Animal welfare assessment in pig abattoir

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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 (Makin et al, 2001). 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, slaughtering and killing. The scientific community plays an important role in delivering an appropriate reliable, valid and feasible framework for these assessments (Makin, 2003). Consideration of the forthcoming accession of the Republic of Croatia to the EU, the Croatian meat producers will have to adjust to Council Regulation (EC) No 1099/2001 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 Foodstuff, based on scientific knowledge gained so far (Davaux et al, 2000). The form consists of seven groups of data which encloses all important elements of slaughter process that involves the risk of stress. Main parts of the form are based on the sequence of slaughter process (general facility appearance, unloading, deposit, 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), negative (1) and assessor’s comment was added. This manner of assessment was applied to 10 fattening pigs of 45 to 105 kg of body weight. A special emphasis was put on start 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 prescribed by national regulations (Kozačinski, 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 vents animals from slipping while unloading, depot, stunning, special requirements proscribed by technical requirements of slaughterhouse. The unloading platform has a satisfying declivity, but it hasn't been worked out so well in terms of construction. Unloading cattle depot is adjusted to animal species which are allowed to be slaughtered in the abattoir. Animals are located in boxes with vents animals from slipping while unloading, depot, stunning, special requirements proscribed by technical requirements of slaughterhouse. The unloading platform has a satisfying declivity, but it hasn't been worked out so well in terms of construction. Unloading cattle depot is adjusted to animal species which are allowed to be slaughtered in the abattoir.

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 expenditures. Appropriate handling of farm animals during transportation and the pre-slaughter period should be monitored as part of a quality assurance scheme (von Boeck and Schaeffler, 2000). It is necessary to instal 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 the platform was designated for workers and should be modified, because the producer’s advice (3 seconds that are recommended to the producer’s advice) instead of 15 seconds (according to all professional workers). In detail of performing the stunning, the workers apply electric current for too long. According to our observations 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 10 out of 10 pigs there were found skin injuries as the consequence of mutual hurting by bites and scratches by hoofs, and there were substantial petechial and small capillary bleedings as the consequence of prolonged application of electric current.
is adopted, it stays at the same level regardless of the number of animals. Animal-based parameters are in some sense more direct measures of welfare than their environmental counterparts, since they each register a state of the animal itself (Sjöberg, 2007). Conclusion Staining 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 animal/farmer safety during increased 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. Redistribu-
tion of works inside the facility and shortening the length of electric current application will bring in to stick the slaughter process to scientifically accept-
able parameters. Education should be emphasized, especially of those who work with animals so that legal regulations could really be condu-
ctrized. Only by regular monitoring and a constant education we can be sure that there will be progress in the procedure.

The research should be continued 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 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 impinging them in a depot, but also incorrectly adjusted to moving of the animals during slaughter. The next objection to this procedure is the lack of roof which 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 animal/farmer safety during increased 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. Redistribu-
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