practice of animal handling is adopted, it stays at the same level regardless of the number of animals. Animal-based parameters are in one sense more direct measures of welfare than their environmental counterparts, since they each register a state of the animal itself (Johnsen, 2001).

Figure 3 **Capillary bleedings caused by too long application of el. current**

Figure 4 **Skin lesions caused by animal interaction**

Conclusion

Stunning in the chosen abattoir has not worked for the welfare of the animal itself, but unfortunately only to help in an easier manipulation of the animals during slaughter. A focus on animal welfare improves animals' lives while increasing food safety and meat quality – the latter directly benefiting both producers and consumers. Better animal welfare ultimately increases yield and expands market opportunities, resulting in economic benefits for the whole production chain. Redistribution of works inside the facility and shortening the length of electric current application will bring stun to stick interval to scientifically acceptable parameters. Education should be emphasized, especially of those who work with animals so that legal regulations could really be conducted. Only by regular monitoring and a constant education we can be sure that there will be progress in the field of animal welfare in abattoirs.

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Schätzung des Wohlergehens im Schlachtobjekt für Schweine

Zusammenfassung

Das Ziel dieser Arbeit war das eigene Schätzungmodell des Wohlergehens im Schlachtobjekt zu entwickeln und auf Grund der Testierung die weiteren Schritte für die Entwicklung dieses Modells zu bestimmen. Das Wohlergehen im Objekt ist nach internem Muster des Instituts für Hygiene und Technologie von Nahrungsmitteln animalen Ursprungs geschätzt, das alle wichtigeren Elemente des Schlachtprozesses enthält, in welchen das Risiko von Stress besteht. Diese Schätzungsweise wurde auf 10 Zuchtschweinen angewendet, Masse 95 – 105 kg. Besondere Betonung wurde auf das Intervall von der Betäubung bis zum Schlachten gesetzt.Es wurde bewiesen, dass dieses Intervall bedeutend länger ist, dies weger der schlechten Verteilung der Arbeiter innerhalb des Schlachtwerks und der zu langen Zeit der Aplikation von elektrischem Strom. Diese Arbeit stellt einen wichtigen Teil in weiterer Entwicklung unseres Modells für die Schätzung des Wohlergehens dar.

***Schlüsselwörter**: Schätzung des Wohlergehens, Schlachthof, das Intervall von der Betäubung bis zum Schlachten, Zuchtschweine*

Valutazione del benessere di animali in macelleria

Sommario

Lo scopo di questo lavoro era sviluppare il proprio modello di valutazione del benessere di animali in macelleria, e determinare i passi successivi nello sviluppo di questo modello facendo esami. Il benessere di animali in macelleria è stato valutato secondo un modulo dell'uso interno del Dipartimento per igiene e tecnologia degli alimenti d'origine animale, che contiene tutti gli importanti elementi del processo di macellazione nei quali c'è la possibilità del rischio di stress. Questo modo di valutazione è stato applicato su 10 maiali ingrassati nell'allevamento, del peso da 95 a 105 chilogrammi. Un accento speciale è stato messo sull'intervallo dallo stordimento alla macellazione, ed è stato provato che quest'intervallo è notevolmente più lungo a causa di male distribuzione di operai entro la macelleria e a causa del troppo lungo periodo del tempo di applicazione di correzione elettrica. Questo lavoro è importantissimo per lo sviluppo futuro del nostro modello di valutazione del benessere di animali.

***Parole chiave:** valutazione del benessere, macelleria, intervallo dallo stordimento alla macellazione, maiali ingrassati nell'allevamento*

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