



Universiti Putra Malaysia



Are Spiritual, Ethical, and Eating Qualities of Poultry Meat Influenced by Electrical Waterbath Stunning?

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Awis Qurni Sazili
Halal Products Research Institute
awis@upm.edu.my



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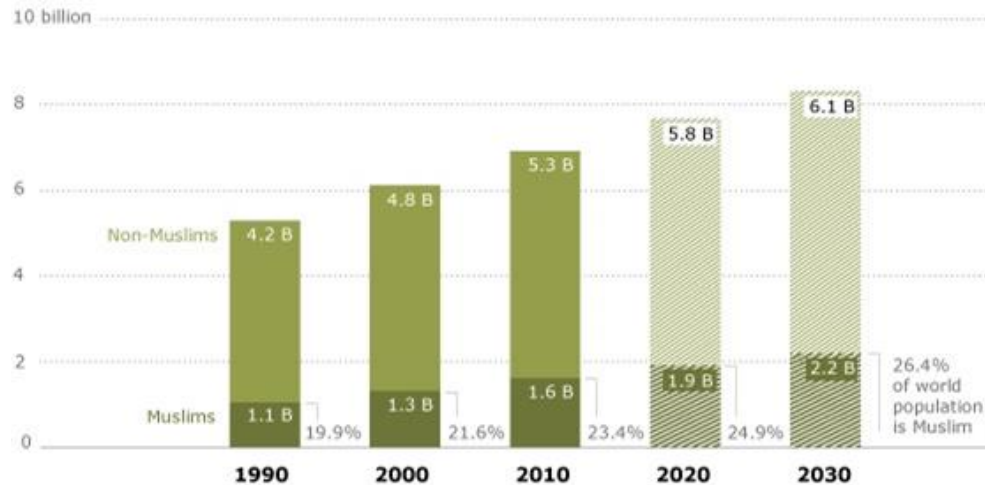
PERTANIAN • INOVASI • KEHIDUPAN
BERILMU BERBAKTI
WITH KNOWLEDGE WE SERVE

Introduction

Religious slaughter and the new dimension of quality

- With the continuous rise of Muslim and Jewish populations and their increasing preference for ritually slaughtered poultry meat, the industry needs to redefine its **existing product centric quality** standard toward a **new consumer centric dimension of quality**.
- The **new dimension** is mainly attributed to ensuring animal welfare and ethical treatment (**ethical quality**), **spiritual quality** (such as halal status), and **eating quality** standards set by religion.

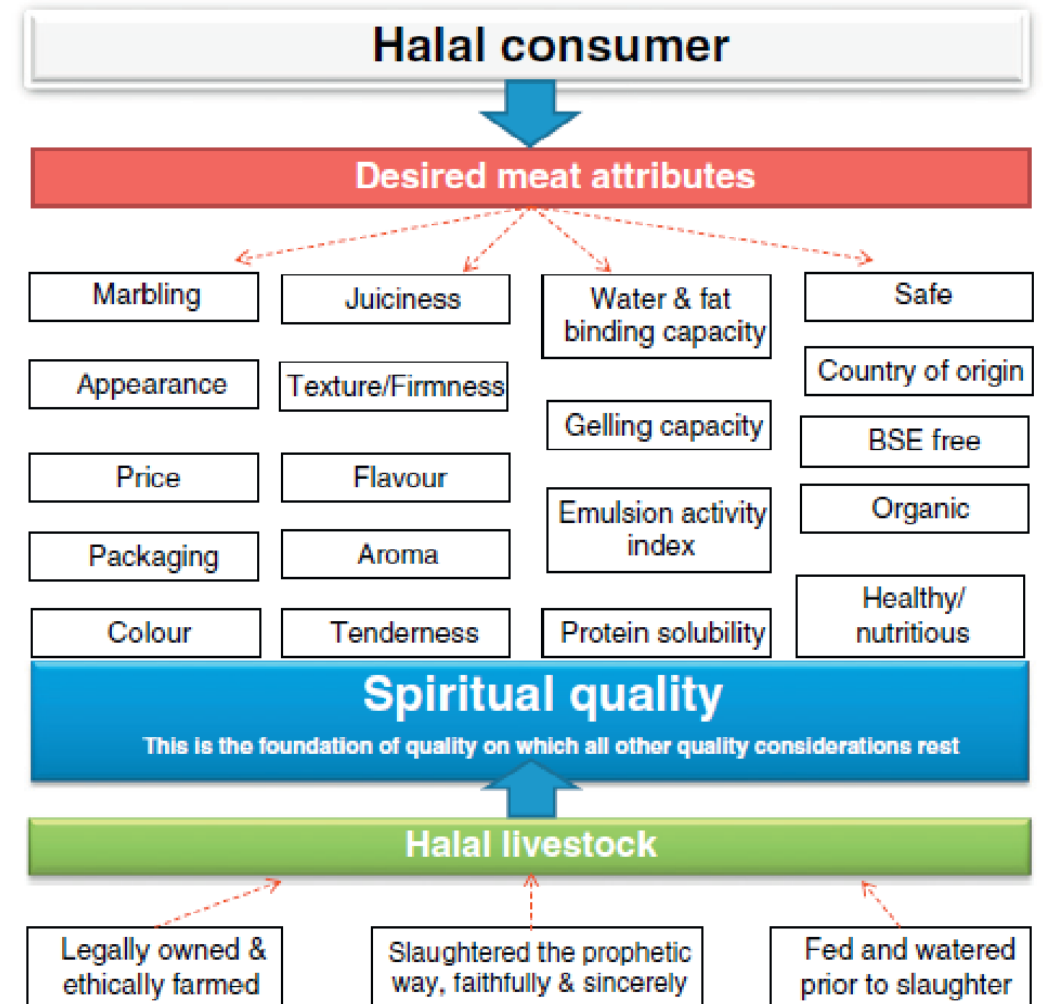
Muslims as a Share of World Population, 1990-2030



Percentages are calculated from unrounded numbers. Cross hatching denotes projected figures.

Pew Research Center's Forum on Religion & Public Life • *The Future of the Global Muslim Population*, January 2011

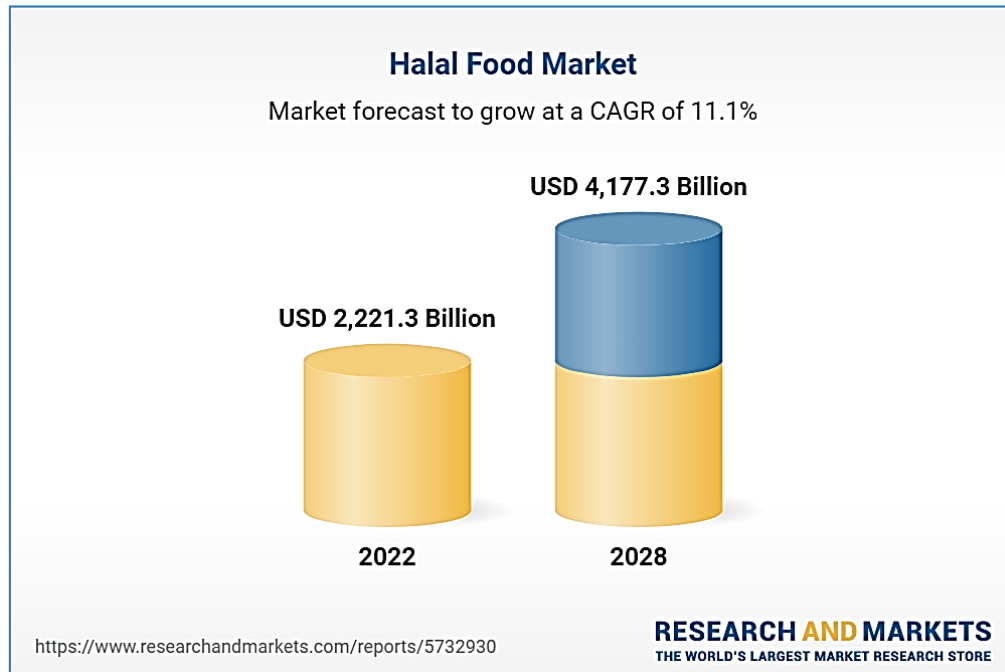
Source: Farouk et al. (2014)



Halal Food Market Size

The global halal food market reached a value of **USD 2,221.3 billion in 2022**. Looking forward, the market is projected to reach **USD 4,177.3 billion by 2028**.

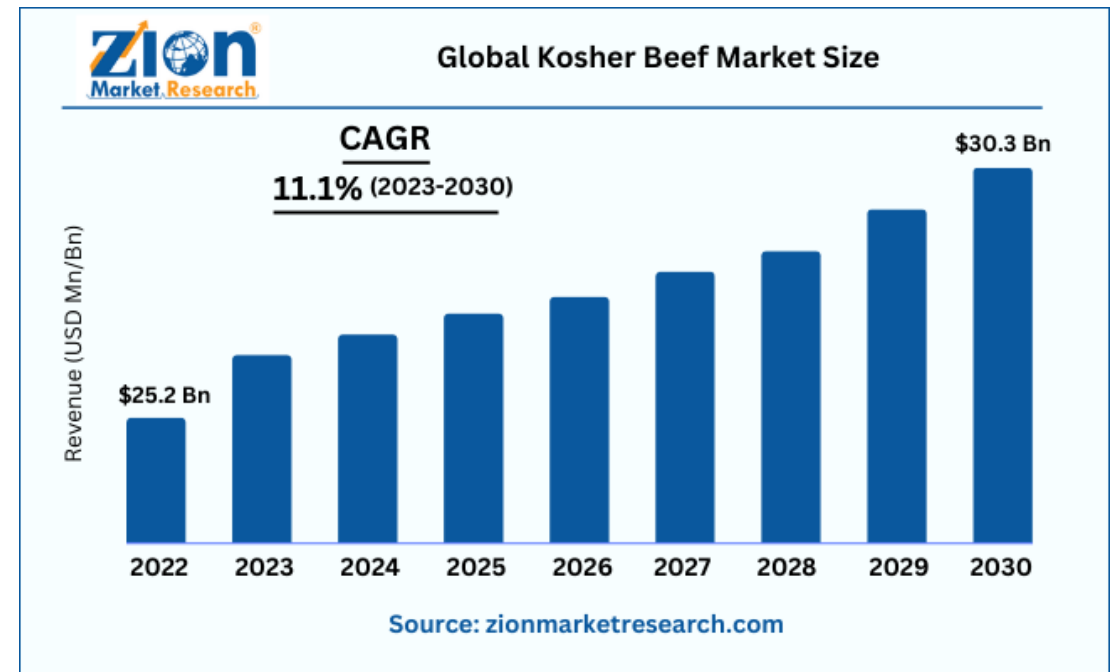
Laura, W. (2022). Global Halal Food Market Report 2022: Industry Trends, Share, Size, Growth, Opportunity and Forecast 2016-2021 & 2022-2027 – Research and Markets.com.
<https://www.researchandmarkets.com/report/halal-food>. Accessed September 2023.



Kosher Food Market Size

“According to the latest research study, the demand of global Kosher Beef Market size & share in terms of revenue was valued at **USD 25.2 billion in 2022** and it is expected to surpass around **USD 30.3 billion mark by 2030**,

Rushikesh, D (2023). Kosher Beef Market By Cuts (Brisket, Loin, Shank, And Others). Zion Market Research New York, United States.
<https://www.zionmarketresearch.com/sample/kosher-beef-market>. Accessed September 2023.



Introduction |

Spiritual quality as the foundation



- **Spiritual quality** has become the main factor or the **foundation for food-based product acceptance** for some major religious communities worldwide.
- For them, animals that have undergone a good processing procedure and hygiene practices would still be considered not spiritually fit for consumption if it is not processed based on their religious guidelines (Farouk et al.,2004).
- **Spiritual quality** will be achieved if the meat is processed according to the religious guidelines and requirements, which may **occur before, during, or after the meat is processed**.
- The most well-known processing methods are halal and kosher, by Muslims and Jewish communities, respectively (Farouk et al., 2014).
- The word halal indicates an action or operation acceptable in Shariah Law. It is mostly used for food products that meet spiritual quality and are suitable to be consumed by Muslims (Che Man and Sazili, 2010).

Introduction |

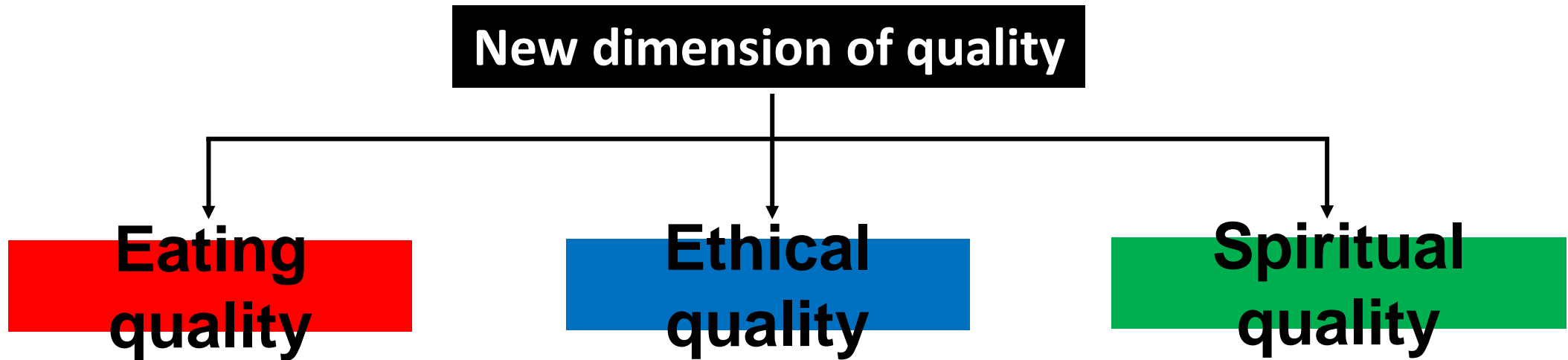
Electrical waterbath stunning in religious slaughter

- To meet consumer quality requirements while maintaining high production performance, the industry has incorporated newer technologies that are compatible with religious regulations such as stunning methods like electrical waterbath stunning.
- However, the introduction of new techniques such as electrical waterbath stunning has been met with mixed reactions. Some religious scholars have banned the use of any stunning methods in religious slaughter, as halal status is believed to be compromised in cases where birds have been stunned to death before slaughter.
- Nevertheless, some studies have shown the positive side of the electrical water bath stunning procedure in terms of preserving eating, ethical, and spiritual quality.

Stunning:

A technical process subjected to induce **unconsciousness and insensibility** in animals, so that slaughter can be performed with **minimal or avoidable fear, anxiety, pain, suffering or distress**

Source: [European Food Safety Authority \(EFSA\), 2006](#)



Source: [Hayat et al. \(2023\)](#)

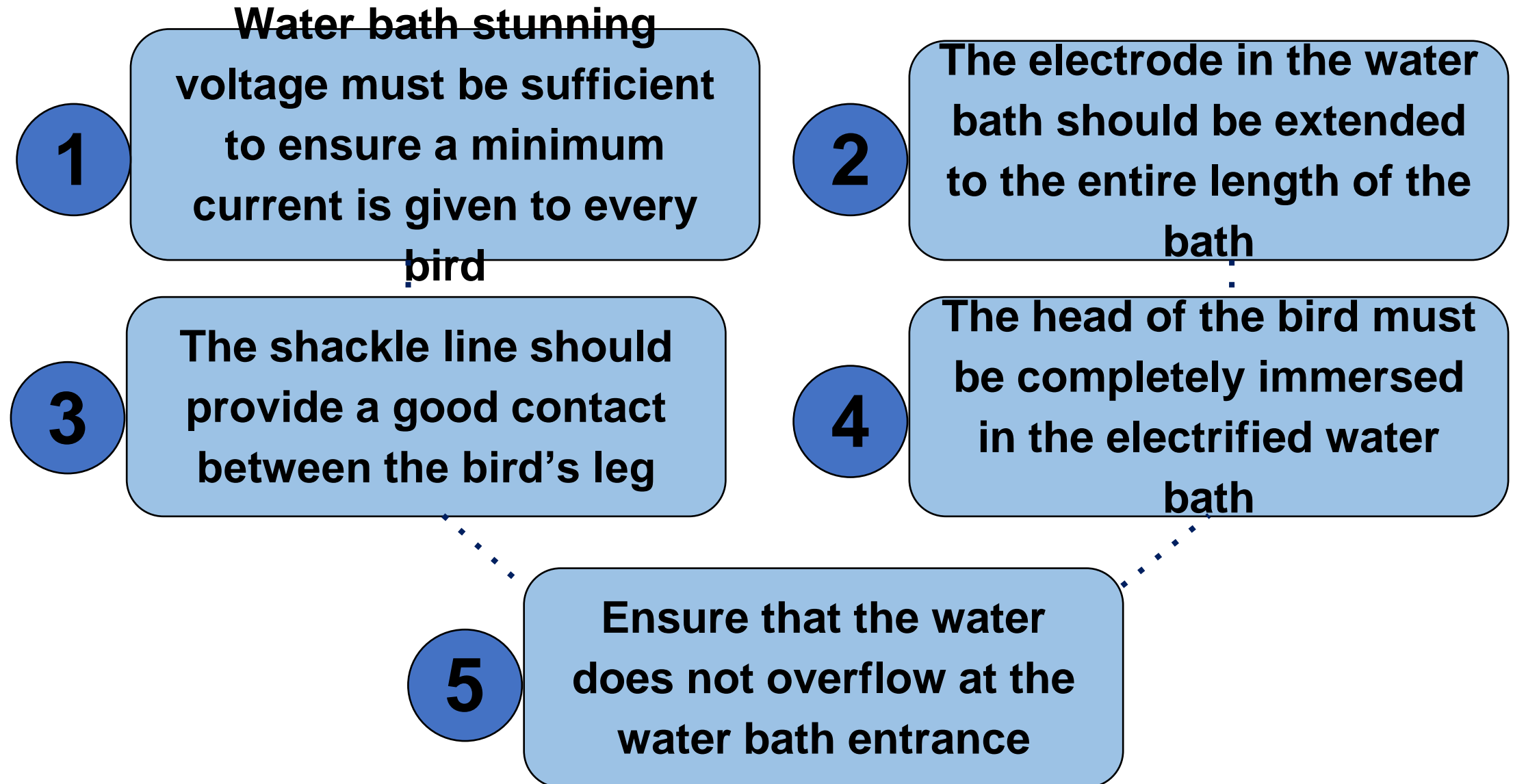
Introduction | Welfare

The 5 Freedoms (FAWC, 1992)



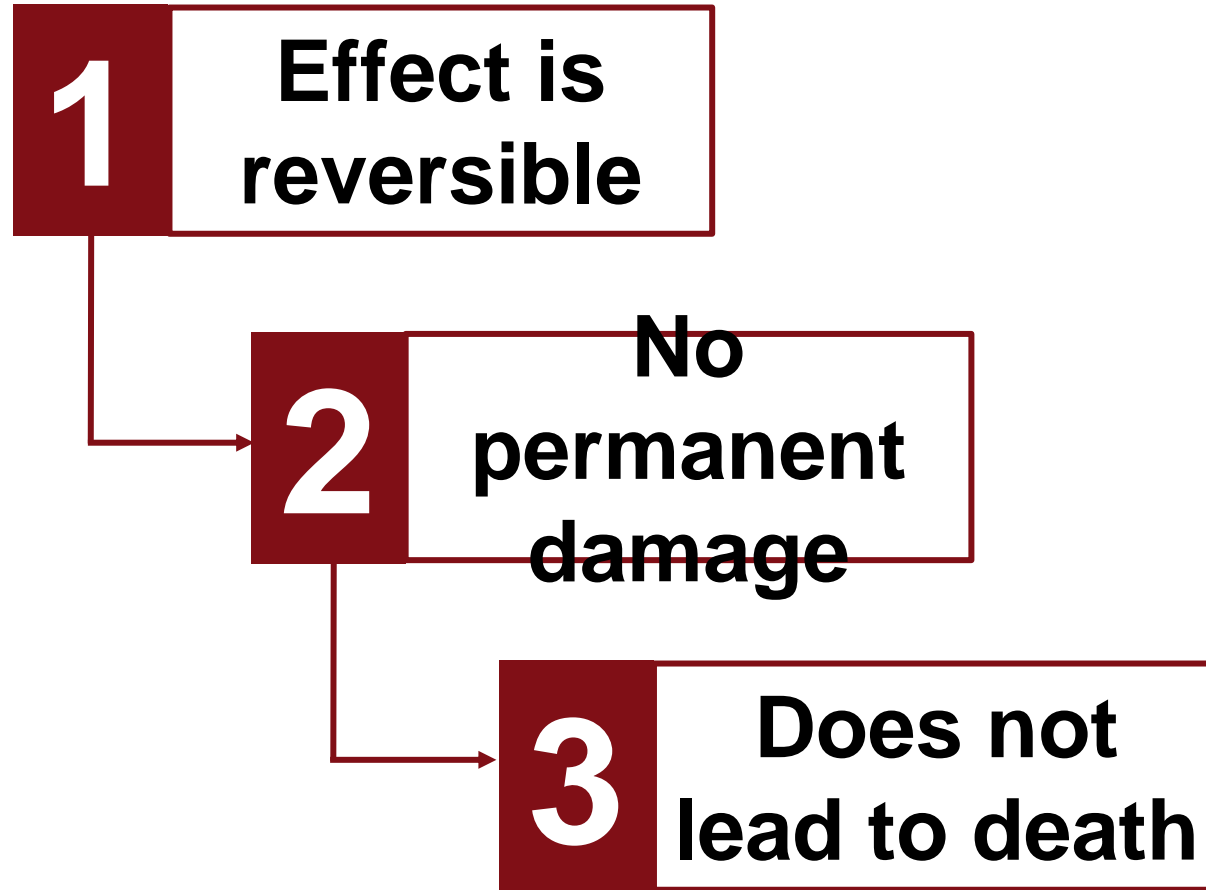
Introduction | **Electrical waterbath stunning**

The basic requirements



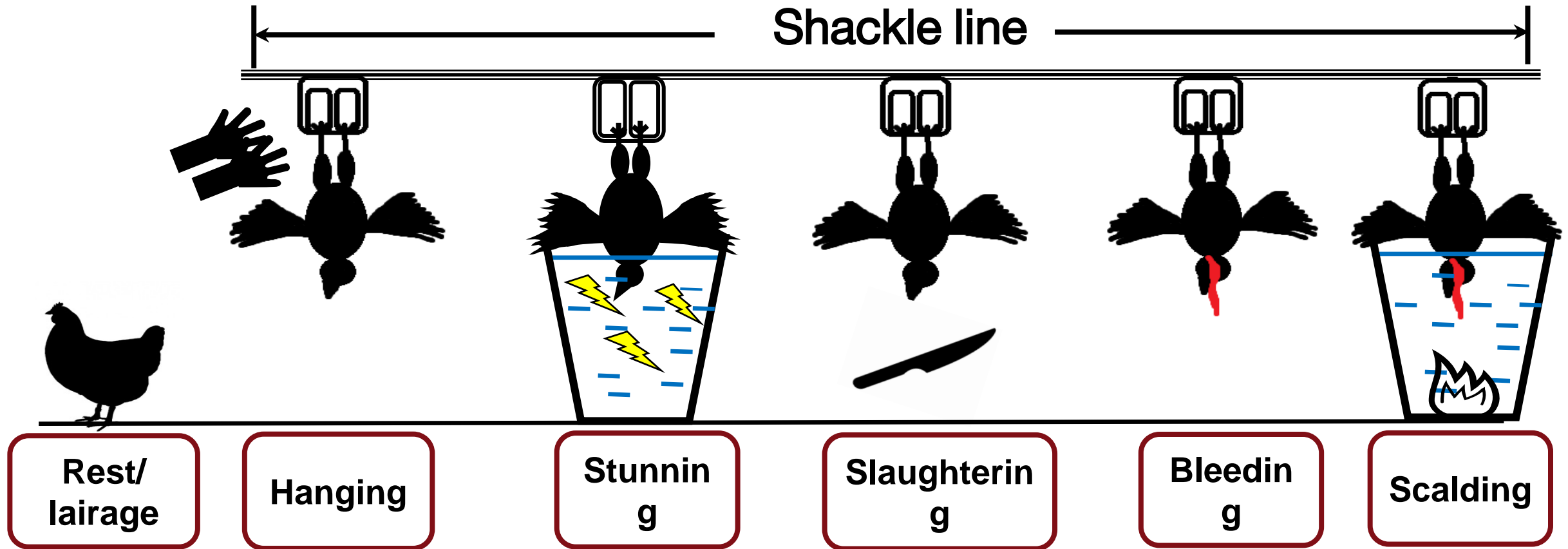
Introduction | Halal Meat Production

Head-only electrical waterbath stunning

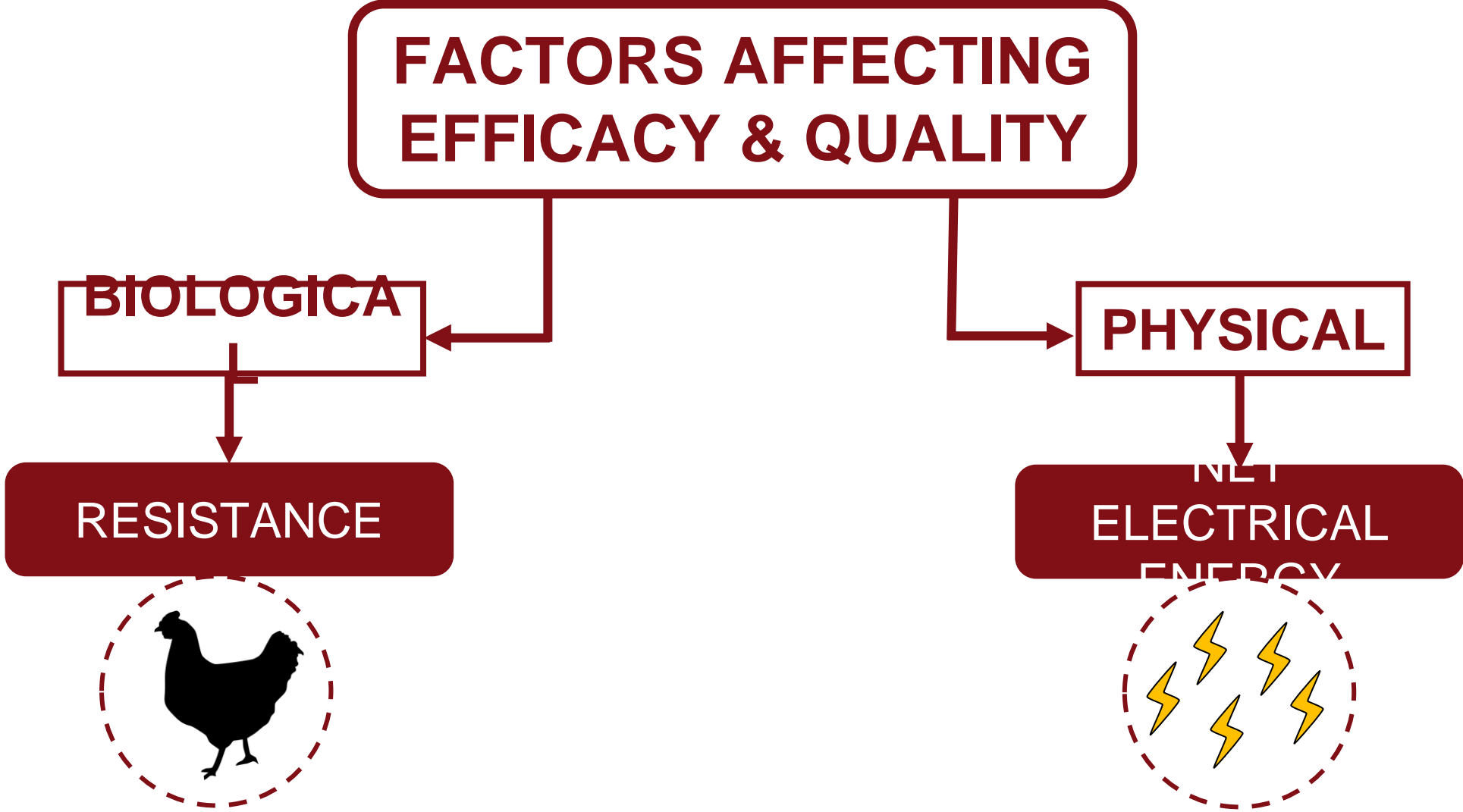


Electrical stunning requirement for Halal meat production. Source: [Velarde et al.](#)

Head-only Electrical Waterbath Stunning



Discussion | Head-only Electrical Waterbath Stunning



Discussion | Stunning efficacy

Biological factors

BIOLOGICAL

RESISTANC

E



**FEATHER
DISTRIBUTION**



WEIGHT



**HYDRATION
STATE**



**BONE
DENSITY**



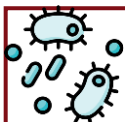
HEAD LIFTING



AGE



GENDER



DISEASE



**FAT
COMPOSITION**



BREED



**METATARSAL
THICKNESS**



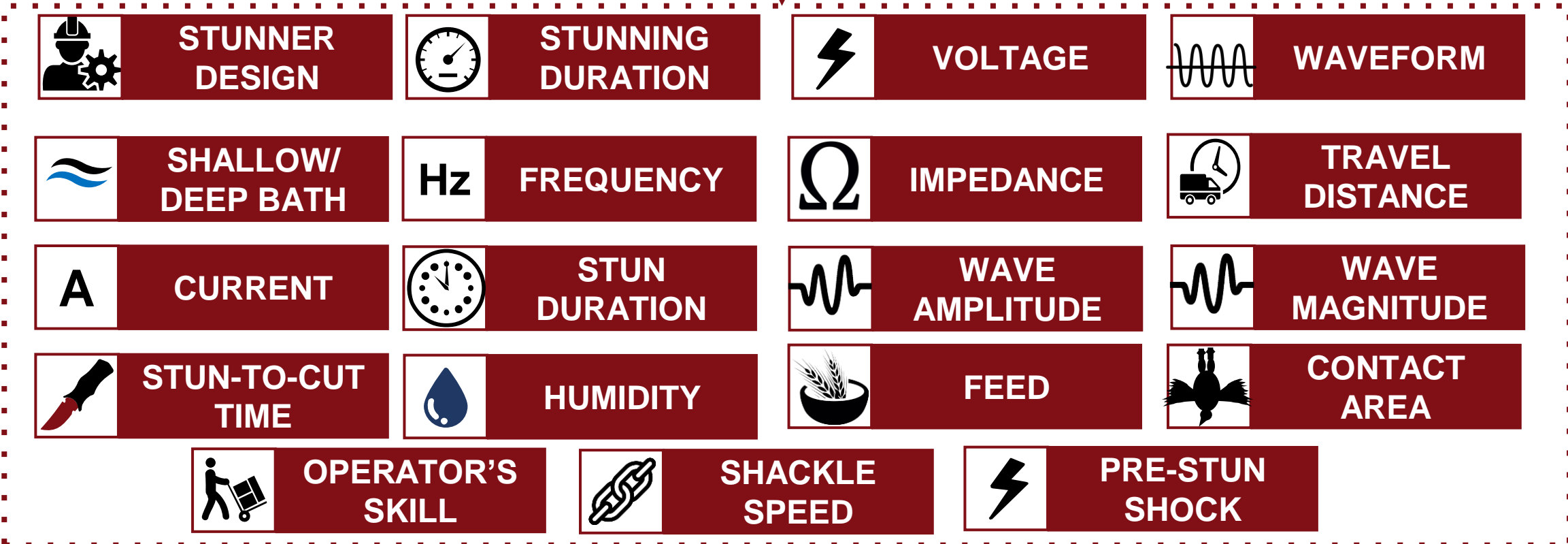
**SKULL
THICKNESS**

Discussion | Stunning efficacy

Physical factors

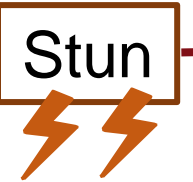
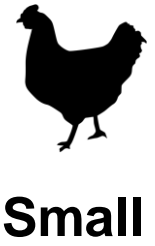
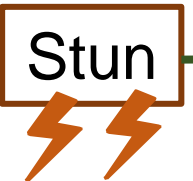
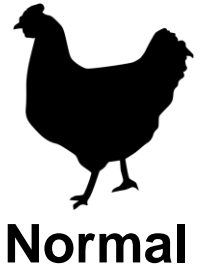
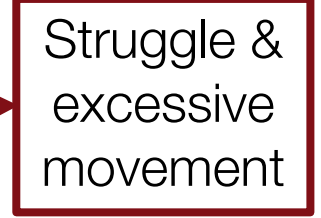
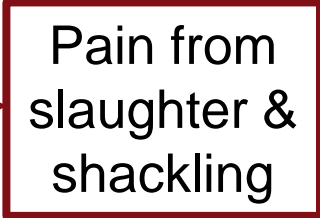
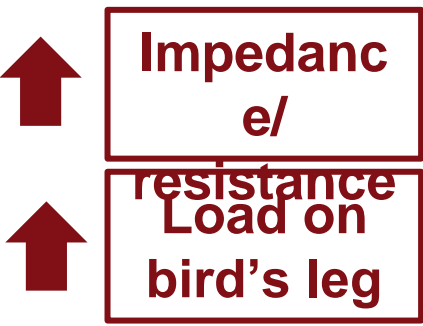
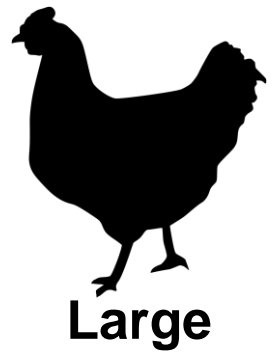
PHYSICAL

NET ELECTRICAL ENERGY



Discussion | Biological factors

Weight/ Size



Discussion | Biological factors

Different duration of unconsciousness among birds from the same batch



www.hsa.org.uk
video

+09:01:00:00



Discussion | Biological factors

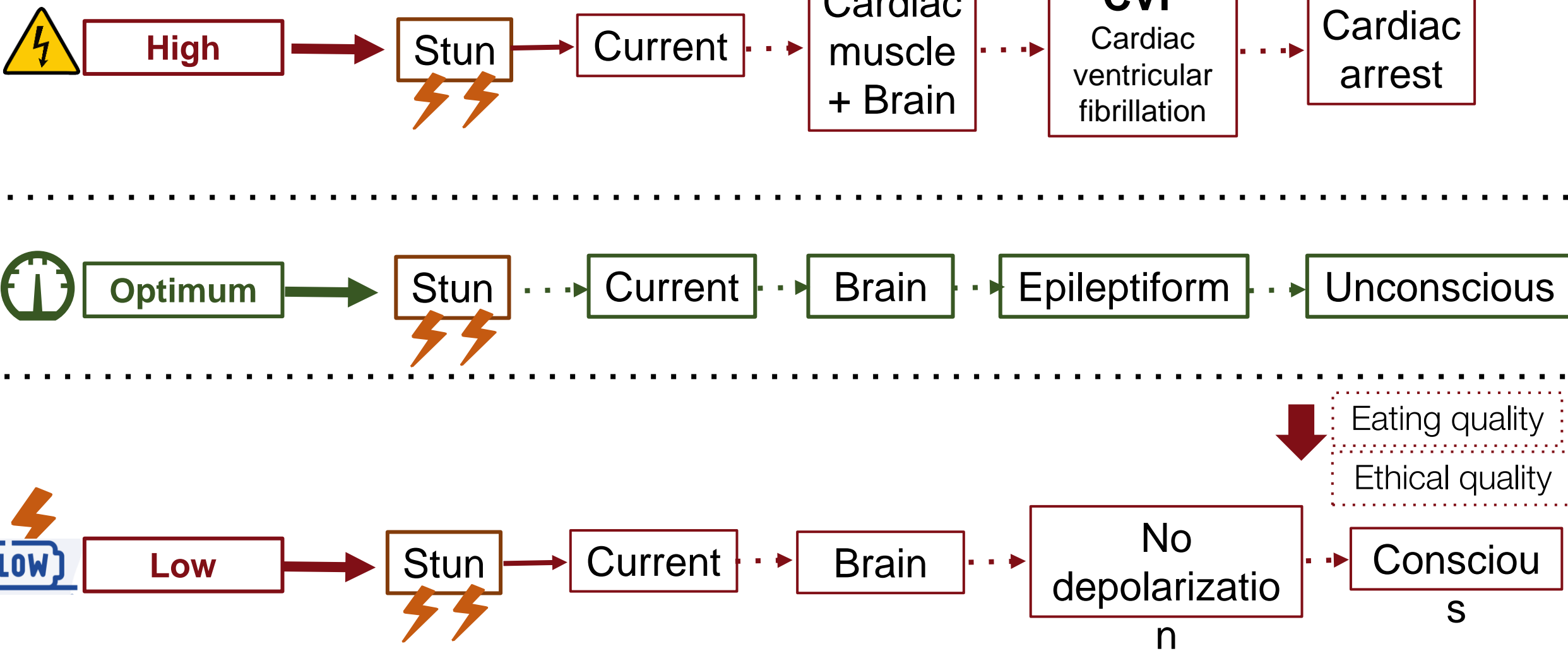
Incidence of broken bones, and carcass defects

Colour Code	T1R9 (50 Hz x 2.5 V)/ Jimat Jaya	
	Carcass Defects	Score
Green	Petechial haemorrhage	3
Yellow	Ecchymosis	3
Red	Wing tips	2
Blue	Haematoma	3
Orange	Broken bones	3

S0: Absence, S1: 1-2, S2: 3-7, S3: 8-10, S4: 11 Above, S5: Fiery red areas

Discussion | Physical factors

Voltage



Discussion | Physical factors

Neck cutting while birds are still conscious



Discussion | Physical factors

Birds remain conscious upon removal from the shackle



Discussion | Physical Factors

Birds lifting their heads inside the water bath



Are spiritual, ethical, and eating qualities of poultry meat influenced by electrical water bath stunning



Striking a balance

Are spiritual, ethical, and eating qualities of poultry meat influenced by electrical water bath stunning



YES!!



Addressing issues through
integrated research
(Science + Syariah)

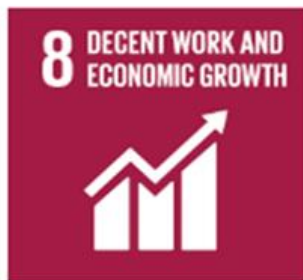


Striking a balance





SUSTAINABLE DEVELOPMENT GOALS







-Thank

Acknowledgement:

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You-

