



Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

**Faculty of Veterinary Medicine
and Animal Science**

Halal slaughter in Sweden

A survey of its occurrence and methods applied

Halalslakt i Sverige

Kartläggning av förekomst och metoder

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*Uppsala
2019*

Degree Project 30 credits within the Veterinary Medicine Programme

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Degree Project in Veterinary Medicine

Credits: 30

Level: *Second cycle, A2E*

Course code: EX0830

Place of publication: *Uppsala*

Year of publication: 2019

Online publication: <https://stud.epsilon.slu.se>

Key words: *halal, slaughter, Sweden*

Nyckelord: *halal, slakt, Sverige*

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SUMMARY

Halal slaughter is a form of religious slaughter practiced by Muslims according to the rules stipulated by the Quran. Traditionally, halal slaughter is performed without stunning, however, slaughter without stunning is controversial due to certain welfare concerns, namely stressful restraint methods, pain sensation during the cut, and the rate at which animals lose consciousness after the cut. Nevertheless, many Western societies give dispensation for religious slaughter from the requirement of stunning before slaughter. This is not the case in Sweden, where the Animal Protection Act stipulates that animals must be stunned before slaughter. The goal of this thesis was to determine the prevalence of halal slaughter in Sweden, and to examine how it is conducted. Furthermore, the aim of this study was to investigate if any of the welfare concerns were relevant in a Swedish context. For this purpose, data on the occurrence of halal slaughter was collected on 122 slaughterhouses. Out of these, six performed halal slaughter, and five of these chose to participate in this study. Information derived from interviews of these five slaughterhouses showed that the difference between conventional and halal slaughter in Sweden was minimal due to the requirement of stunning. Welfare concerns such as pain sensation during the cut and the rate at which animals lose consciousness were therefore not relevant in a Swedish context, while stressful restraint was concluded to be relevant for all forms of slaughter. Since the methods of restraint do not differ between conventional and halal slaughter, no differences in the impact on animal welfare could be found between conventional and halal slaughter in Sweden.

SAMMANFATTNING

Halalslakt är en form av religiös slakt som utövas av muslimer enligt regelverket i Koranen. Traditionellt har halalslakt utförts utan bedövning men slakt utan bedövning är kontroversiell på grund av vissa välfärdsaspekter, nämligen stressande fixering, smärta vid snittläggning samt hur snabbt djuren förlorar medvetandet efter snittet har lagts. Ändå så har man i många västländer dispens från kravet på bedövning för religiösa grupper. Detta är dock inte fallet i Sverige där Djurskyddslagen kräver att djur bedövas inför slakt. Målet med denna uppsats var att utreda hur vanlig halalslakt är i Sverige, samt att undersöka hur den genomförs. Utöver detta undersöktes även om välfärdsaspekterna var relevanta för svensk halalslakt. I detta ändamål samlades det in data om 122 slakterier angående huruvida de hade halalslakt eller ej. Sex av dessa hade halalslakt och fem valde att delta i studien. Information från intervjuer av dessa fem slakterier visade att skillnaderna mellan konventionell slakt och halalslakt var minimal i Sverige på grund av bedövningskravet. Välfärdsaspekter såsom smärta under snittläggning och hur snabbt djuren förlorar medvetandet var inte relevanta för svensk halalslakt, medan stressande fixering är relevant för alla former av slakt. Eftersom fixeringsmetoderna dock inte skiljer sig åt mellan konventionell slakt och halalslakt, drogs slutsatsen att det inte fanns någon skillnad i påverkan på djurvälståndet mellan konventionell slakt och halalslakt i Sverige.

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Appendix A

GLOSSARY

This glossary is specifically composed for this work, and defines terms found in this text as they are meant to be understood in this work.

Conventional slaughter:

Non-religious slaughter performed according to national rules and regulations.

Electroencephalography (EEG):

A neurological test that uses an electronic monitoring device to measure and record electrical activity in the brain.

False aneurysm:

A false aneurysm in this context occurs when the severed arteries retract into the surrounding connective tissue sheath. Blood flow from the arteries is limited when they are compressed by blood flowing around the outer wall of the artery and under the connective tissue sheath.

Halal slaughter:

Muslim method of slaughter, also called dhabh. Halal slaughter can be performed with or without stunning.

Meat quality:

A combination of measures related to for example the tenderness, color, texture and hygiene of the meat.

Neck cut:

Severing major blood vessels (carotid arteries, jugular veins) by a cut through skin and tissue of the ventral neck.

Post-cut stunning:

The animal is stunned by penetrating or non-penetrating captive bolt after the cut.

Religious slaughter:

In this case, halal or shechita slaughter/kosher slaughter. There are also other religions, besides Islam and Judaism, involving special prescriptions for the slaughter of animals. These are, however, not dealt with in this report.

Rete mirabilis:

“Rete mirabilis occipital” – vascular network that supplies ruminants’ brains with blood. It is supplied by branches from the carotid artery and the vertebral artery.

Shechita:

Jewish slaughter method, resulting in meat to be labeled “kosher”.

Sunnah:

The Quran and Sunnah are the two primary sources of Islamic theology and law. The Sunnah are the verbally recorded teachings, sayings and deeds of the Prophet Muhammad.

Thoracic cut:

Severing the brachiocephalic trunk via the thoracic inlet.

INTRODUCTION

Halal slaughter – a current topic

With the expected growth of the world's Muslim population from 1.6 billion in 2010 to 2.2 billion in 2030, the global halal market is expected to extend concurrently (Grim & Karim, 2011; Miele 2016). According to Grim & Karim (2011), the Muslim population in Sweden is expected to rise from 451 000 in 2010 to 993 000 in 2030, which means an increase in the percentage of the population that is Muslim from 4.9 % to 9.9 %. From a Swedish perspective, it is therefore unlikely that the question of halal slaughter and access to halal meat will disappear. Even though demands for meat from halal slaughtered animals, both stunned and un-stunned, may be at least temporarily satisfied by access to the European and World markets, consumers do request locally produced, i.e. Swedish, meat (Anon., interview, 2017).

The term 'halal' is not only referring to the actual method of slaughter, and does not necessarily imply slaughter without stunning. The debate around stunning for halal purposes in Europe is according to Miele (2016) quite recent and has only developed during the last twenty to thirty years. Before that, animals slaughtered by the 'People of the Book' (i.e. also Christians and Jews) were considered halal (Quran 5:5). A decline in the number of religious people in Europe in combination with non-traditional technologies used for halal slaughter, has stimulated a call for more 'traditional' halal meat production without stunning (Miele, 2016). Historically, animals were not stunned when slaughtered halal, and the same is true presently for the so called developing world (Fuseini *et al.*, 2017b). It should be mentioned that stunning is a relatively modern phenomenon, which has only been applied in relatively recent times also in the Western cultures.

For Muslims, consumption of meat slaughtered according to the principles of halal is part of living the Islamic faith and is therefore a matter of worship rather than simply the production of food (Quran 2:172; Nakyinsige *et al.*, 2013). The matter of halal slaughter and/or access to halal meat is therefore an important question both for Muslims living in Muslim countries, and for Muslims living in traditionally non-Muslim countries, like Sweden.

Islam places great importance on how animals are treated, both prior to and during slaughter (Nkyinsige *et al.*, 2013). However, slaughter without stunning is controversial from an animal welfare point of view because of certain concerns raised in conjunction with both halal and shechita slaughter, such as stressful restraint methods, pain sensation during the cut and the rate at which animals lose consciousness after the cut (Grandin & Regenstein, 1994; Gregory, 2005; Nakyinsige *et al.*, 2013). These issues are subject of extensive scientific research and can affect both public opinion and public policy. Of course, animal welfare is not only an important matter for religious slaughter, but for all forms of slaughter.

The concept of welfare refers to the animal's ability to cope with its environment, specifically how much the individual needs to do to be able to cope, and to what extent coping mechanisms are successful (Broom, 1991). Poor animal welfare in a slaughterhouse can be caused by poorly maintained equipment or facilities, untrained or unsupervised employees and minor or major design faults (Grandin, 2010).

Aim

The goal of this study is to determine the prevalence of halal slaughter in Sweden and to examine its context and procedures, specifically the number of slaughterhouses, how and why they have halal slaughter, staff used, any perceived difficulties, etc.

Furthermore, this thesis aims to describe some of the characteristics and controversies of halal slaughter and how they work in the Swedish context, within the limits of Swedish laws and regulations. Included in this is a review of halal slaughter from a veterinary and consumer point of view, and from the perspective of religious freedom.

Species commonly slaughtered halal are cattle, buffalo, sheep, goats and poultry. However, the research presented here focuses on cattle and sheep.

The Jewish slaughter method, shechita, is not discussed in this text because it demands that the animal be conscious at the time of slaughter and stunning is therefore not permitted. Therefore, shechita cannot be performed in Sweden.

LITERATURE REVIEW

To slaughter halal

The Quran and the teachings of the Prophet stipulate the requirements for the slaughter of animals for Muslim consumption (Fuseini *et al.*, 2017a). Such requirements concern not only the slaughter process itself, but also which species may be slaughtered, handling of animals prior and during slaughter and the person who bleeds the animal.

Despite practical variations, common requirements for halal slaughter are that the animal is healthy and a species accepted for halal food; that the animal be alive at the time of slaughter; that the name of Allah is mentioned with each animal (*Bismillah, Allahu Ekber, In the Name of Allah*); that the cut across the neck is performed by a trained Muslim and severs the trachea, esophagus, both carotid arteries and jugular veins; and that the knife used in the slaughter is sharp for a quick and stress-free cut that results in optimal bleeding (Quran 5:3, 6:121; Farouk *et al.*, 2014; Miele, 2016; Fuseini *et al.*, 2017b). Turning the animal and oneself towards the Kaaba in Mecca is also an obligation according to the Sunnah, and for many Muslims a requirement just as important as the ones above (Anon., interview, 2017; Gunner, 1999).

Halal slaughter can be performed with or without stunning, but particular importance is placed on the animal being alive when it is bled (Quran 5:3; Fuseini *et al.*, 2017a). Therefore, the time interval between the stun, if performed, and the neck cut is critical to ensure that the animal is alive (Nakyinsige *et al.*, 2013). However, keeping this interval short is also important from a welfare angle to make sure the animal is still unconscious when the cut is made, in particular if a reversible stunning method is applied.

Since the animal must be alive at the time of slaughter, stunning techniques considered irreversible, such as penetrative captive stunning, are not widely accepted (Fuseini *et al.*, 2017b), even though this method doesn't lead to the immediate death, in terms of cardiac arrest, of the animals (Jerlström, 2014). However, knowledge on stunning techniques seems to vary

among Muslim scholars (Fuseini *et al.*, 2017b), and current attitudes towards different methods of stunning can therefore not be thought of as static. There is also debate among Muslims whether stunning is permissible at all, and in some countries, there is a call for a more ‘authentic’ halal meat production without stunning (Miele, 2016; Fuseini *et al.*, 2017a).

Some Muslims may be hesitant to accept stunning because it is considered “doubtful” (Nakyinsige *et al.*, 2013), which means that it lies between what is legal and what is illegal according to the religious texts. To avoid these doubtful things is to err on the side of caution. Concerns may be whether the animal is alive at the time of the cut if pre-slaughter stunning is used, that pre-slaughter stunning is not explicitly mentioned in religious texts, fear of diminished blood loss due to stunning, that the technique will not sever the main blood vessels, that stunning is perceived as cruel, and that meat quality is impacted negatively (Fuseini *et al.*, 2017b). Although several of these reasons for being skeptical to pre-slaughter stunning are based on misconceptions rather than facts, one should acknowledge that religion and religious traditions are not a matter of facts, but of beliefs, regardless of scientific evidence.

Slaughter with and without stunning – welfare concerns

Restraint

The method and degree of restraint influences several variables or factors pertaining to the slaughter procedure, such as time intervals, struggling, vocalization, number of cuts, bleeding and loss of posture (Velarde *et al.*, 2014). Both struggling during restraint and vocalization are signs of stress (Velarde *et al.*, 2014) and struggling indicates excessive pressure (von Holleben *et al.*, 2010).

While animals that are to be stunned may be restrained in an upright position to ensure optimal use of the stunning equipment, cattle and sheep that are slaughtered without stunning are restrained in a variety of positions (Velarde *et al.*, 2014; von Holleben *et al.*, 2010). An upright position would demand that the cut of the un-stunned animal be performed upwards, which entails standing in an awkward position (Gregory, 2005). While immediate unconsciousness through stunning possibly gives the staff the benefit of time in performing the cut, an animal that is cut without being stunned needs to be in an optimal position for the cut to be quick and effective in order to minimize potential pain or suffering and to facilitate bleeding.

In slaughter without stunning, cattle can be restrained upright or rotated (90 or 180 degrees) (von Holleben *et al.*, 2010). In both cases, a box or pen with additional equipment is often used, such as the Cincinnati or ASPCA pen which includes a chin lift, a belly plate and a backpusher. The design of the box or pen serves to position the animal in such a way that the animal is properly restrained, and the cut can be performed effectively.

Upright restraint of cattle is better than rotating restraint since rotation to the side or back leads to the rumen exerting pressure on the lungs, which is highly uncomfortable for the animal (von Holleben *et al.*, 2010). Animals who are rotated prior to the cut struggle and vocalize more than animals left in an upright position. Grandin and Regenstein (1994) also found that it is difficult to evaluate the animals’ reaction to the cut when they are rotated on their back. In addition, animals in a rotating pen will aspirate blood following the cut, which does not happen when the

animal is standing. They conclude that a well-designed pen for upright restraint would be more comfortable for the animal.

Velarde *et al.* (2014) found that the amount of struggling during restraint varied. In a comparison between ten abattoirs that slaughtered cattle without stunning, and six that slaughtered cattle with stunning, it was found that approximately the same percentage of cattle, around 40 percent, struggled when held on their back. All observed cattle that were slaughtered without stunning struggled when rotated 90 degrees, whereas in cattle slaughtered with stunning, struggling while restrained was about five percent when turned on the side. When restrained upright, struggling varied between around 15 percent (slaughter with stunning) and approximately 60 percent (slaughter without stunning). Since these numbers refer to animals struggling prior to being cut or stunned, it indicates that other factors, such as design of equipment and/or handling by staff, influence animals stress levels and therefore their inclination to struggle when restrained.

Whereas upright restraint may be less stressful and more comfortable for the animal, the findings of Velarde *et al.* (2014) indicate that upright restraint demands a higher number of neck cuts than when the animals were rotated. This again may be due to the position of the staff relative to the animal when the cut is performed. While it is difficult to draw conclusions from such a small study, this may again indicate the importance of equipment design, the position of the animal's neck and handling by staff.

The concern about stressful restraint during slaughter without stunning, can be related to the position of the animal in the box/pen. A rotated position might mean advantages during the performance of the slaughter, but disadvantages for the comfort of the animal. While a rotated position may lead to stress, equipment design and handling by staff are also important in reducing stress for the animal. One must also consider that, in slaughter with stunning, restraint may not need to be as extensive, which in itself reduces stress.

Slaughter methods: pain during the cut

Studies on the painfulness of the cut, judged primarily by the animal's reaction, have yielded conflicting results (von Holleben *et al.*, 2010). After observation of over 3000 cattle and calves which did not visibly react to the cut, Grandin and Regenstien (1994) found that certain elements need to be in place for the cut to be minimally painful. The animal needs to be calm when entering the restraint and should be accepting the head restraint, which must be comfortably designed. The knife, in this study shaped like a razor and twice as wide as the animal's neck, must be razor sharp. The cut is made without hesitation and the wound should not close back over the knife, which again demands a well-designed restraint.

Other scientists may instead argue that the substantial tissue trauma the cut elicits, must result in pain perception via noxious stimulus (von Holleben *et al.*, 2010). Johnson *et al.* (2012) evaluated the perception of pain during slaughter of cattle with the help of an electroencephalogram (EEG) and they found that the neck cut will cause pain until the animal loses consciousness. The pain perception is not mainly due to the severing of vessels, but is primarily caused by general damage to the tissues in the neck. They also evaluated the effects

of stunning on pain perception measured by EEG and found that stunning, in this case concussive captive-bolt stunning, eliminates cerebrocortical activity, thereby rendering the animal unconscious, and that a subsequent neck cut will not elicit any reaction which the animal could experience as pain.

Slaughter methods: time to unconsciousness

A long time-interval between cut and unconsciousness implies a higher risk of pain and stress for the un-stunned animal. While correctly stunned animals can be released from their restraint immediately, following slaughter without stunning they need to be kept in their (loosened) restraints until collapse (Grandin & Regenstein, 1994). Failure to do so is likely to cause the animal more pain when the cut edges touch or the cut meets parts of the pen.

In their study of 174 cattle slaughtered without stunning, Gregory *et al.* (2010) showed that although ninety percent of the animals examined collapsed within 34 s, eight percent took 60 s or more before the final collapse. These findings are in line with previous studies that have shown conflicting results concerning time to loss of consciousness after slaughter without stunning. The time required for cattle to lose consciousness may vary more than for sheep and goats, which generally lose consciousness within 15 s after the cut of the carotid arteries (Grandin & Regenstein, 1994).

The time lag to loss of consciousness and brain function in cattle, compared to for example sheep, is partly thought to be due to the vertebral arteries, which pass close to the spinal cord and are therefore not severed by the neck cut (Blackman *et al.*, 1986; see von Holleben *et al.*, 2010). These arteries in cattle can maintain blood flow to the brain, particularly in unanesthetised animals since anaesthesia reduces cerebral blood flow.

Gregory *et al.* (2010) also found that delayed collapse and therefore prolonged consciousness in cattle was associated with false aneurysms at the cardiac end of the severed carotid arteries. Seventy-one percent of the animals that took more than 75 s to collapse had cardiac end false aneurysms in their study. Swelling at the cephalic ends could also lead to late collapse due to increased cerebral blood flow via the rete mirabilis. Cattle without aneurysms or swellings in the severed carotid arteries collapsed within 34 s of the cut.

Twenty-five cattle regained a four-legged stance after the first collapse before the subsequent final collapse which occurred on average twenty seconds later (Gregory *et al.*, 2010). The authors concluded that insensibility is not necessary achieved after the first collapse, but rather that the animals can “repeatedly drift in and out of consciousness”. This also constitutes a likely source of distress for the animals.

However, false aneurysms can also occur at the end of carotid arteries when animals are slaughtered following stunning (Gregory *et al.*, 2006). To avoid false aneurysms, some recommend thoracic sticking at slaughter (Anil *et al.*, 1995). This method can reduce blood pressure to nearly zero in eight seconds, thereby effectively stopping cerebral blood flow. Thoracic sticking is commonly used in non-religious slaughter of cattle, and in some parts of the world thoracic sticking is admissible in halal slaughter under certain conditions, such as that

it may not be the main cause of death (Fuseini *et al.*, 2017b). In other parts, thoracic sticking is not performed at halal slaughter.

Concerns about stunning – consumer perspective

Besides the welfare concerns explained above, other discussion points in relation to halal slaughter are the concerns halal meat consumers may have about stunning. These may include diminished blood loss and a negative impact on meat quality as well as concerns that the animal is not alive at the time of the cut due to stunning (Fuseini *et al.*, 2017b).

Bleeding and meat quality

As mentioned above, optimal bleeding is one requirement for halal slaughter for welfare and hygiene reasons. A rapid blood loss is required because it should rapidly lead to unconsciousness. Also, the consumption of blood is not desirable (Quran 6:145). The requirement for good bleeding is the same for conventional, non-halal slaughter, for the same reasons.

In a study by Anil *et al.* (2004), comparing bleed out and meat quality parameters between sheep slaughtered without prior stunning and sheep stunned with head-only electrical stunning, they found no difference in rate and total blood loss between the different groups. Concerning meat quality, captive bolt stunning lead to increased pH levels and a darker meat color, but the significance of this is unclear.

In a similar study in cattle, Anil *et al.* (2006) again found no significant differences in rate and total blood loss between cattle stunned with captive bolt and cattle slaughtered without prior stunning. These two studies indicate that stunning does not affect exsanguination.

In a study comparing blood loss between lambs slaughtered without stunning, lambs stunned with electrical head-only stunning and lambs stunned electrically post-cut, Khalid *et al.* (2015) found no significant differences in final blood loss. However, it was noted that the rate of blood loss was faster in lambs stunned with electrical head-only stunning and in lambs stunned post-cut.

In a study from 2017, Danso *et al.* compared meat quality parameters in lamb meat from animals slaughtered without stunning, stunned by electric head-only stunning or post-cut electric stunning. They did not find that the stunning method or lack thereof had any “substantial effect” on meat quality. In contrast, Linares *et al.* (2007) found that stunning method did affect certain meat quality parameters in lambs when comparing three different stunning protocols: electric stunning, CO₂ and no stunning. Meat from animals slaughtered without stunning had at 7 days post-mortem lower pH, cooking loss and dripping loss when compared to other stunning methods.

In a study on cattle, it was found that percussive bolt stunning led to superior meat quality when compared to meat from animals stunned electrically or not stunned (Önenc & Kaya, 2004).

Reversibility of stunning

For halal slaughter it is vital that the animal be alive at the time of the neck cut, and stunning can therefore be regarded with skepticism by the regular halal meat consumer. Different methods of stunning affect the animal in different ways. Head-only electrical stunning, as applied on sheep, lambs and broilers, is a reversible method which does not lead to the death of the animal. Nor will captive bolt stunning cause the immediate death of the animal, even if it is irreversible (Jerlström, 2014). This means that the animal will lose consciousness immediately at stunning, but remain alive for yet a couple of minutes. Waterbath stunning for broilers may be reversible, if high electrical frequencies are used, or lead to the immediate cardiac arrest (death) of the birds, if low frequencies are used. Gas stunning of poultry may be reversible or not, depending on the CO₂ concentration and the duration of stunning, but in any case, the heart of the birds is usually beating when bleeding commences.

Halal slaughter in Sweden

Legislation

Slaughter is a stressful process for the animals, and as such a frequent source of pain and fear (Terlouw *et al.*, 2016). Both the Swedish Animal Protection Act (Djurskyddslag, 1988:534) and EU regulation (EC 1099/2009¹) therefore specify that pain and suffering in conjunction with slaughter should be avoided (13 §, SFS 1988:534; Ch. II, Art. 3.1, EC 1099/2009). Regulation (EC) 1099/2009 also specifies that all animals that are slaughtered need to be stunned (Ch. II, Art. 4.1).

In Sweden, stunning at slaughter has been mandatory since 1937 (Lag om slakt av husdjur, 1937:313). The Swedish Animal Protection Act (SFS 1988:534) from 1988 continues to make slaughter without stunning illegal (14 §). In this aspect, the Swedish legislation goes beyond EU regulation 1099/2009, which allows slaughter without stunning for religious purposes (Ch. II, Art. 4, 4 §).

Other Swedish rules applying to the slaughter process are specified in regulations by the Swedish Board of Agriculture (Statens jordbruksverks föreskrifter och allmänna råd [SJVFS 2012:27] om slakt och annan avlivning av djur, saknr L22). Allowed methods for stunning are specified, and while several species such as sheep and poultry may be stunned with electricity, only penetrating captive bolt, rifle, handgun, or shotgun are permitted for cattle (Ch. 7, 3 §, SJVFS 2012:27). It is also specified that animals stunned by penetrating captive bolt or rifle must lose consciousness immediately (Ch. 7, 7 §, SJVFS 2012:27). Chapter 7 also specifies which methods of restraint are permitted (1 §) and that the stun quality needs to be controlled (2 §). After bleeding the animal, staff need to make sure the animal is dead before it is processed further (Ch. 8, 4 §, SJVFS 2012:27).

¹ OJ L 303, 18.11.2009, p. 9, Celex 32009R1099.

Investigations into dispensation and alternative stunning methods

In 1992, the Swedish Board of Agriculture prepared a report on the question of whether there are reasons for dispensation for religious groups from the law concerning stunning of animals at slaughter (Jordbruksverket, 1992:37). They found that dispensation should not be given for two reasons: 1) slaughter without stunning would lead to stress and fear due to restraint, particularly of the head, and the cut itself, which goes against the Swedish Animal Protection Act's stipulation that unnecessary discomfort and suffering should be minimized; 2) the bulk of the meat from animals slaughtered according to shechita would not be acceptable for Jewish consumption, and would therefore be sold on the open market to consumers unaware of the meat's origin.

The Swedish Animal Protection Agency, which was its own institution between 2004 and 2007 and now has been incorporated into the Swedish Board of Agriculture, published two reports in 2005 and 2007 respectively (Djurskyddsmyndigheten, 2005 & 2007). In 2005 they evaluated different slaughter methods used for religious slaughter in other countries, particularly New Zealand where electric stunning of cattle for halal slaughter is the norm. The report concludes that electric stunning of cattle is not possible without significant changes to national and EU legislation for two reasons: 1) the short time interval between stun and cut makes it difficult to control the quality of the stun before the cut; 2) regulation stipulates that further processing of the carcass may only be done after the animal is dead, i.e. after bleeding. This makes the use of an immobilizing current to reduce muscle activity, which is usually applied, impossible in Sweden.

In 2007, a report was presented evaluating the use of post-cut stunning in conjunction with religious slaughter of cattle. It was deemed problematic to evaluate the possibility of using post-cut stunning due to the lack of scientific studies on the subject, particularly regarding animal welfare aspects. However, it was concluded that for this type of stunning to be possible in Sweden, the animal must be stunned immediately after the beginning of the cut to shorten the time interval between cut and stun as much as possible. During visits to abattoirs abroad, where post-cut stunning was used, it was observed that time intervals could vary between twelve seconds up to several minutes, which would not be acceptable under Swedish law.

Religious perspective on halal slaughter

The Swedish law prohibiting slaughter without stunning for religious reasons is problematic from the perspective of religious freedom. The European Convention on Human Rights guarantees religious freedom in article 9:1:

“Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief and freedom, either alone or in community with others and in public or private, to manifest his religion or belief, in worship, teaching, practice and observance.”

At the same time, it allows for certain limitations on said freedom in article 9:2:

“Freedom to manifest one’s religion or beliefs shall be subject only to such limitations as are prescribed by law and are necessary in a democratic society in the interests of public safety, for the protection of public order, health or morals, or for the protection of the rights and freedoms of others.”

The Swedish Constitution also guarantees religious freedom in one of its four Fundamental Laws, The Instrument of Government (Ch. 2, article 1, Regeringsformen, 1974:152):

“Everyone shall be guaranteed the following rights and freedoms in his or her relations with the public institutions:

....

6. freedom of worship: that is, the freedom to practice one’s religion alone or in the company of others.”

Additionally, chapter 2, article 19 declares:

“No act of law or other provision may be adopted which contravenes Sweden’s undertakings under the European Convention for the Protection of Human Rights and Fundamental Freedoms”.

There is criticism against the Swedish law prohibiting slaughter without stunning. Göran Gunner (1999) discusses the origin of the ban against slaughter without stunning, which in 1937 was equivalent to shechita, the Jewish slaughter method. He proposes that the law came about due to public opinion, rather than a concern for animal welfare, and that antagonism towards Jews cannot be discounted as a motivating factor.

He also criticizes the Swedish Board of Agriculture’s report from 1992. Gunner feels that the report did not fully live up to the assignment given, namely to investigate if there was cause for dispensation from the law that prohibits un-stunned slaughter.

MATERIAL AND METHODS

For the literature review, the website of the Swedish Agricultural University’s library was employed, using search parameters such as “halal slaughter”, “slaughter without stunning”, “pain during slaughter”, “restraint AND slaughter”, “veterinary AND slaughter”, etc. Additional relevant articles were found using the references in these first articles. Also, some material was provided by the supervisor of this work.

For the interviews, a first email specifying the subject of the study was sent to slaughterhouses for which a contact person was known to the supervisor. The email informed them that a student would contact them in the coming weeks, and further explained that any participation in the study would be anonymous.

A document was formed listing slaughterhouses in Sweden based on information from the National Food Agency’s (NFA) website. Slaughterhouses processing only pigs were excluded. Slaughterhouses with halal slaughter were then identified with the help of staff from the NFA

around the country, or by calling individual slaughterhouses. For one out of the 123 slaughterhouses on the list, no contact details could be found, and no information was provided by the NFA. At least six slaughterhouses on the list have halal slaughter at the time of writing. Additionally, 11 slaughterhouses that were contacted but did not have halal slaughter provided valuable information included below.

Of the six abattoirs with halal slaughter, one chose not to participate in this study. All the slaughterhouses with halal slaughter that were interviewed were very accommodating and helpful.

All slaughterhouses with halal slaughter that participated in this study answered the questionnaire in appendix A, although the questions were posed in Swedish and the questionnaire was only translated to be included in this work.

Slaughterhouses that were contacted to enquire if they had halal slaughter, and who answered with no, were asked whether they ever had been contacted by someone who wanted to slaughter halal, and why they chose not to.

At the start of all conversations, I introduced myself by name and explained that I am Swedish veterinary student doing research for my master thesis on halal slaughter in Sweden.

RESULTS

Due to the small number of slaughterhouses with halal slaughter, and the promise of anonymity, the results are presented in such a way that identifying the individual slaughterhouses is made as difficult as possible without compromising the readability of the text. This is also why the results only are presented in a limited number of tables.

Abattoirs that perform halal slaughter

General background on the slaughterhouses

Number of slaughterhouses that perform halal slaughter

Since this is not a comprehensive study, the exact number of abattoirs in Sweden that perform halal slaughter remains undetermined. Out of the 122 slaughterhouses that I contacted myself or received information about, six had halal slaughter in addition to conventional slaughter. None of the slaughterhouses contacted carried out halal slaughter only.

Size of abattoirs and species slaughtered

Out of the five slaughterhouses interviewed, one slaughtered only sheep/lambs, while the other four slaughtered cattle and one or two other species, either sheep, horses or pigs. The slaughterhouses were either owned by a large corporation or were privately owned, some were quite large and slaughter tens of thousands of animals per year, while others were much smaller. A few were founded during the 20th century while some were founded quite recently, during the 21st century.

Halal slaughter

Species slaughtered halal

Four of the five slaughterhouses slaughtered sheep halal, between 100 and 250 animals per week with seasonal variation, and one of these slaughtered cattle on request. The fifth slaughterhouse slaughtered calves and occasionally a young bull halal, approximately two to five animals per week, depending on their weight. Older animals were not desirable because of meat quality factors.

Statistics for halal slaughter and owner awareness

Three out of the five slaughterhouses had statistics for halal slaughter, usually by using a separate code for these animals.

Three of the five slaughterhouses had not informed animal producers (i.e. the farmers) that their animals may be halal slaughtered. Two slaughterhouses said most of their animal suppliers were aware that their animals might be or would be slaughtered halal.

Reason for halal slaughter

Three slaughterhouses, two founded less than ten years ago and one more than ten years ago, have had halal slaughter since the beginning. The other two started relatively recently, but one of them had halal slaughter before, which had “died out” because the customer left.

For four out of the five slaughterhouses, the reason for why they started with halal slaughter was either that the customer had been “with them from start”, in one case he was known from another slaughterhouse, or, quite pragmatically, they saw it as a source of income, particularly in one case in which the slaughterhouse performed halal slaughter for another company. One slaughterhouse happened to have a Muslim performing all of the slaughter including the conventional slaughter, and therefore they were able to offer halal meat.

Staff and customers

Different kinds of customer relations existed at the different slaughterhouses, see table 1 below. In the case of two of the slaughterhouses, circumstances were as follows: the customer bought the animals from the slaughterhouse, bled them there himself and sold the meat, presumably in his own shop. In one slaughterhouse, the customer, who had his own shop, hired the person who bled the animals from a third party. Another slaughterhouse used its own staff, Muslim men, who were already in employment at the abattoir and who solely performed the bleeding. The meat then went to another large meat producing company (on whose behalf this slaughter is taking place), which processed and sold it further. Still another slaughterhouse had a Muslim on staff who performed both conventional and halal slaughter and who also performed the stunning. The meat went to private individuals, including meat bought back by the live animal supplier, or restaurants, for example at Eid al-fitr.

Table 1. Description of customer relations, (SH = slaughterhouse)

SH 1 & 2	SH 3	SH 4	SH 5
Customer was Muslim, bought the animals, bled them and sold the meat.	Customer with his own store, bought the animals and hired someone to bleed them.	Two members of staff were Muslim, they performed the bleeding. The meat was sold to a large company.	One member of staff was Muslim and performed the whole slaughter process. The meat went to private individuals (including meat bought back by the farmer), restaurants.

Competence of staff

In all slaughterhouses except one, the stunning was always performed by another member of the slaughterhouse staff. A Certificate of competence for performing the bleeding was confirmed in three cases and assumed in two, in which cases the slaughterhouse seemed to have trust and confidence in the person performing the bleeding.

Stunning method and equipment

The stunning method was either electricity (sheep) or penetrating captive-bolt (cattle, sheep). The animals were either restrained manually (sheep) or in a common restraining pen without restraint of head/neck (cattle). In all cases but one, the person bleeding the animals used knives from the slaughterhouse, in one case he brought his own. Only one single cut was made.

Perceived differences between halal and conventional slaughter

None of the slaughterhouses felt that there was any significant difference between halal slaughter and conventional slaughter, except that someone else came in to do part of the work. The impression was in all cases that the customer had to adapt to the slaughterhouse's schedule, and one person stated clearly that he did not perceive that halal slaughter made the line slow down.

Problems or difficulties in conjunction with halal slaughter

Problems or difficulties seemed to be a rare occurrence. In one case, an earlier customer who also performed the bleeding did not adhere to rules and regulations, for example concerning the control of the stunning quality through examination of reflexes. The animal welfare officer decided at this point that the customer would no longer be welcome at the abattoir.

In two cases, the person performing the bleeding was trained at the slaughterhouse and they therefore felt confident in his work.

Abattoirs that do not perform halal slaughter

Prejudice

Out of the eleven abattoirs interviewed who did not perform halal slaughter at the time, six could be considered prejudiced against the practice. Prejudice ranged from “all religion should be outlawed” to a feeling that the “ceremony” around the bleeding was “uncomfortable” because of the animals suffering. One person was surprised at hearing that halal slaughter is slaughter *with* stunning in Sweden. Only one interviewee out of the eleven gave the impression of knowing what halal slaughter entails in a Swedish context.

Fear of customer reaction

Two slaughterhouses stated clearly that they were afraid of customers’ reactions and the impact on their reputation if it became known that halal slaughter was performed at their abattoir. One of these also said that animal suppliers did not wish for their animals to be slaughtered halal, whereas the slaughterhouse itself did not have a negative opinion on the practice of halal slaughter. The other slaughterhouse also stated “practical reasons” for not performing halal slaughter.

Requests

Eight slaughterhouses had received requests for halal slaughter, either from private individuals or businesses. One slaughterhouse claimed to have received many requests for slaughter without stunning. Another slaughterhouse was contacted and asked if they wanted to be certified as halal slaughterhouse, which they declined.

“Practical reasons”

Five slaughterhouses also cited “practical reasons” for not having halal slaughter, such as not wanting “strangers” in the abattoir, or feeling that they would need to hire an imam to perform the bleeding. In three cases, the interviewee gave the impression that Swedish rules and regulations were so complicated that halal slaughter would not be feasible. Several slaughterhouses also felt that they were “busy enough”.

In some cases, these “practical reasons” may disguise prejudice and a lack of interest.

DISCUSSION

The aim of this study was to examine how common halal slaughter is in Sweden, but also to collect information on its methods and attitudes surrounding it. In addition, this text sought to describe how characteristics and controversies surrounding halal slaughter applied to the Swedish context, particularly regarding Swedish laws and regulations.

Data collection and sources of error

This study cannot claim to know the exact number of slaughterhouses in Sweden that perform halal slaughter since it is not a comprehensive study. The NFA’s list of slaughterhouses in Sweden is updated continuously, but nonetheless may represent a possible source of error. Also, the method for collecting information on which slaughterhouses performed halal slaughter

cannot be said to be completely reliable, particularly if slaughterhouses do not want to admit to having halal slaughter. Unfortunately, one slaughterhouse that performs halal slaughter is missing from this study.

Nevertheless, this study presents a clearer and more comprehensive picture on the occurrence of halal slaughter in Sweden than what was known before.

Halal slaughter in Sweden

Halal slaughter in Sweden is relatively uncommon when looking at the number of abattoirs performing slaughter according to halal principles, and a very conservative estimate is that around 21 000 lambs are slaughtered every year for the Swedish halal market.

It is interesting to note that three of the abattoirs with halal slaughter perform this method of slaughter only because they were contacted by a private individual who wanted to sell halal meat. This indicates that the Swedish halal market is not particularly organized but relies on small individual businesses. Concurrently, the meat goes mainly to small companies selling the meat directly to restaurants or private individuals, rather than to large supermarket chains. This raises the question of how available Swedish halal meat is to Muslim consumers. Many most likely have to rely on imported meat and meat products from the European market sold in large supermarkets, which comes from animals which may or may not have been stunned prior to slaughter.

There may be different reasons for the limited amount of halal slaughter in Sweden. One reason is a shortage of animals due to sheep farming being quite limited in Sweden, particularly compared to other countries (Anon., interview, 2017). This also means that Swedish lamb meat is more expensive than imported meat from for example New Zealand. And although some consumers want to buy locally produced meat, the price has an obvious influence on choice of purchase.

Another possible reason for the small number of abattoirs performing halal slaughter, is an unwillingness or lack of interest by the individual slaughterhouses. The findings of this study indicate that such opinions may be based on lack of knowledge about what halal slaughter entails or fear of a negative reputation due to customers' prejudice on the subject.

It is worth considering that, since the practical differences between halal and conventional slaughter are so small given that the animals are stunned, all sheep/lambs and even cattle could be slaughtered halal. Since halal slaughter in Sweden has no implication on stunning or other animal welfare aspects of slaughter, non-Muslim consumers should find consumption of halal meat un-problematic. Also, most likely halal meat is sold to Swedish consumers without halal labeling already, for practical reasons.

Animal welfare

Halal slaughter in Sweden does not differ substantially from conventional slaughter since all meat production in Sweden adheres to Swedish laws and regulations which demand that animals be stunned before slaughter. Specific welfare concerns about halal slaughter, such as pain during the cut and time to unconsciousness, pertain to slaughter without stunning, and are

therefore not relevant for the Swedish context. Stressful restraint as well as animal handling prior to slaughter in general on the other hand is not specific for Swedish halal slaughter, but an important issue pertaining to all slaughter methods. Since all animals are stunned, there is no difference in methods of restraint between conventional and halal slaughter in Sweden. The implications halal slaughter in Sweden has on animal welfare are therefore no different than for conventional slaughter.

As the findings of this study indicate, differences between halal slaughter and conventional slaughter are also perceived to be minimal by people who are involved in the process, namely staff at abattoirs and official veterinarians.

The future of halal slaughter in Sweden

Different investigations into a possible dispensation from stunning for religious slaughter or acceptance of new stunning methods, such as electric stunning for cattle, have not yielded any results and these questions do not seem to be currently investigated.

Occasionally, the issue of dispensation comes up in Swedish Parliament through a motion by a member, but there seems to be more interest in issues such as labeling of products from unstunned animals and in keeping Swedish dispensation from EU regulations concerning stunning at slaughter for religious purposes.

This author believes that it is unlikely that religious groups will be able to perform slaughter without stunning for the foreseeable future, particularly considering public opinion on this issue.

Further research

Further research into this subject could yield additional information on the prevalence of halal slaughter in Sweden. Additionally, other questions might be of interest, such as attitudes towards stunning and the production of Swedish halal meat among Swedish Muslims, and attitudes/prejudice on conventional meat production among Swedish Muslims, and what the perceived differences are. It would also be interesting to look at the availability of halal meat for the regular Swedish Muslim household, and to which degree the Swedish halal market is dependent on imports. Would a common, Swedish halal certification system be helpful for the consumer? And which are the possibilities for that?

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APPENDIX A

Questionnaire for abattoirs

Contact information:

Do you have halal slaughter: Y/N.

If yes, proceed with the following questions.

Questions on the slaughterhouse:

- How large is the slaughterhouse, i.e. how many animals are slaughtered, how many days a week (in total)? How many employees do you have?
- Which species do you slaughter?
- How long have you been in operation?
- Who is the owner (large cooperation/private owned)?

Questions on halal slaughter at your abattoir:

- Which species do you slaughter halal?
- How many animals and how many days per week?
- Do you have separate statistics for animals slaughtered halal?
- On your staff:
 - Do you hire the person who performs the halal slaughter (i.e. the bleeding) or does he come from a religious organization?
 - Who performs the stunning?
 - Does the person performing the halal slaughter have a certificate of competence in accordance with EU Regulation 1099/2009?
- On the slaughter itself:
 - Which method do you use for stunning?
 - What equipment is used?
 - How are the animals restrained?
 - What are the differences to conventional slaughter?
 - How many cuts are performed?

Halal meat:

- Who receives the halal meat?
- Animals bought back by the farmer/supplier?
- Do the animal owners know that their animals are slaughtered halal? Which attitudes have you encountered?
- To slaughterhouses that also do packaging: does the packaging say that the meat is halal?

General questions:

- Why do you have halal slaughter?
- How long have you had halal slaughter?

- Problems or issues with the person performing the cut?
- What do you perceive as the biggest difference to conventional slaughter?
- Controversies among other staff about halal slaughter?