

Poster exhibition parallel session 3: Robotics and process control

PE3.01 Meat science, technology and ritual halal slaughter - knowledge gaps. 21.00

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INTRODUCTION

There is significant volume of trade in Halal meat and live animals towards Muslim countries and it is rising every year with their improving economies. It is, therefore, important for the international meat and livestock export industry to understand modalities of Halal slaughter more precisely for their Muslim customers and consumers. The live animals exported to Muslim countries are slaughtered by the ritual method of slaughter and are also cause of concern to some extent for national & international animal welfare organizations. Another view is that the Halal slaughter of animals is considered inefficient by the animal industry and thought to be applied in an inappropriate way on the live animals. The practice is said to be causing some violations of animal welfare codes and affecting the quality of carcass meat. It is also presumed that the Halal slaughter of animals is, perhaps, not conducted in accordance with the real spirit and the observance of all its basic virtues and values. The study was conducted with this background so as to understand the exact method of Halal slaughter and its ritual requirements pre-slaughter and at slaughter. Another component of the study was to find ways and means through the modern day interpretations of Qura'n and Hadi'th (sayings of the prophet Muhammad, PBUH) on the subject of animal welfare as well as to solicit scholarly viewpoints on new developments in science and technology to comfort slaughter animals in Halal slaughter process, produce better quality meat and to improve worker's safety.

DESCRIPTION OF ACTIVITIES

The study was based on a detailed review of scientific literature on the subject of Halal slaughter, meat science related to quality, effects of pre-slaughter restraints & different stunning methods towards stress and pain to animal, blood letting rates and percentage in different slaughter methods and species of animals. Latest literature was also reviewed on the current and in-practice

pre-slaughter animal welfare procedures / regulations in developed (mainly non-Muslim) countries as well as Muslim countries. The second part of the study consisted of a dialogue process on the current and burning issues of Halal slaughter with leading & renowned Muslim religious scholars in different Muslim & non-Muslim countries. The scholars included, Dr. Saeed Tantawi, the Grand Imam of Al-Azher, Cairo, Egypt, Dr. Zakir Naik, Islamic Research Foundation & Peace TV, Bombay, India, Chief Mufti of Deoband, India and Justice, Dr. Taqi Usmani and Dr. Israr Ahmad of Pakistan. The discussion held & the knowledge sharing which accrued on the issues in Halal slaughter were recorded and conclusions drawn on possible religiously acceptable scientific interventions in the Halal procedures, presumably to lessen animals sufferings and improve meat quality.

Non-compromising Minimum Basics for Halal Slaughter of Animals

- (i) A healthy live animal,
- (ii) To be slaughtered from neck front with a sharp knife,
- (iii) By invoking the name of Allah (God) on it and
- (iv) Allowing maximum blood letting from its body.

Detailed Requisites for Halal slaughter of Animals (Some may be called optional) (On the Basis of Religious Dialogue with scholars of all opinions/sects)

1. The animal to be slaughtered must be from the categories, which are permitted (lawful) for Muslims to eat.
2. The animal must be alive and healthy at the time of slaughter.
3. The animal should be clean.
4. Water should be offered to the animal before slaughter, and it should not be slaughtered when hungry or thirsty.
5. No stress or discomfort should be caused to the animal. Animals should be handled gently and individually.
6. The face of the animal should preferably face towards Mecca at the time of slaughter.

7. The animal must be slaughtered by the use of a sharp knife. The knife must not kill due to its weight. If it kills due to the impact the meat may not be permissible.
8. The knife should be re-sharpened before slaughter.
9. The slaughtering must be done in one stroke without lifting the knife. The knife should not be placed and lifted when slaughtering the animal.
10. The knife should be hidden from the animal, and slaughtering should be done out of sight of other animals waiting to be slaughtered.
11. The windpipe (throat), food-tract (oesophagus) and the two jugular veins must be cut.
12. Slaughtering must be made in the neck from the front (chest) to the back.
13. Slaughtering must be done by a sane adult Muslim. Animals slaughtered by apostates, idol worshippers, atheists etc. are not permissible.
14. The name of Allah must be invoked (mentioned) at the time of slaughtering by saying: Bismillah; wa Allahu akbar. (In the Name of Allah; Allah is the Greatest.)
15. If at the time of slaughtering the name of anyone else other than Allah is invoked (i.e. animal sacrificed for him/her), then the meat becomes Haram 'unlawful.'
16. Animals should be killed in a comfortable way. Unnecessary suffering must be avoided.
17. If a Muslim forgets to invoke the name of Allah at the time of slaughtering, the meat will remain Halal. However, if he intentionally does not invoke the name of Allah, the meat becomes Haram.
18. The head of the animal must not be cut off during slaughtering but later after the animal is completely dead.
19. Maximum possible blood should be allowed / let from the carcass
20. Skinning or cutting any part of the animal is not allowed before the animal is completely dead.
21. The slaughtering must be done manually and not by a machine, as human intention is not regarded as transferred to a machine

Proposals for Possible Scientific Alignment of Halal Slaughter, Meat Quality and Animal Welfare. Education & Training of Slaughtermen & Butchers: Under Islamic rules, Halal slaughter can be performed by any sane Muslim without any experience, education or training in slaughtering or butchery. It is not so in Jewish ritual slaughter or other non-ritual slaughter methods. It is one of the main cause of number of problems encountered under Halal slaughter system. So, there is dire need to education and proper training program for Halal slaughter-men in Muslim countries. Pre-Slaughter Stunning of Animals in Halal Slaughter: The

stunning of animals is accepted by some Islamic religious scholars and practiced in some Muslim countries while others reject it altogether. International efforts should be made towards the formation of an international Islamic Halal authority like ISO in Geneva. Only such a body representing whole Muslim world can take a uniform view on such important but contentious issue. Organisation of Islamic Conference (OIC), established in 1974, the largest religious and political Muslim entity of 56 Muslim countries can play crucial role in this regard. Currently this organization is drafting "Guidelines on Halal Food Standards" and the licensing rules for Halal accreditation bodies. The guidelines include the description of Halal method of slaughter, status of pre-slaughter stunning in Halal slaughter etc. There is need to follow these drafts regulations by the international community in order to harmonise certain requisites for international trade in Halal meat and meat products. Animal Welfare in Islam The animal welfare status in most Muslim countries is contrary to the codes expressed in Qura'n and Hadith. This serious lapse on the part of Muslim world is acknowledged by religious authorities of Muslim countries. The religion does not permit cruelties or costless attention towards the animals in any situation. Blank inattention in most cases is making the animals suffer at the hands of humans. It needs to be corrected by different approaches.

SCIENTIFIC AND TECHNICAL RECOMMENDATIONS

Model of a simple, animal friendly Halal slaughterhouse A model of semi-automatic (more manual) simple design, low cost slaughterhouse, having animal friendly layout would go a long way in the judicious use of funds, technology and care towards animals in many Muslim countries. The common problem often found in many slaughterhouses of slippery floors which cause animals to slip and fall must be taken care of. Simple Restraint for Halal Method of Slaughter No specific pre-slaughter treatment is described for the Halal slaughter of animals. Only religious requirement in the pre-slaughter period is of the provision of sufficient food and water for the animals before slaughter. At present manual restraining of cattle and small animals is widely in practice which does cause animal sufferings. Appropriate interventions in this regard hold great potential for acceptability to improve animal

welfare, meat quality and worker's safety. Development, provision and technical assistance in the incorporation of a simple restraint system even in existing slaughterhouses would reduce significant sufferings of the slaughter animals in Muslim countries.

Stress & Pain in Halal Slaughter Research shows that it still remains indecisive whether an animal slaughtered by religious (Halal) method feels stress and pain in the first place. Even if the existence of pain is proved then the question arises of more or less as compared to one after stunning. So, unless and until such knowledge gaps are filled explicitly by more targeted research work into animal physiology and neurology the question of stress, pain and of its intensity as alleged to be caused under ritual as well as non-ritual slaughter methods, will remain controversial. So, focused research on the feeling and precise measurement of stress and pain in Halal (unstunned) and non-Halal (stunned) animal slaughter is suggested.

Bleeding In Halal Slaughter Complete scientific certainty is not available to prove that better bleeding is achieved in non-Halal method of slaughter compared to Halal method. Blood eating is forbidden in Islam so, maximum bleeding at slaughter is a strong ritual requirement for meat to be consumed by Muslims. It is explained in the Holy Book and firmly believed amongst Muslim intellectuals and religious leaders alike that only Halal method of slaughter of animals leads to maximum bleeding out from the carcass. Science based proofs are, however, lacking regarding better bleed-out in Halal & non-Halal methods. Bleeding well at slaughter is a ritual requirement for meat to be consumed by Muslims. So, the point remains inconclusive so far. Similarly the issue of bleeding on the floor or in hanging position requires attention.

Stunning Possibilities in Halal Slaughter & Blood Splash. At all, out of the current stunning methods, the only holdon potential for acceptability in Halal

slaughter appears to be electrical as it does not cause apparent injury and can be controlled to ensure that the animal is in life after its application. But it is said to cause blood splash in meat. Although the quality of meat of stunned animals is said to be better than non-stunned in some studies yet investigations involving electrical stunning, blood splash & meat properties like, tenderness, water holding capacity (WHC), post-mortem pH fall etc. require further authentication.

Possible Future International Trends in Halal Meat / Slaughter As a whole scientific research done so far on Halal slaughter is viewed by Muslims as a compromise related to animal welfare and economic welfare of meat production systems. Also the research did not originate from the eminent apprehensions of Muslim religious or scientific scholars. So, it is looked upon as biased to affect the religious purity towards commercial ends. According to world estimates the trade in Halal meat is growing. According to certain estimates it is US \$ 500 billions in food and non-food items. As a result the world trading system in Halal commodities will be coming under pressure for converging towards a mutually acceptable International Halal Standards conforming to the satisfactory, trustworthy and certified ritual performances in the whole chain of production systems. As and when it is achieved, that should facilitate both the Halal meat and animal exporting countries and the importing religious communities in Halal animal products and the live trade.

CONCLUSIONS

The study presents prominent issues of Halal slaughter of animals and the international trade in live animals and the Halal meat. It concludes to promote more focused research work on aspects of pre-slaughter stunning methods for Halal pre-requisites, bleed out comparison, different kinds of stunning and their effects on meat quality, blood splash, WHC, tenderness and other properties of meat from different animal species.