8 Halal Production Requirements for Meat and Poultry

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Among all the dietary restrictions or prohibitions placed on Muslims by God, the majority are related to the consumption of meat and animal products, especially land animals (see Chapter 3). Religion is a driving force in determining the consumption of meat and it permits or prohibits the use of certain type of meat by the group of people belong to it. This chapter will address the requirements and procedures surrounding the consumption of meat and poultry in Islam. Restrictions, prohibitions, permissions, and instructions are presented in such a way as to balance two potentially conflicting viewpoints; the requirement that Muslims respect and care for the animals around them, and the permission for Muslims to consume animal flesh for their own subsistence. Chapter 6 has detailed the importance of animal welfare in a holistically Islamic meat production system. This chapter will detail further how those and other requirements relate to the production of meat and poultry in the slaughter plant and during meat processing. This chapter also includes a set of halal control points (HCP) that can be used by the industry to guide in the development of protocols in each area of animal slaughter and meat processing.

The first section of this chapter will address land mammals and go over the flow of the slaughter process from arrival at the plant until the death of the animals. Primary requirements, those required for the meat to be permissible for Muslims to consume, will be shown in bold text while secondary requirements, that is, things that are highly encouraged based of the teachings of Prophet Muhammad (PBUH), and scientific advice will be added to clarify these points. There are some acts that can occur during slaughter that can be considered sins on the soul of the person who engages in them even if they do not make the resulting meat unfit for Muslim consumption. These reprehensible acts will be underlined.

Halal meat is what we get from the slaughter of a halal animal according to the Islamic law, that is, slaughtering of an animal in a prescribed way (Qureshi et al., 2012). Animals slaughtered for Muslim consumption must be of acceptable species and alive at the time of slaughter. Pigs are never acceptable for halal slaughter. Carnivorous animals such as tigers, cats, and dogs are not acceptable for Muslim consumption (Department of Standards Malaysia, 2009). There are different scholarly opinions on the subject of eating horse and other equid meats. Some scholars view the following verse in the Quran as discouraging the eating of horse meat while others say that it could be permissible as it was never strictly forbidden.

And (He has created) horses, mules and donkeys, for you to ride and as an adornment.

al-Nahl 16:8

In terms of practical production opportunities, there is no consumer market for halal horse meat. The most commonly halal-slaughtered red meat animals are cattle (including water buffalo), sheep, goats, and camels. Of these, the first three are all
slaughtered in approximately the same way. Only camels have a different prescribed means of Islamic slaughter, which will be defined later in this chapter.

The animal must be safe for human consumption, wholesome, free of gross disease, and should be whole and completely healthy, free of any ailment or visible deformity. It is worth mentioning that a halal animal may become haram during breeding if they are treated with any products that involve the use of ingredient that are obtained from haram sources or derived through genetic engineering involving a component from a haram source (Department of Standards Malaysia, 2009). The first portion of this injunction should, in most countries, be met by governmental bodies responsible for the safety and security of the food supply. The secondary portion of the injunction is the responsibility of the halal slaughter plant in conjunction with farmers, animal welfare auditors, and industry standards overseeing the raising and transport of animals going to the slaughter plant. Animals have a good sense to perceive the signals of danger, such as odor, sights and sounds that can be a cause of pre-slaughter stress, and therefore, require careful pre-slaughter handling (Micera et al., 2010). An animal should be given water and handled humanely before slaughtering so that it is calm and not experiencing unnecessary fear. Poor handling of animals prior to slaughter is not only a bad welfare practice but has negative meat quality consequences (Casoli et al., 2005). This injunction applies to the animal in the holding yard as well as in any shoots leading up to slaughter point. At no point should painful stimuli be applied to sensitive areas of the animal such as the face, genitals, or rectum. At no point should an animal be kept from water or prevented from drinking enough water to sustain itself.

The restraint of animals for slaughter is discussed in Chapters 6 and 7 but there are a few points that are worth repeating. There are some means of restraint that do not directly prohibit meat from being consumed as halal but alternatives should be found in the spirit of halal being designed to treat animals with kindness and respect. Restraint equipment should keep animals upright and quiet, and/or have their bodies completely supported until they have lost consciousness. Hanging or dragging conscience animals is not acceptable from an animal welfare perspective. It is also not acceptable to intentionally trip animals in preparation for slaughter. It is never acceptable to damage the legs of an animal to immobilize them prior to slaughter. Restraint equipment should be designed so that the majority of animals will walk into the equipment for stunning or slaughter without the use of painful driving aids (Apple et al., 2005; Hambrecht et al., 2004; Kannan et al., 2003; Ljungberg et al., 2007; Schaefer et al., 2001). The one time when the best option for slaughter restraint may be to have the animal on the ground is that for camels, which are normally slaughtered while kneeling. The camel should be gently placed in this position by a trained handler. The animals should be accustomed to kneeling on command. There also may be times when cattle may have to be cast prior to slaughter if acceptable handling facilities are not available. With proper use of ropes and trained workmen, this can be done with reasonable respect for animal welfare.

However, if cattle are brought to a facility for the express purpose of slaughtering on a regular basis, then it is important that the plant is willing to make the capital investment needed to have equipment available that negates the need for casting. Any animal that is abused or experiences an excitation phase prior to slaughter is likely to produce poorer quality meat as well as being subjected to poor animal
welfare (Nakyinsige et al., 2012). The cost of better handling equipment and better training programs for employees can be recouped in terms of having a safer facility and better meat quality. Once the animal is restrained in a manner so as not to produce pain or fear there are two possible major ways to undertake the slaughter: slaughter with the use of a stunning device prior to the halal slaughter cut or immediate halal slaughter. Slaughtering by hand without prior intervention is still preferred by most Muslims and quite widely followed in Muslim countries and other countries where Muslims control many slaughterhouses (Gibson et al., 2009). No matter whether stunning is used or not in Islam, the animal must die from a cut to the throat that severs the carotid arteries, jugular veins, the trachea, and the esophagus, without severing the spinal cord. If prior stunning is to be done, it must be done in a way that leaves the animal’s heart beating throughout the process of exsanguination (i.e., bleeding) (Gregory et al., 2010). The debate surrounding the use of stunning in halal slaughter stems from the following verse:

Prohibited to you are dead animals, blood, the flesh of swine, and that which has been dedicated to other than God, and [those animals] killed by strangling or by a violent blow or by a head-long fall or by the goring of horns, and those from which a wild animal has eaten, except what you [are able to] slaughter [before its death].

al-Maa’idah 5:3

Stunning with gas is religiously equated to killing by strangulation. Captive bolt or mushroom head stunners are violent blows, and, while electric stunners are not directly addressed in the Quran, they may be considered another form of violent blow. By this logic, it is clear why most Muslims prefer meat from animals that have not been stunned but the final line of the above quote allows for a certain degree of theological flexibility. However, it also makes it clear that research into each method of stunning must be done to ensure that no animal experiences heart death before the throat is cut. This is a difficult requirement to meet in a real slaughterhouse where the size, hair covering, and wet/dryness, and so on, of the animals will vary widely from animal to animal.

Research has shown that when non-penetrating captive bolt or mushroom head stunning is applied to a healthy bovine, the animal should live a minimum of two minutes. After that time, there is an increase risk that the heart of animals stunned with a captive bolt may stop or animals stunned with mushroom head stunner may begin to regain sensibility. For these reason, mechanically stunned cattle should be slaughtered within two minutes, preferably sooner, of the stun being applied. The time frames are accelerated in small ruminants so it is recommended that sheep and goats be slaughtered within one minute, preferably sooner, of stunning. There has not been adequate research done on camels to establish a timeframe for post-stun halal slaughtering (Kadim, 2012).

Currently, there is no established form of gas stunning that does not leave a large percentage of the animals dead before bleeding. As a result, gas stunning is not currently recommended for the stunning of red meat animals prior to halal slaughter (Nakyinsige et al., 2012). As further research in this area is conducted, it is possible that a humane and halal compliant form of gas stunning may be achieved (Anil et al., 2002).
Electric stunning at appropriate voltages has been shown to be an effective, fully reversible form of stunning that is particularly effective for sheep and goats. It is important that any plant using these methods be certain that they are using the correct amperages/voltages for the species and size, whether using alternating current (AC) or direct current (DC), maintaining their equipment in the best possible repair, correcting for variation in size and fleece coverage in the case of sheep and wool goats, and using the equipment correctly so as not to “hot wand” the animals. “Hot wanding” an animal occurs when the animal feels the jolt of electricity as pain without the loss of sensibility associated with correct usage. In the worst case, the animal is “frozen” but is still capable of feeling pain (Zivotofsky and Strous, 2012). Sheep often must have their fleeces wetted prior to electric stunning due to the need to overcome the insulation effect of wool. It is very important that head-only electric stunning be used in halal slaughter plants as a head-heart (head-back) stun will stop an animal’s heart and cause the meat to be unacceptable for halal consumption. Other forms of stunning such as microwave stunning are being researched, and if those are shown to be able to render animals insensible to pain without causing their death, they should be considered where applicable by religious scholars (Small, 2013).

Ideally in plants slaughtering many animals, a Muslim should be responsible for assuring that animals are all alive at the time of halal slaughter and that no animal is further cut until it is insensible (Anil et al., 2000; Limon et al., 2010; Önenç and Kaya, 2004). For the actual slaughtering, the throat cut must be done by a Muslim of sound mind while pronouncing the name of God (Bismillah Allahu Akbar) on each animal. The blessing of each animal must be done at the moment of slaughter and should be undertaken by a person that understands its religious significance. In Islamic teachings, the slaughter person is causing the death of a being with a soul with the permission of God. The blessing is not just said to make the meat permissible to eat, but because it is also an act of worship and should be performed according to the teachings of God and with his name/authorization the slaughter person is killing the animal. But it is also meant to be the last moment of that animal’s life so that the animal is also given a chance to submit to its death. By blessing animals before they die, the slaughter person is giving that animal the right to submit their soul as well as providing meat for their community. The right of animals to speak on the Day of Judgment is shown in the following hadith:

The father of Amru’bnuashareed reported: I heard the Messenger of God (PBUH) say, “Whoever kills so much as a sparrow for no reason will have it pleading to God on the Day of Resurrection, saying: O Lord, so-and-so killed me for no reason, and he did not kill me for any beneficial purpose.”

Sunan An-Nasa’i

If a person kills an animal without a blessing, they have not used the permission God has given them to take a life. And if an animal is killed but not eaten, the permission has been taken but not for the intended purpose. If a slaughter person intends to bless the animal but forgets it at that moment, God is forgiving.

Slaughter persons should also be trained specifically for the type and size of animal that they are slaughtering to ensure that the process goes as smoothly as
possible (Malaysia Standard MS 1500, 2009). Ideally, the slaughter person or the animal should be facing Mecca while slaughtering is being done. This is a secondary requirement and there are multiple opinions as to whether the animal or slaughter person be facing Mecca.

If traditional slaughter is going to be done, care must be taken to follow Islamic teachings closely to prevent any suffering of the animal. The animal should not be hung or dragged prior to slaughter. For more information as to why this is important please refer to Chapter 6 regarding animal welfare. Slaughtering must be carried out using a sharp knife in a swift sweep so that the animal does not feel any unnecessary pain. The most important factor in how much pain an animal will feel during a traditional slaughter is the size, sharpness, and lack of nicks of the knife. If the knife is dull or nicked, it will create drag on the nerves of the tissue of the neck which is painful. If the knife is not long enough, the tip of the knife will enter the wound which will create more pain for the animal. At no point should the animal be fully restrained while the knife is being sharpened nor shall the knife be sharpened within view of the animal. For modern equipment generally this means the head holder should not be applied until the slaughter person is ready to do the slaughter (Grandin, 2010).

The placement of the cut in sheep, goats, and cattle should be as high on the neck as possible without risking contact between the knife and the bones of a larynx (AMI, 2007). In camels, the cut should be placed at the base of the neck between the neck and the thorax. The placement of the cut in camels is lower because higher in the neck the carotid arteries are concealed by the cervical vertebra (Kadim, 2012).

After the neck of the animal is cut it should be allowed to bleed at least to the point when its heart stops pumping before any other processing is done. This is equally important whether the animal has been stunned or not prior to slaughter.

After the animal has died, care must be taken to ensure that a safe product is prepared for consumers. Care should be taken to prevent contamination of the carcass by digesta and debris from the hide. Once an animal has been skinned, halal assurance as well as food safety must be properly taken into account. The following sections lays out the HCP that can be used to assist in the maintenance of food safety as well as ensuring that the final product is halal. A simplified flow chart (Figure 8.1) is given to point out the HCP in red meat slaughterhouses.

**HALAL CONTROL POINTS (HCP) IN ANIMAL SLAUGHTERING**

**HCP-1: ALLOWED ANIMALS**

The animal must be of acceptable halal species such as sheep, goats, cattle, or camels. Swine and carnivorous animals cannot be considered halal even if they are slaughtered in a halal manner.

**HCP-2: HOLDING**

Islam advocates merciful treatment of animals. Hence, animals must be treated such that they are not stressed or excited prior to slaughter. Holding areas for animals
should be provided with drinking water. Excessive use of electric prods or sticks must be avoided to prevent the animals from becoming stressed (Gregory et al., 2010). Animals should be nourished and well rested. For proper pre-slaughter handling of animals as well as restraining animals for slaughter, the use of the NAMI (North American Meat Association) religious slaughter guidelines in conjunction with the general NAMI guidelines is recommended and is found in Chapter 7 (Regenstein and Grandin, 2002).

**HCP-3: Stunning**

It is preferable that animals be slaughtered without stunning but using a proper humane restraining system. However, non-lethal methods of stunning might be used
to meet the legal requirement for humane slaughter regulations in some countries. The animal must be alive at the time of slaughter and must die from bleeding rather than from the pre-slaughter stun (Bergeaud-Blackler, 2007).

**Captive Bolt Stunning**

A mechanical stunner where a bolt enters the head and then retracts, making the animal unconscious, is acceptable provided that the animal is slaughtered within two minutes of stunning. The correct stunning equipment in good repair must be used so as to ensure that all animals lose sensibility without the heart stopping before the neck can be cut.

**Mushroom-Shaped Hammer Stunner**

This is used in some slaughterhouses for cattle and delivers a more diffuse blow that stuns the animal for a short time. This method is not only acceptable but preferred over captive bold stunning in certain countries. There is a slightly higher risk of incomplete stuns with this method. If it is employed, employees must fully trained and always alert for incompletely stunned animals. The exact placement of the stunner on the animal's head is more critical. Therefore, the use of a head holder to position the head prior to the use of the stunner is recommended (EFSA, 2004; OIE, 2008, Section 7.5).

**Electrical Stunning**

Head-only stunning using the appropriate amperage/voltage that assures that the stun is reversible is acceptable; head-heart stunning is not acceptable as it stops the heart from pumping. A novel method of fully recoverable stun in development by a cross-disciplinary team in Australia is shown Figure 8.2.

**FIGURE 8.2** A novel method of fully recoverable stun in development by a cross-disciplinary team in Australia.
Carbon Dioxide Stunning or Other Forms of Gas Stunning
Gas stunning is not recommended. Further research is required to determine if it is possible to routinely make an animal insensible to pain while not causing its death.

HCP-4: KNIVES
Knives used for slaughter should be very sharp. The slaughter person should be trained in how to best care for their knives to ensure the best possible edge free of nicks. The size of the knife should be proportional to the size of the neck so that one may minimize the number of back and forth strokes. Dr. Grandin specifically recommends that the knife be twice the width of the animal’s neck. The knife must not be sharpened in front of the animal.

HCP-5: SLAUGHTER PERSON
The slaughter person must be an adult Muslim of sound mind familiar with the process of slaughter. A trained slaughter person will be more efficient, minimize damage to the skin and carcass, and minimize animal suffering (OIE, 2008; Grandin, 2006). The issue of Al-Kitab slaughter, that is, slaughter by people of the book, will be discussed separately.

HCP-6: INVOCATION
It is mandatory to pronounce the name of God while cutting the throat. It suffices to say Bismillah (in the name of God); however, some slaughter persons prefer to say the full statement Bismillah Allahu Akbar.

HCP-7: SLAUGHING/KILLING OR BLEEDING
The slaughter person must, while pronouncing the name of God, cut the front part of the neck, severing the carotids, jugulars, trachea, and esophagus, without reaching the bone or nerves in the neck. Reaching the bone in the neck both increases the risk that the spinal cord will be severed, which is not allowed for halal slaughter, and increases the risk that the knife will be damaged, which could result in unnecessary pain for future animals slaughtered with the same knife. Ideally, this cut will be done in one stroke without needing any back and forth cutting. In cattle, sheep, and goats the cut should be high up on the neck as it has been suggested that such a position limits aspiration of blood and minimizes the time required to lose consciousness.

Research has shown that up to 69% of cattle slaughtered without stunning may aspirate blood; work should be done to try to reduce blood aspiration (Gregory, 2008). However, the exact circumstances of this research cannot be obtained from the paper as published. Aspiration of the blood into the trachea is not a real animal welfare issue but aspiration into the lung tissue is a major concern (Temple Grandin, personal communication). The anatomy of camels requires that the cut be done where the neck meets the thorax.
HCP-8: Post-Slaughter Treatment

It is abominable to sever parts such as ears, horn, skin, and legs before the animal is completely lifeless. Normally when the bleeding has ceased, the heart stops, and the animal is dead. One may start further acts of processing the carcass after that. The removal of the hide and the internal organs before fabricating the carcass is done in a manner that protects the safety and quality of the meat, and is consistent with the secular laws of the country of origin and/or country of export.

HCP-9: Packaging and Labeling

Packing is then done in clean packages and boxes. Proper labels are affixed to identify the products as halal by using markings, ideally unique and trademarked by the agency certifying the product.

This chapter will now address the slaughter of birds in a step-wise manner. As with the red meat section, primary requirements, those required for the meat to be permissible for Muslims to consume, will be in bold text while secondary requirements, things that are highly encouraged based on the teachings of Prophet Muhammad (PBUH), and scientific advice will be added to clarify these points. There are other acts that can occur during slaughter that can be considered sins of the soul of the person who engages in them even if they do not make the resulting meat unfit for Muslim consumption, these reprehensible acts will be underlined.

ACCEPTABLE BIRDS

Birds for Muslim consumption must be of acceptable species and alive at the time of slaughter. Birds of prey, such as eagles and vultures are not acceptable for halal slaughter. Common birds in the halal market include chickens, ducks, turkeys, quail, and pigeons. For commercially processed poultry, birds are generally acquired from poultry farms that raise chickens specifically for that purpose, or hens may be acquired from poultry farms that raise chickens for eggs when their egg production decreases below a certain level. Chickens of any size, age, and gender may be used for halal production. The preferred feed for halal poultry should be devoid of any animal by-products or other scrap materials, which is a common practice in the West. Some halal slaughterhouses use an integrated approach, for example, where they raise their own chickens on clean feed, but most halal processors do not have any control over the feed. Muslim retailers often prefer free-range farmed chickens that are not fed animal by-products nor treated with growth promotants (illegal in the U.S.) or unnecessary antibiotics (i.e., sub-therapeutic use for growth promotion). From the halal perspective, the use of hormones in chickens for egg or meat production is discouraged; some scholars call it mushbooh (doubtful) or haram whereas others ignore it.

The animal must be safe for human consumption, wholesome, and free of gross disease and should be whole and completely healthy, free of any ailment or deformity. Problems can arise in this area when spent hens (i.e., chickens after finishing their egg laying) are sent to slaughter and may suffer from bone loss. Bone loss
makes the birds more delicate at slaughter and increases the risk that legs or wings may be broken during the pre-slaughter and slaughter handling. One of the most common times in a bird’s life when they are likely to experience injuries is during the loading process on the farm before going to slaughter. In all types of poultry processing, there should be safeguards in place to prevent injury during this time but it is of paramount importance that birds destined for halal slaughter are protected. Industry recommendations should be consulted so that the most humane and safe method of capture can be used. This is an area in which the halal industry should look for ways to instigate better auditing processes because as the Muslim consumer base becomes more educated about the slaughter process they are increasing likely to demand birds that are undamaged prior to slaughter. Birds that are transported from the farm to a slaughter facility are often taken directly from their transport cages to the slaughter line. It is very important that the time in transit combined with the wait time at the plant not be more than is sustainable by the bird. At no point should an animal be starved for water or prevented from drinking enough water to sustain it. As poultry cannot be given water during transport, temperature control must be maintained to prevent suffering.

Restraint for birds prior to stunning or slaughter is normally done with leg shackles, in cones, or by hand. If leg shackles are used the bird should be placed carefully and gently so as not to injure it and should always be held and hung by two legs. If cones are used the birds should be placed carefully with their wings folded to prevent damage. It is very important that as little time as possible passes between the bird being placed in the cone or on shackles and the slaughter. If restraint is done by hand, it should be with pressure firm enough to stop the bird from injuring itself but gentle enough to prevent human-induced injury or bruising of the meat.

There are some methods of stunning that are acceptable to portions of the Muslim consumer population providing they are non-lethal. Low-voltage stunning for a short time has been shown to leave birds alive. Whether electric stunning is painful to the animal has not been adequately studied and will not be discussed in this section.

Different conditions are used for electrical stunning, depending on the region of the world. Although poultry is not required by law to be stunned before slaughter in the U.S., virtually all commercial poultry is stunned for humane, efficiency, and quality reasons. The birds receive 10 to 20 mA per broiler and 20 to 40 mA per turkey for 10 to 12 seconds. These conditions give an adequate time of unconsciousness for the neck to be cut and sufficient blood to be lost to kill the bird before it regains consciousness. In most European countries, laws require poultry to be stunned with much higher amperages (90+ mA per broiler and 100+ mA per turkeys for four to six seconds). These laws and higher amperages are intended to ensure that the birds are irreversibly stunned so that there is no chance they will be able to recover and sense any discomfort. Essentially, these European electrical stunning conditions kill the bird by electrocution and cardiac arrest, stopping blood flow to the brain. Thus, death is by loss of blood supply to the brain for both stunning conditions, but one is by removal of blood and the other is by stopping blood flow to the brain. The harsher European electrical conditions also result in higher incidences of hemorrhaging and broken bones (Sams, 2001).
Use of low amperage is recommended for halal slaughtering, because low amperage stunning does not kill the birds. Amperages higher than 40 mA for turkeys and higher than 20 mA for broilers must be avoided. Each plant must establish its own working procedures depending on the size, condition, and age of the birds, so that the birds do not die due to electrocution. Carbon dioxide stunning or low atmospheric pressure stunning as it is currently used is normally a stun to kill and thus is equivalent to chemical strangulation. Death by strangulation is prohibited; hence this method is not recommended. If future research should show ways to use gas stunning without killing animals, it may then be possible to consider its use in halal slaughter.

Regardless of whether stunning is used or not, in Islam, the animal must die by the impact of a slit to the throat, cutting the carotid arteries, jugular veins, the trachea, and the esophagus, without severing the spinal cord. Mechanical or machine slaughtering of birds, which was initiated in Western countries, is gaining acceptance among Muslims. Almost all countries that import chicken accept machine-killed birds. The method of slaughter by machine approved by the Malaysian government is different in the following aspects from what is usually practiced by the industry in the West.

A Muslim while pronouncing the name of God switches on the machine.

One Muslim slaughter person is positioned after the machine to make a cut on the neck if the machine misses a bird or if the cut is not adequate for proper bleeding. In commercial poultry processing, generally the machine does not properly cut 5% to 10% of the birds. A Muslim then cuts the missed birds. The Muslim back-up slaughter person also continuously invokes the name of God on the birds while slaughtering and witnessing the machine kill. The settings of the blade are adjusted to make a cut on the neck, right below the head, and not across the head. A rotary knife should be able to cut at least three of the passages in the neck. Any birds that are not properly cut may be tagged by the Muslim slaughter person/inspector, and used for non-halal purposes. Two slaughter persons might be required to accomplish these requirements, depending on the line speed and efficiency of the operation.

For the actual slaughter, the throat cut must be done or watched (for mechanical slaughter) by a Muslim of sound mind while pronouncing the name of God (Bismillah or Bismillah Allahu Akbar) on each animal. With higher speed lines, it may be necessary for there to be multiple Muslims blessing a mechanical slaughter line. Slaughtering must be carried out using a sharp, nick free knife in a swift sweep so that the animal does not feel any unnecessary pain. The stipulation applies both to a knife individually used by a slaughter person or any mechanical blade. If the machine is stopped during breaks or for any other reason it must be restarted by the previous procedure involving a Muslim slaughter person/inspector.

Whether slaughtered by hand or machine, the birds must be completely lifeless before they enter the scald tank and/or the defeathering area. The scalding conditions for defeathering, such as water temperature and chlorine level, are the same for halal processing as for regular poultry processing. It is recommended that a Muslim be stationed at the entrance to the scalding to be sure all birds have been properly bled. A bird that has not been properly bled is known as a cadaver and is illegal in many countries to enter the food supply. A halal slaughterhouse should aim to never have a cadaver. However, in poultry processing plants where both halal and non-halal birds are processed, halal birds must be completely segregated during the defeathering,
chilling, eviscerating, processing, and storing processes. It is a common practice
after eviscerating to chill the birds in cold water, where they might pick up water
in varying percentages. Air chilling rather than chilling with water is used by some
companies that prefer it over water chilling. A simplified flow chart (Figure 8.3) is
given to point out the HCP in poultry slaughter.

HALAL CONTROL POINTS (HCP) IN POULTRY SLAUGHTER

HCP-1: Acceptable Birds

The animal must be an acceptable halal species such as chickens, ducks, turkeys,
quail, or pigeons. Eagles, vultures, and the like cannot be considered halal even if
they are slaughtered in a halal manner.
HCP-2: Holding

Islam advocates the merciful treatment of animals. Hence, birds must be treated such that they are not stressed or excited prior to slaughter. Birds should be nourished and well rested.

HCP-3: Stunning

It is preferable that birds be slaughtered without stunning but using a proper humane restraining system. However, non-lethal methods of stunning might be used to meet the legal requirement for humane slaughter regulations in some countries. The animal must be alive at the time of slaughter and must die of bleeding rather than electrocution or other stunning system (EFSA, 2004).

HCP-4: Knives

The knife or mechanical blade must be sharp and free of nicks so that the bird does not feel the pain of the cut. It is even more important for the knife to be sharp and nick free when the birds are slaughtered without any stunning. The knife must not be sharpened in front of the bird. Must a halal bird not see the slaughter of another bird?

HCP-5: Slaughter Person

The slaughter person must be an adult male or female Muslim of sound mind familiar with the process of slaughter. A trained slaughter person will be more efficient and minimize pain or damage to the animal.

HCP-6: Invocation

It is mandatory to pronounce the name of God while cutting the throat or watching the throat cut on a mechanical line. It suffices to say Bismillah (in the name of God); however, Bismillah Allahu Akbar is encouraged if there is time.

HCP-7: Slaughter/Killing or Bleeding

The slaughter person must, while pronouncing the name of God and with a swift cut, cut the front part of the neck severing carotid arteries, jugular veins, the trachea, and the esophagus, without reaching the bone in the neck. This procedure is the same for the person cutting missed birds on a mechanical slaughter line.

HCP-8: Post-Slaughter Treatment

It is abominable to sever any part of the bird or allow entrance to the scald tank before the bird is completely lifeless. Normally when the bleeding has ceased, the heart stops, and the bird is dead. At that point, further acts of processing may start (Zivotofsky and Strous, 2012).
HCP-9: PACKAGING AND LABELING

Packing is then done in clean packages and boxes, and proper labels are affixed to identify the products with preferably a trademarked symbol of the halal certifying agency.

The following section refers to all meat products.

HALAL REQUIREMENTS FOR DEBONING AND PROCESSING ROOMS

The same conditions that apply to abattoirs also apply to boning and cutting establishments, with respect to segregation of halal from non-halal, cleaning, certification, packing, and labeling products with a proper symbol of halal certification. It is imperative that all halal products coming into a processing facility from other establishments be accompanied by a halal batch certificate that is received and reviewed by a Muslim inspector (Ayan, 2001).

HALAL REQUIREMENTS FOR COLD STORES

All incoming halal load must be received and reviewed by a Muslim inspector if the products are not sufficiently sealed either individually or in a bulk container. Halal products must be clearly separated from other products during blast freezing. The freezer cannot be used to freeze halal and non-halal products at the same time.

Frozen halal products must remain isolated from non-halal products in the freezer unless totally sealed so cross-contamination is impossible (Khawanjah, 2001).

Halal products should be loaded separately from non-halal products under the supervision of a Muslim inspector. In a mixed halal and non-halal area or container, Halal products should be placed above non-halal products to avoid potential cross-contamination. All halal products transported from the cold store must be accompanied by a batch certificate for any bulk-packed containers. All halal products loaded for export must be accompanied by a halal certificate.

FURTHER PROCESSED MEAT ITEMS

Meat and poultry products can be marketed fresh or frozen, and can also be used for further processing. A simplified flow chart (Figure 8.4) is given to point out the HCP in further processing.

HCP-1: MEAT SOURCE

Halal inspectors and quality assurance personnel must make sure that meat received from a slaughterhouse or fabricator is acceptable as halal according to the standards of the halal certifying agency of the receiving plant.

HCP-2: EQUIPMENT

The equipment used for halal production must be clean and then inspected by the halal inspector as well as by the plant’s quality assurance personnel and the USDA
FSIS or equivalent agency in other countries. The company may use equipment that is used for non-halal meat only after thorough cleaning, but it may not use any equipment that has been used for pork processing unless a DNA PCR test is run on the equipment and product prior to issuing the certificate. If a PCR test is not possible then religious cleaning before production may sometimes be an acceptable alternative. It is almost impossible to clean meat processing equipment under normal operational conditions, which is why pork and non-pork equipment must almost always be segregated. If one has to convert the equipment that has been used for pork to make halal products, the equipment must be religiously cleansed.

An acceptable method for religious cleaning includes the following: (1) Thorough washing of the equipment with hot water and detergent to get rid of visible traces of non-halal meat. (2) Rinsing of the equipment thoroughly with clean water by a Muslim inspector to make it acceptable for halal production. This is sometimes known as religious cleansing. All halal products should be the first to be produced after a sanitation shift if it is a shared facility.

**HCP-3: Non-meat Ingredients**

Thousands of ingredients are approved for use in meat products. One must ensure that prohibited materials do not become part of halal products. Some of the ingredients to be avoided include, but are not limited to, non-halal gelatin, lard, pork extract, natural bacon flavor, other ingredients derived from non-halal animals or halal animals that were not halal slaughtered, and ingredients containing more than 0.5% alcohol. Gelatin is a particularly complex material with respect to its halal status (please see Chapter 14).

Appendix C lists halal, doubtful, and haram ingredients. Meat packers generally receive non-meat ingredients from spice companies or directly from ingredient manufacturers. It is advisable to ask suppliers for halal certificates for all blended
products or complex materials such as seasonings and spice blends, batters and breading, and smoke and other flavorings. The halal certificate needs to be acceptable to the plant’s halal certifying agency.

**HCP-4: Casings**

Casings can be edible or inedible. Some meat products use casings whereas others do not. Three types of casings are available and used according to the type of product.

*Natural casings:* These are made from animal guts. These can be from lambs, sheep, goats, cows, or even pigs. Pig casings must not be used for halal products. Among other animals, casing can be from halal-slaughtered animals, generally from Muslim countries, or both halal and from non-halal-slaughtered animals, generally from Western countries. It is required that only casings from halal-slaughtered animals be used (Nakyinsige et al., 2012).

*Collagen casings:* These are made from finely ground cattle skins or theoretically can be made from pork skins. Because these are edible casings, they should be from halal-slaughtered animals.

*Cellulose casings:* These are not edible casings. They are peeled off after the product is formed and cooked. Cellulose casings are made with cellulose (a plant material) and other ingredients such as glycerin, which may or may not be halal (see Chapter 22). Halal-certified cellulose casings are available from major manufacturers.

**HCP-5: Packaging and Labeling**

The final step in the manufacture of processed meat is packing the product in the right containers and labeling them to accurately identify them with respect to the halal certifying agency.

**INDUSTRY PERSPECTIVE ON HALAL PRODUCTION**

According to Jackson (2000), until now many Muslims accepted kosher meat products because they believed the slaughter was similar to their requirements and because the animals at least received a blessing at the time of slaughter. However, the blessing is traditionally a group blessing, that is, not for individual animals. However, in some cases, a Jewish slaughter person may say Bismillah Allahu Akbar over each animal while a Muslim observes the slaughter. In other cases, a Muslim may say the Bismillah at the time of slaughter either separate from the Jewish slaughter person or while touching the slaughter person. Some scholars accept this meat as halal based on the permission in the Quran to eat from the table of the Al-Kitab (people of the book).

*surah al-ma’idah 5:5*

This day [all] good foods have been made lawful, and the food of those who were given the Scripture is lawful for you and your food is lawful for them.
Until recently, commercial halal-certified meat products were virtually nonexistent in U.S. supermarkets except for imported products and locally slaughtered meat. Muslim consumers are increasingly looking for convenient halal options available in supermarkets which require that meat be certified as halal and properly packaged because in a supermarket setting word of mouth assurances are not possible. Also, as the Muslim consumer base expands, it is beginning to see halal certification as integral to retaining a chain of custody and accountability for their meat suppliers. Many Muslim-majority countries require prior certification by an accredited halal certifier for imported meats.

Some meat producers think that to be halal, they only have to follow a set of procedures such as those in this chapter. Companies following this policy will encounter significant marketing problems. Proper halal certification by a reputable halal certifying agency is becoming more important in the marketplace.

Companies following a policy of simply labeling their products as halal without backing by a certification agency will encounter marketing problems. The following are some corrections to notions on what can be considered halal meat (adapted from Jackson, 2000):

- Muslim inspectors cannot say a blessing on a truck as it passes their houses on its way from the slaughterhouse to qualify the resultant meat as halal acceptable.
- Inspectors cannot say a blessing only at the start of the slaughtering process. It must be said throughout the process as each animal is slaughtered.
- A Muslim cannot say a blessing after all slaughtering is completed to cover all animals slaughtered that day.
- Inspectors cannot use recordings of blessing to substitute for the devotion of an observant Muslim.
- Meat producers cannot accept the word of the slaughterhouse that halal methods were used and the meat therefore should be considered halal.
- Further processors cannot accept that a product labeled as halal is indeed produced halal. It must be certified by a halal certifying agency and that certification accepted by the plant’s certifying agencies.
- Producers must never label a meat product as halal if there is no on-site Muslim participation.
- Producers cannot simultaneously process any pork or pork-derived product while producing halal-labeled meat.
- Producers cannot process any pork or pork-derived product immediately prior to the processing of any halal-labeled meat product without a full, comprehensive, and detailed religious cleaning. They ideally should also perform a pork DNA PCR test. Sampling should be done in accordance with guidelines set up by their halal certification agency.

REFERENCES


