

The Technological Challenges Faced by Halal Slaughter Procedures

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Abstract

The halal meat industry in Europe is progressing to meet the demands of the local consumer or alternatively it's proceeding towards the goal of being exported to the Islamic world. The modern technology which is used in the meat industry is constantly evolving and updating to keep pace with modernization and to meet the needs of the market. For societies in which religion plays a fundamental role in their dietary habits, such as with the Islamic community, religious principles have priority over all other considerations. Religious laws in the field of halal meat production are ancient pieces of legislation that were designed in a time where today's technological means were not available. Common practices and technology in European slaughterhouses could be in conflict with the criteria of halal, thus posing serious challenges for the halal meat industry. The objective of this study is to highlight the technological challenges that are facing halal slaughter procedures. Such obstacles and challenges that are reviewed in this study include the pre-slaughter feed withdrawal, stunning, body position and Qibla direction, sticking and automated slaughter. The study may contribute to the clarification of some of the absent facts that European halal meat producers face, in order to develop and choose the technological means that are the most compatible with halal standards.

Keywords: ritual slaughter; halal criteria, technological means

Introduction

As of 2010, Muslims around the world make up a quarter of the global population, and year by year their population keeps increasing (Hackett et al. 2015). Lining up with the elevation of the Muslim population, the halal food market is growing unprecedentedly, the global halal industry is estimated to be worth more than 1.6×10^{12} dollars (Lever and Miele 2012; Lubis et al. 2016; Sow et al. 2017). Recently, the European food industry invested in the production of halal food. Some European retailers added fresh halal meat to its selections, and several European manufacturers now export their products to the Islamic world. The Netherlands is leading the world in halal food storage and warehousing, and it is serving as a channel for halal food to European, African and Middle East markets (WHF 2009). Dinar Standard synthesis and analysis report 2015, indicated that the leaders of halal meat exports to OIC countries (Organisation of Islamic Countries) are Brazil, India, Argentina, Russia and France with a ratio of 28.5% of the total halal meat market. The top five halal meat importers with the ratio of 42% of the global halal meat market are Saudi Arabia followed by Malaysia, the UAE, Indonesia and Egypt (Benzertih et al. 2018). Halal food products are food produced according to Islamic law (Ceranic and Bozinovic 2009). The Islamic law (Sharia) divides food for Muslim consumers into two categories which are halal (meaning permitted) and Haram (meaning prohibited). The Quran and the Hadith (the sayings of the prophet Mohammed) are the main sources of Islamic law (Sharia) which is explained and interpreted by Islamic scholars (Riaz and Chaudry 2004). Basically, according to Islamic dietary laws, all food products are permitted except pork, blood, meat from cadavers, and the meat of animals that have not been slaughtered ritually (Bonne and Verbeke 2008). Challenges that face halal slaughter procedures are included: cross contamination of halal with haram food during manufacturing, failure to comply with halal practices related to ritual slaughter (HMC 2009), adulteration of halal food by adding haram nutritional substances (Lam and Alhashmi 2008), inappropriate use of halal

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certifications and product labelling (HMC 2009). Globalization, modernization, and new technological means influenced the industry of halal meat. The negative role of modern technology and modernization on the halal meat industry is represented by the technology surrounding the slaughter process, which is not in line with halal principles. Also there is an inherent risk of contaminating halal with harm meat by non-Muslim producers due to a lack of knowledge in the field. The aim of this study is to highlight technological obstacles and challenges that are facing the practices of halal.

Feed withdrawal

Pre-slaughter feed withdrawal of ruminants (periods of transportation and lairage at slaughterhouses) is recommended in order to decrease the volume of the gastrointestinal tract (GIT) contents and thus, reduce the risk of carcass contamination during evisceration (FAO 1991). This technological practice is necessary and applicable today in Europe and it is organised through legislation. The periods of pre-slaughter fasting and associated journey times of each animal species are explained in Council Regulation (EC) No. 1/2005 and Council Regulation (EC) No. 1099/2009. The principles of Islamic law state the opposite of this practice, which prefer that the animals be well fed prior to slaughter by providing free access to feed and drinking water. This principle is recommended by the saying of the Prophet Muhammad *“When one of you slaughters, let him complete it”, meaning that one should sharpen the knife well and feed, water, and soothe the animal before killing it (as mentioned in Sahih Muslim, Book 21, Chapter 11, Number 4810) (Rahman 2017).* Providing feed and water to an animal prior to slaughter at that time could have been for animal welfare purposes, while today feed withdrawal for restricted periods is necessary for technological purpose.

Stunning

“Means any intentionally induced process which causes loss of consciousness and sensibility without pain, including any process resulting in instantaneous death.” This is the definition of “stunning” which is mentioned in Council Regulation (EC) No. 1099/2009. Statutory requirements for the obligations of pre-slaughter stunning of animals in Europe is indicted in Council Regulation (EC) No. 1099/2009. The idea of animal pre-slaughter stunning is to avoid suffering, pain, anxiety and distress before and during the slaughter process (Velarde et al. 2014). Stunning is one of the most serious challenges facing the halal meat industry. Despite stunning not being mentioned directly in the Quran nor in Hadith literature, it raises concerns regarding the fulfilment of halal practices of which are indicated in the primary sources of Islam. Halal practices which are not fulfilled due to stunning are represented by the fact that the animal is not alive at the onset of slaughtering, as well as the incomplete bloodletting due to stunning (Chandia and Soon 2018). Many complications related to poor animal welfare were observed as a result of the slaughtering of cattle and small ruminants without stunning (Abdullah et al. 2019). This prompted several European countries (such as Sweden, Denmark, Norway and Switzerland) to insist on prohibiting the slaughter of animals without prior stunning and ignoring European legislation (Council Regulation No. 1099/2009) which permits religious slaughter, which is usually conducted without stunning (Anil 2012). There is no single opinion among Muslims regarding acceptance or rejection of pre slaughter stunning practice for animals (Lever and Miele 2012). In this regard, there are three different opinions, the first opinion admits to accepting stunning with specific conditions (reversible stunning); the second one refuses it on the pretext of not complying with Islamic law (Sharia); the third opinion of uncertainty requires certain assurances (Anil and Gregory 2014). Farouk et al. (2016) indicated that currently, in the meat industry sector, the technology of reversible stunning is constantly evolving in order to meet the halal practices of slaughtering and at the same

time to improve animal welfare. Reversible stunning means that such stunning process should not kill animals nor cause permanent injury. Such stunning methods can be adopted if performed by trained Muslim slaughterers under a halal certification body and never be applied with stunning equipment used on non-halal animals such as pigs (Chandia and Soon 2018).

Animal position and Qibla direction

The common method of restraint for large animals in a modern abattoir is to be hanged by the legs and tied to the shackles. Bleeding operations are conducted while the animal is in this hanging or vertical position. The useable restraint methods in red-meat animal's slaughterhouses are V-shaped restraints or straddled conveyors with full or half inversions in a rotary pen and upright restraint system (Gregory 2005). Vertical hanging on shackles is the common position of poultry at slaughter in automated slaughterhouses (Lambooi et al. 1999). According to historical practices of animal slaughter in Islam, the animals during the slaughtering process should be laid on their left flank, preferably facing the Qibla (Makkah direction in Saudi Arabia). Facing Qibla means that at the onset of the incision, the slaughterer and also the neck of animal (where the incision occurs) should face towards the Qibla (Abdullah et al. 2019). Some Muslims thought that such a position of the animals body at slaughter (lying on the left flank) is in order to maximize blood drainage by the pressure of the body on the heart (Awan and Sohaib, 2016), as the blood of bleeding is forbidden for Muslims consumers (Quran 2:173, 5:3, 6:145, 16:115). Even in modern halal slaughterhouses, most methods of a ruminant's restraint, such as restraining in the standing position (upright), the hoisting of conscious cattle by the hind legs and restraining by inversion of cattle on their backs are not in compliance with halal practices related to the position of animal's bodies at slaughtering (Fuseini et al. 2016; Gregory 2005). Restraining methods of animals during the slaughtering process has its negative and positive advantages technologically and in terms of animal welfare which is not the subject research of this study. However, the most preferable restraint method of cattle for most halal slaughterhouses is the lateral recumbency position (lying on their sides at a 90° angle) because such a method is the most suitable regarding compliance with the criteria of halal (Fuseini et al. 2016).

Sticking

Slaughtering is mostly defined as the exsanguination of an animal until dead. Though there are many slaughtering methods, currently, the popular method is chest sticking which is used widely due to efficient results. chest sticking is performed via a longitudinal incision into the skin from the neck down to the chest following the midline and then cutting blood vessels into the chest near the heart (Anil et al. 1995). Bleeding via the chest-stick slaughtering method involves severing all the major blood vessels close to the heart including the jugular veins and the carotid arteries, or the vessels from which they arise (Brachiocephalic Trunk). It has been reported the chest-stick method is the most effective method of bloodletting for all red meat species (Humane Slaughter Association 2016). The Islamic ritual method of bloodletting is mentioned in the Hadith and says: *the cut must be made on the neck, just below the gullet and the core of the neck*. The hadith moreover mentioned that *the jugular veins and the carotid arteries must be cut; in addition to the oesophagus and the trachea* (Sahih Bukhari). The location of the incision at halal slaughter process is at the ventral part of the neck near the lower jaw which must continue until reaching the spine (incompletely separating the head), in order to continue blood flow to the brain through the vertebral arteries and thus to delay of the loss of consciousness (Gregory et al. 2012a; Gregory et al. 2012b). The technique of halal sticking is performed by one incision with one uniform continuous movement, without any interruption, or unnecessary

delay (Helmut 2010). Halal slaughter requires minimal pain for animal welfare reasons and maximal bloodletting for religious reasons (as blood is a forbidden material), which is difficult to perform in large animals (Fuseini et al. 2016). Find and applied means that are taking into consideration both religious roles and animal welfare could be the appropriate choice.

Automated slaughter

It is thought that the mechanical slaughter of poultry is controversial and does not adhere to Islamic principles, even those that are used in halal abattoirs (Muftī Shafī 1388/1968; Nakyinsige et al. 2013). This view was also confirmed by the DIALRE project (2010), which evaluated the halal slaughter practices in poultry abattoirs in Europe. Many practices in such abattoirs were observed of which could be in conflict with traditional Islamic rules of slaughter (Velarde et al. 2014). For example, slaughtering procedure with an automatic horizontal rotary knife for the cutting of the neck of poultry contradict the practices of halal. Islamic principles require the performance of sticking to be performed by a Muslim slaughterer that is familiar with Islamic ritual slaughter and doesn't mind if it is conducted by "People of the Book" (Christians and Jews). The knife which is used for halal slaughters must be sharp, without any scratches or nicks and has a suitable length (twice to four times the size of an animal's neck) (Aghwan et al. 2016; Grandin and Regenstein 1994). At the onset of sticking, specific phrases should be said aloud by the slaughterer in Arabic "Bismillah, Allahu Akbar", which means, "In the name of Allah, Allah is the greatest." This is in accordance with the orders mentioned in the Quran "*So eat of that over which the Name of God was pronounced*" (al-An'am, 118). in large-scale poultry processing plants that process around 4,000 to 12,000 birds per hour on a single line, repeating aloud such a phrase (invocation of blessing) by the slaughterer at the onset of slaughtering each bird is very difficult from a practical perspective (Raj 2014; Schilling et al. 2014). This is what prompted the Standing Committee for Scientific Research and Issuing Fatwas (Islamic rulings) to issue a Fatwa that to pronounce phrases once at the start of mechanical slaughtering machines is enough in poultry abattoirs (Al-Darwish 2003). The application of halal slaughtering practices which depended on workers more than machines (hand slaughtering and without stunning) in poultry slaughterhouses face serious economic challenges. The high costs of increasing manpower in addition to slow technological processes of halal hand slaughtering compared to automated slaughterhouses have direct reflections on meat prices (Chandia and Soon 2018).

Conclusion

The practices of halal are based on ancient laws from a time much different than our own. The practises of halal slaughter procedures which are mentioned in Islamic sources are compatible for individual cases of animal slaughter. Animals were slaughtered for personal consumption or in the honour of a mighty guest or they were sacrificed for Gods and idols which are mentioned in the Quran "*that on which hath been invoked the name of other than Allah. V:4*" (Usmani, 2005). The hot desert environment of the Arabian Peninsula and the lack of means for preserving meat (cooling, freezing, canning, etc.) at that time, required the immediate consumption of the meat of slaughtered animals and not for commercial purposes. There is a segment of Muslims who believe that religious laws are holy and it is divine legislation and these things are not the subject of the influences of time and space. The technological means of the meat industry are constantly evolving in order to achieve several goals such as meeting consumer demand, improving hygienic and environmental conditions as well as animal welfare. In this regard, the religious rules such as halal slaughter practices could be the last consideration taken into account. The creation of the

technological means which are taken into consideration in the halal slaughter principles and at the same time the requirements of modernity would be necessary.

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