



PROBLEMS AND CHALLENGES FACING WATER BATH STUNNING IN HALAL CERTIFICATION SYSTEM

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

يَا أَيُّهَا النَّاسُ كُلُوا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا
خُطُواتِ الشَّيْطَانِ ۚ إِنَّهُ لَكُمْ عَدُوٌّ مُبِينٌ

O mankind, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy

قال تعالى: {حُرِّمَتْ عَلَيْكُمْ **الميتة** والدم ولحم الخنزير وما أهل لغير الله به والمنخنقة والموقوذة والمتردية والنطيحة وما أكل السبع إلا ما ذكيتم وما ذبح على النصب} (المائدة: 3).

Prohibited to you are dead animals, blood, the flesh of swine, and that which has been dedicated to other than Allah, and 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 slaughter, and those which are sacrificed on stone altars (5:3) .



Conditions of the Slaughtered animal

It should be alive **a normal life** at the time of slaughtering, so that **rivers of blood would pour out**

And that the **death of the animal just with slaughter and **not** because of another reason**

What is the definition of dead animal in the Islamic Fiqh?

Scientist of Islamic Fiqh have defined dead as: “when the spirit departs the body without "thakat" (Shari’a slaughtering) , like died for no reason, or not from slaughter, or lacking one of conditions of Slaughtering according Shari’a law ”





Fuqaha of the four Fiqh schools have set the condition of **stabilizing** the life of the animal before slaughtering, to assure that the slaughtered animal is Halal,

Providing that it shall die due to slaughtering, that is **no other reason shall cause the death other than slaughtering.**

Death happens when the spirit departs the body, which is one of the matters that is not subject to the concept of material, *Fuqaha* tried to determine the Death by tangible signs





Briefly they stated that the indications they set as conditions for the stability of the animal life are indicators that the animal is alive and able to issue all of the reactions that come from live animals





THE STABLE LIFE

when the spirit is still in the body, and the animal makes optional movements rather than forced movements, and it is mostly thought to be survival of life evidence ,including blood explosion & strong movement



What is the definition of Dead in the scientific terminology?

“death is the cessation of the vital functions which maintain the life of the living organism”

Or

“a series of operations leading to the cessation of these functions”



Death as stated by scientists:

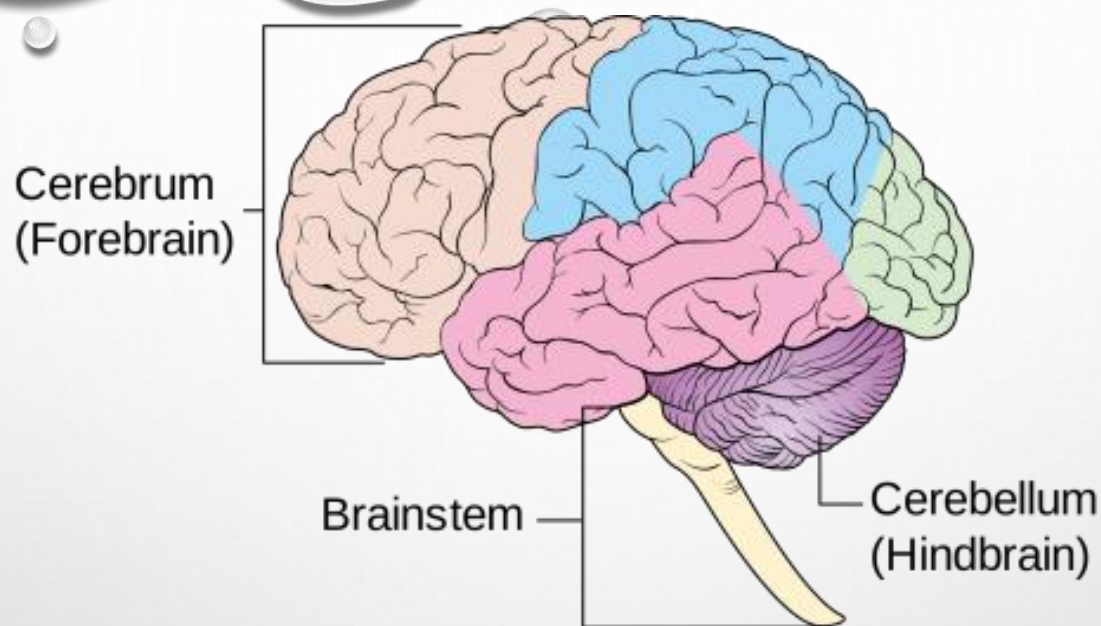


Clinical Death: “is a medical terminology describes the cessation of blood circulation and respiration, which are necessary for life continuation, which occurs when the heart stops beating in a regular rhythm, and this status is called “**cardiac arrest**”.

Brain Death: “is the complete cessation of the brain from operating and the inability of living”, End of irreversible brain **due to the damage of a set of brain neurons due to the lack of oxygen in the brain.**



The brain consists of three parts



Brain stem: is the basic center for breathing, controlling the heart and the blood circulation, if the brain stem dies, then this leads to the end of the humanitarian life as most doctors determined.



However, what are the signs indicating death from a scientific perspective?

And to what extent the said by *Fuqaha* in the past regarding the stable life, and complies with the modern science?



Scientists have determined brain death with several signs:

- Fully fainting and not responding to any effectors.
- No movement “the corpse is subject to monitor for at least one hour”.
- No breathing “when stopping the Ventilator”.
- The absence of any reflexes.
- The absence of any electric activity in the brain graph (Flat E.E.G).



Stunning and death



Do the Conditions of slaughtering are actually being fulfilled when using the methods of stunning?



HEAD-ONLY ELECTRICAL STUNNING

In this system, birds are restrained in a cone and two electrodes are placed on either side of the head of each bird



LOW ATMOSPHERE PRESSURE SYSTEM (LAPS)

The birds are rendered unconscious by a gradual reduction of oxygen tension in the chamber, leading to progressive hypoxia





Gas Stunning



Gas systems are increasingly being used for the killing of poultry. Controlled Atmosphere Stunning (CAS) systems kill birds by exposure to an anoxic gas mixture (gas mixture that does not contain oxygen), which rapidly renders them insensible to pain or distress.



Electrical Water bath Stunning

During water-bath stunning operation, electrical current passes through the heart and may cause cardiac arrest and death.



Can pre-slaughter stunning cause death to the the animal?

Is the use of stunning methods is it followed by the animal restoration to its conscious or not?





There are many industrial factors affect on results of water bath stunning system

- Type of current,
- Current value,
- Frequency,
- Voltage,
- Number of birds in the water bath stunner.
- Immersion time in the stunner
- The health status of the birds before stunning.





European Food Safety Authority

EFSA Journal 2012;10(6):2757

SCIENTIFIC OPINION

Scientific Opinion on the electrical requirements for waterbath stunning equipment applicable for poultry¹

EFSA Panel on Animal Health and Welfare (AHAW)^{2,3}

European Food Safety Authority (EFSA), Parma, Italy





1.1. Requests by Dutch and UK Authorities

The concerns of the UK and Dutch Authorities mainly concern Electrical Requirements for waterbath stunning equipment (proposed Regulation implementation date 01 January 2013) given in Regulation (EC) No 1099/2009, Chapter II of Annex I:

Table 2 Electrical requirements for waterbath stunning equipment
(average values per animal)

Frequency (Hz)	Chickens	Turkeys	Ducks and Geese	Qualls
<200 Hz	100 mA	250 mA	130 mA	45 mA
From 200 to 400 Hz	150 mA	400 mA	Not permitted	Not permitted
From 400 to 1500 Hz	200 mA	400 mA	Not permitted	Not permitted



Electrical requirements for waterbath stunning of poultry

- Mean duration of unconsciousness (unconsciousness ascertainment using both EEG and Non-EEG methods).
- Percentage of animals with cardiac arrest.

The conclusions and recommendations are as follows:

Conclusions:

- 1 Legislation requires that there is always an effective stun that lasts until the bird dies. This depends on there being a good stunning procedure and an effective method of killing at the abattoir. In order to determine whether or not this is the case, there have to be accurate measures of unconsciousness and insensibility, and its irreversibility until death.
- 2 A stun is effective if it renders the bird rapidly unconscious and insensible for a period of at least 45 seconds. It is also effective if it results in death of the bird from cardiac arrest as then the action of stunning does not result in poor welfare. However, it is uncertain whether currents that induce cardiac arrest may cause momentary pain and distress for a few second.



ELSEVIER

British Veterinary Journal

Volume 143, Issue 2, March–April 1987, Pages 175–183



Effect of electrical stunning on the electroencephalogram in chickens

N.G. Gregory, S.B. Wotton

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[https://doi.org/10.1016/0007-1935\(87\)90009-1](https://doi.org/10.1016/0007-1935(87)90009-1)

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Abstract

Electrical stunning at normal current levels (approximate range 30 to 100 mA per bird) was found to cause low frequency epileptiform activity in the EEG of chickens. High stunning currents (over 100 mA per bird) inhibited the expression of epileptiform activity and this occurred irrespective of whether the heart was fibrillating.

An appraisal of electrical stunning baths used commercially showed that 40% of the broilers were subjected to a cardiac arrest at stunning. The stunners used a variety of electrical waveforms but just over half of them put out a 50 Hz sinusoidal alternating current. Experimental work showed that when this waveform was used, the current necessary to induce cardiac arrest in 99% of the broilers was 148 mA per bird.



To: Stakeholders

Date: 23rd January 2013

CHANGES TO ANIMAL WELFARE WITH REGARDS TO REGULATION 1099/2009

As you may be aware from 1 January 2013, Reg EC No 1099/2009 came into effect in all EU Member States. This introduces a number of changes to welfare requirements for the slaughterhouse, moving the emphasis for monitoring and improving welfare to the Food Business Operator.

There are also a range of new definitions in the Regulation and we have become aware of some concerns relating to interpretation of the new Regulation and what the Regulation actually means. On that basis the FSA is writing to clarify the actual position with regards to the new definitions of key aspects of the slaughter process under the new Regulation.

The Regulation introduces new definitions for the slaughter process as follows:

- "Slaughter" means killing animals intended for human consumption
- "Stunning" is any process that causes a loss of consciousness and sensibility without causing pain
- "Stunning" includes any process that results in instant death
- "Simple stunning" is any stunning process which does not result in instantaneous death
- "Simple stunning" must be followed as quickly as possible by a procedure ensuring death occurs before the animal regains consciousness





Definition in the european text :

Depending on how they are used during the slaughtering or killing process, some **stunning methods can lead to death while avoiding pain and minimising distress or suffering** for the animals.

Other stunning methods may not lead to death and the animals may recover their consciousness or sensibility during subsequent painful procedures. Such methods should, therefore, be completed by other techniques that lead to certain death before the recovery of the animals.

It is, therefore, essential to specify which stunning methods need to be completed by a killing method. *Article 24/ introduction*

Sens of stunning :

‘stunning’ means **any intentionally induced process which causes loss of consciousness and sensibility without pain, including any process resulting in instantaneous death;** *Article 2*



From the Shari'a perspective, the basic challenge is:

The **susceptibility** of the effect of stunning for **reversibility** of life **Nobody can guarantee that**



CHALLENGE



The Result: The conditions of Shari'a Thakah (are set as to guarantee the life of the animal before being slaughtered
(set as a condition to live)

Whereas the methods of stunning are set to ease the death of the animal before being slaughtered
(set as a condition to kill)



Islamic Shari'a ordered to move away from the suspicions.

There are Fiqh rules which considers suspicion a cause for prohibition:

أ. قاعدة: "الأصل في الذبائح التحريم" حتى تحلّ بذكاة متيقنة (أكيدة).

a- *"the Origin in animals slaughtered is Haram" Prohibition"*

until Thakah (Shari'a Slaughtering) make its Halal.



ب. قاعدة: "إذا اجتمع الحلال والحرام، غلب الحرام"

b- "If Halal and Haram get together , Haram dominated.

Because it is further from the suspicion



What is the origin, which is due to it when in doubt?

Four Fiqh schools stated that the origin concerning meat and animals slaughtered meat is prohibited, until meeting the Halal Thakah

that is the correct view in their perspective is that
“slaughtering follows the Islamic slaughtering conditions, which make meat to be Halal.

ما هو الأصل الذي يرجع إليه عند الشك؟
قررت المذاهب الفقهية الأربعة أنّ الأصل في لحوم الحيوانات المذبوحة التحريم حتى تثبت الذكاة المبيحة

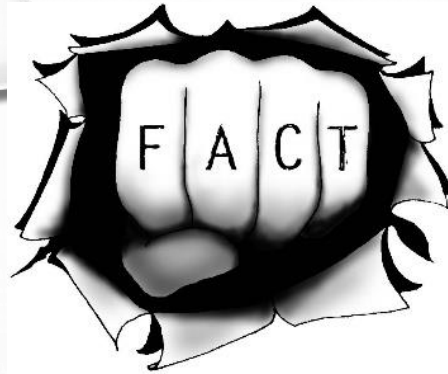
الذكاة الشرعية هي من ميزات الأمة الإسلامية

Slaughtering animals in accordance Shari'a, is one of the features of the Islamic Nation:

قال النبي صلى الله عليه وسلم: "من صلى صلاتنا واستقبل قبلتنا وأكل ذبيحتنا فذاك هو المسلم الذي له ذمة الله ورسوله فلا تخفروا الله في ذمته"
صحيح البخاري، 391.

The Prophet (All Prayers and Blessings of Allah be upon him): "Whoever prays as we pray, turns to face the same Qiblah as us and eats our slaughtered animals, that is a Muslim, and is under Allah's and his Prophet protection.."

(Sahih AL Bukhari, 391)



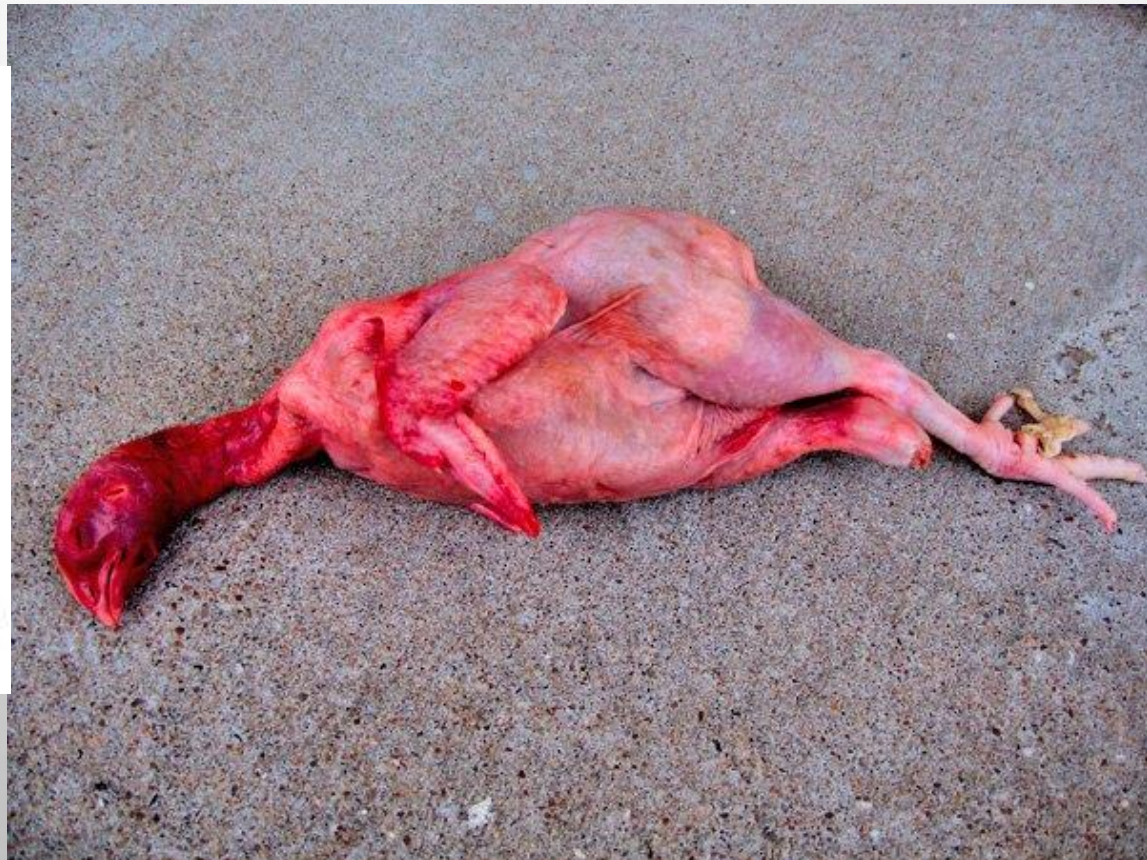
- The conditions of slaughtering according to Shari'ah are set to ensure the life of the carcass,
- whereas the methods of stunning including its history, justifications, uses and objectives, are set to ease the death of the animal.



Question



If a bird die prior to slaughtering, can it be detected morphologically? or is it same as chickens that are slaughtered as alive?



The chicken without cutting through the neck is shown in Figure A, and the chicken cutting through the neck partially is shown in Figure B.



As seen in the figures, visible bruising was occurred in uncut and partially cut chickens.

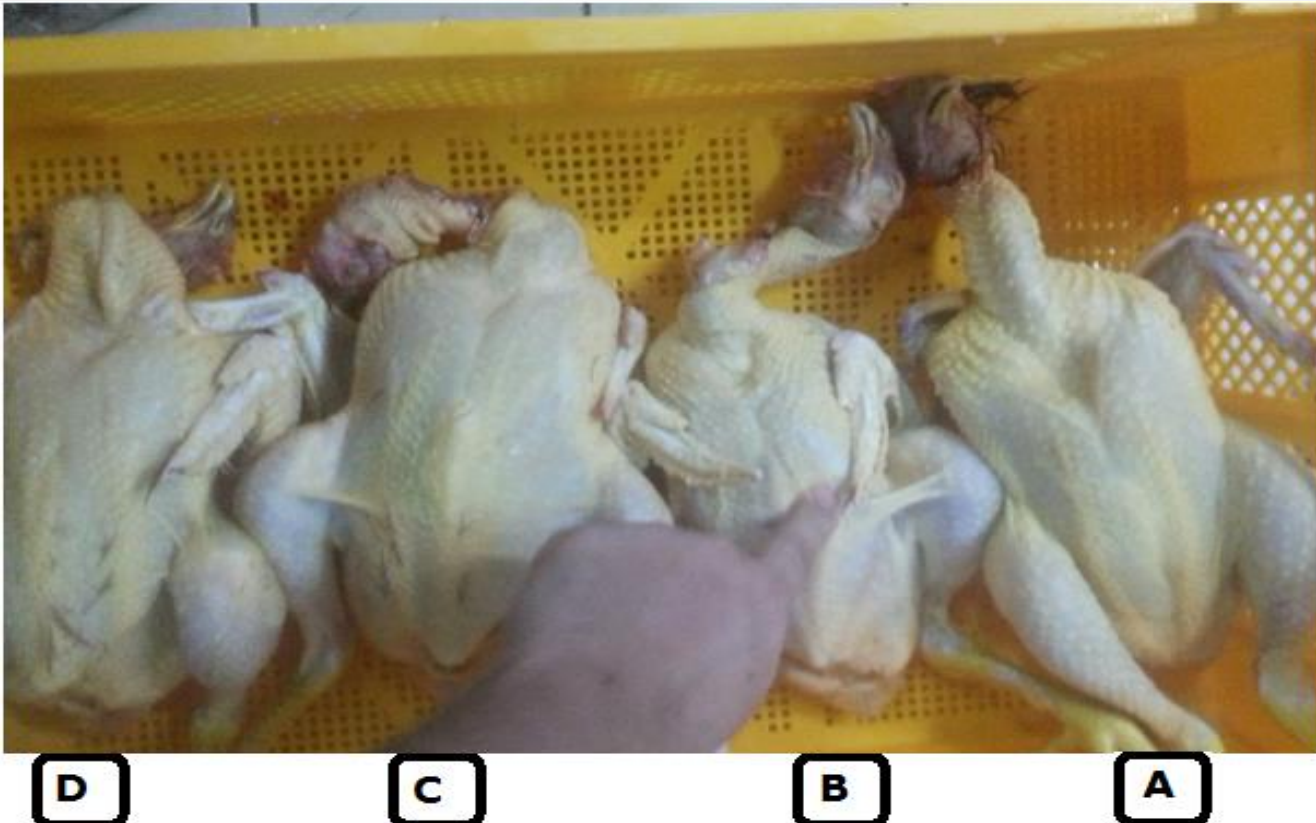


So can we see the same situation in the poultry slaughtered after death has occurred ?



First location

At the first location, chicken died in shocking (A), shocked normally (B), shocked via high voltage (C) and shocking untreated (D) has been slaughtered. After plucking, four chickens were observed and compared to each other

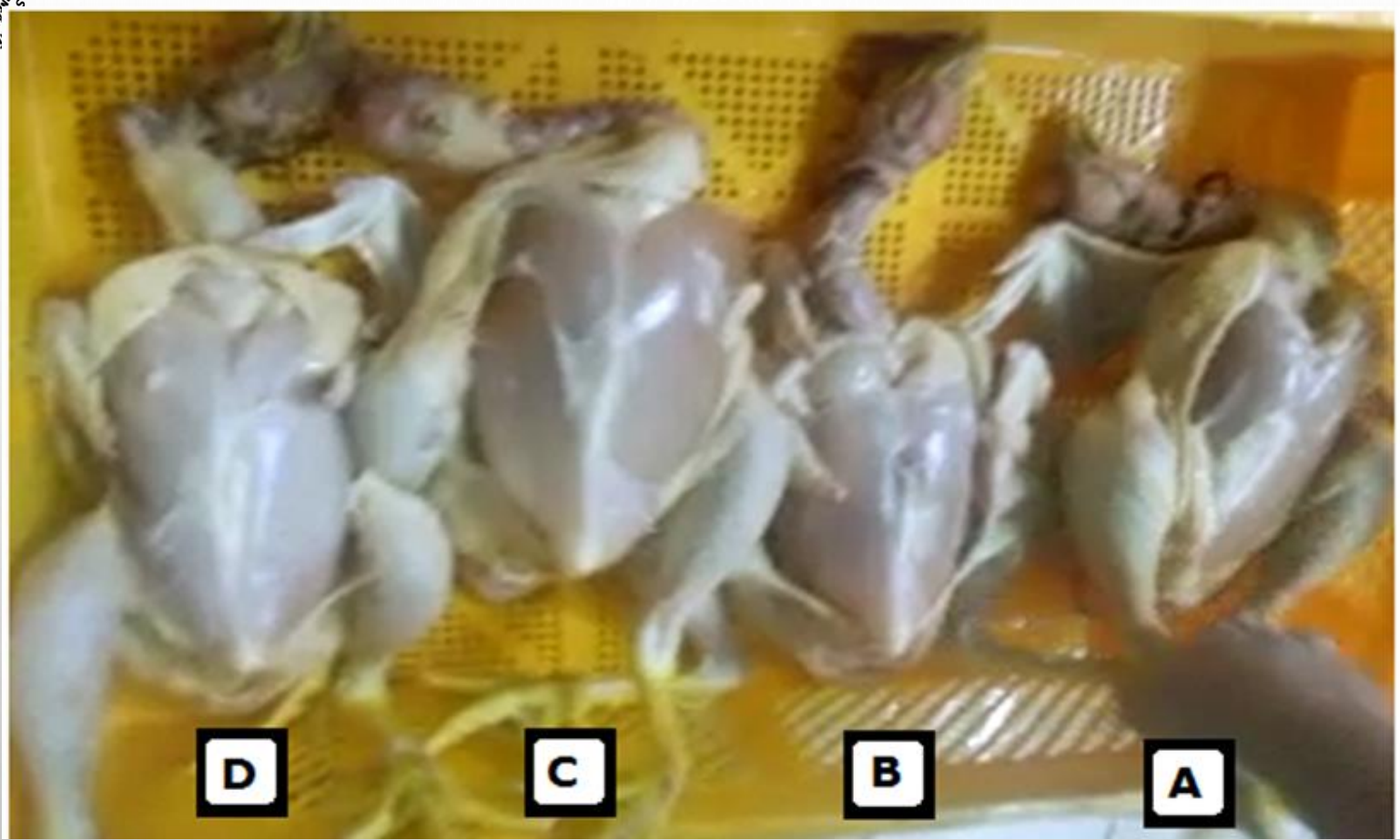


Comparison of four chickens slaughtered at first location in terms of morphological



CONCLUSION FOR THE MKS...





The comparison of chickens' chests slaughtered at first location in terms of morphological



It is observed that there is no difference on the skins and chests of chickens.



Second location

In the study conducted at second location, the chicken shocked in the normal shocking conditions of slaughterhouse (A), shocking untreated chicken (B), the chicken killed by breaking neck and waited for fifteen minutes without cutting (C) has been slaughtered and compared to each other after plucking.





The comparison of chickens' chests at second location



The chicken cooled down to 4°C

it is examined whether differences in cooling process occur on the carcasses. the study at second location gave the same result as the first. after the chickens has been kept for almost three hours in air cooling unit, no bruising or a different physical changes were observed.



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THIRD LOCATION

In the study carried out in third location, chicken exposed to normal shock value (A), chicken killed by breaking neck (B), chicken killed by drowning (C) and shocking untreated chicken (D) were slaughtered and compared to each other after plucking.







In the third location same outcomes were obtained. It was seen that chickens killed via breaking neck or drowning have no differentiation with regards to external appearance.





CONCLUSION



Scientifically, the possibility of dying derived from electroshock is very high if poultry is sick, weak, crushed or oppressed. No morphological change on carcasses was observed in the chickens exposed to shock, untreated with shock and killed by various methods after slaughtering process. Fatigue and distraction resulted from line speed and pace of work make the realization of dead poultry coming from electroshock pool almost impossible. In the case that chickens slaughtered as dead reach storage room, according to Islamic Fiqh, all slaughtered poultry on that day become suspicious. The possibility of dead chickens slaughtered is very high in our slaughterhouses that has high pace of work, unfortunately.





OBSTACLES FACING SALUGHTERING WITHOUT STUNNING

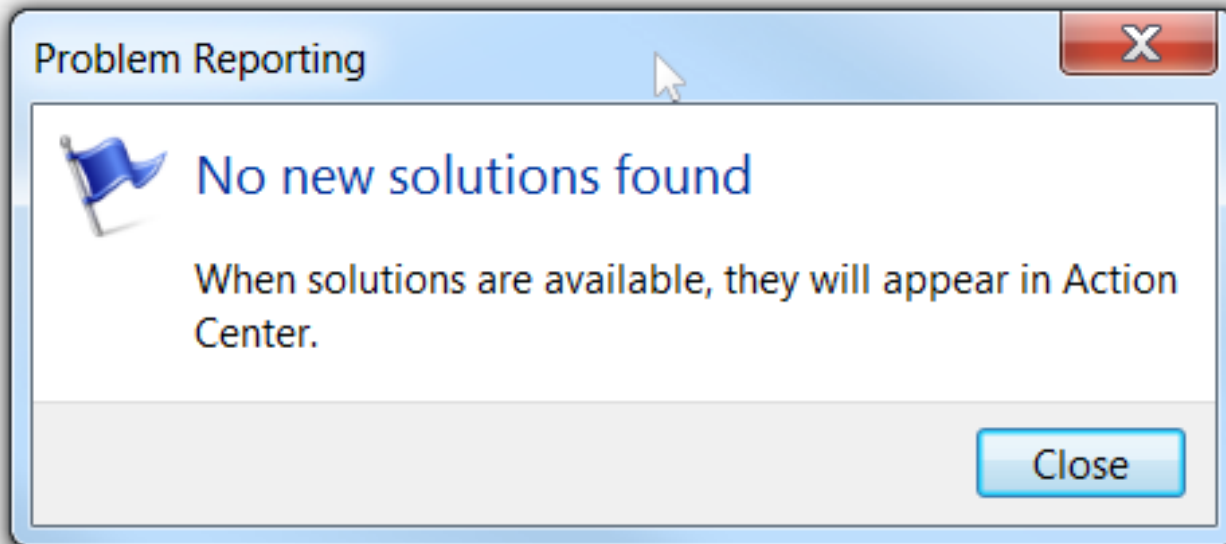
There are two main problem facing non-stun slaughtering:

- 1-breaking wing due to flapping after slaughter
- 2-difficulty in slaughtering





SOLUTION





THANK YOU

