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HALAL CERTIFICATION OF INSECT-BASED FOOD: A CRITIQUE

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Abstract: In 2013, the United Nations began to campaign for insect consumption as an alternative rich source of high-quality protein and minerals, to thwart the predicted global food shortage and to reduce greenhouse emission. Consequently, entomophagy (or insect consumption) began to receive stronger impetus, and the global edible insect market is estimated to reach US$1.2 billion by 2023. However, while more insects are increasingly becoming parts of processed foods globally, halal certification bodies do not hold a unified stand on the 'halalness' of insects and their extracts. The aim of this paper was to juxtapose the views of the scholars of the four Sunni Madhabs (schools of Islamic Canon law) on insect consumption, and drew on the Qur'an linguistics theories and Islamic maxims in the construction of the theoretical framework for this research. Critical Discourse Analysis (CDA) was adopted as research methodology which guides the whole research process, while content analysis remains the central research method. The result includes relevant factors that must be considered when certifying insect-based gastronomic items as Halal. The novelty and contribution of this paper lies in exposing the cultural milieu that informed the verdicts of the classical scholars on insect consumption, which later became the harbinger for the controversies among the contemporary halal certification bodies. The main practical implication of this study is that it paves way for a unified Islamic stand with regards to halal certification of insect-based food items. The limitation of the study is that it is confined to the major four schools of Islamic canon law only.

Keywords: Insect-consumption, insect-based food, halal certification, halalan-tayyiban, Islamic classical scholars.

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INTRODUCTION

Since prehistoric time, insect consumption (or entomophagy) has been a human tradition. Recent archaeological shreds of evidence have proved that humans were entomophagous in the ancient time in various parts of the world, including some parts of the USA, Canada and Mexico (Dobermann, et al, 2017; Jongema, 2015; Kouřimská and Adámková, 2016; Lesnik, 2014; McGrew, 2014; Shockley, et al, 2018; Sutton 1995; Reckhaus, 2017; Raubenheimer and Rothman 2011; Van Huis et al., 2013; Vantomme, 2015; Yen, 2009, 2015). However, the progress made in the domestication of animals and advancement in animal production which make animals easier and faster to get, hunting for animals, and, by extension, edible insects as means of food was becoming infamous in the modern time (Shockley, et al, 2018). This advancement notwithstanding, insect consumption remains part and parcel of food culture of many human races around the world. In 2013, the United Nations' Food and Agriculture Organization (FAO) published a report on insect consumption caused it to gain global popularity and unprecedented trans-cultural acceptance. In its report, FAO submitted that insects are rich sources of high-quality protein and minerals, and that insect consumption is an efficient way to thwart the predicted global food shortage

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and to ameliorate greenhouse emission (Durst et al, 2010; Van Huis et al, 2013). In 2015, and for the first time in modern time, insect consumption was becoming popular in some European countries. The Netherlands and Belgium currently both permit the sale of foods containing certain processed insect species (Bureau Risicobeoordeling & Onderzoeks programmering, 2014; Ngonlong, Bergen, & Onderzoeksprogrammering, 2014; Ngonlong, Bergen, and Keppens, 2014 as cited by House, 2016, footnote p. 1). Currently, insect consumption has become an acceptable food culture in about one hundred and thirteen (113) countries in the world. Subsequently, the insect-based food market had begun to grow tremendously, and several food industries have begun to tap into the market which is estimated to worth 1.2 billion U.S. dollars by 2023 (Statista, 2018).

Statement of the Problem

Research has shown that there exists an interplay between religion and consumerism (Karner and Aldridge, 2004; ZickVarul, 2008), and that religion is one of the major factors that determine consumer's choice (e.g. Collins, et al, 2009; Dindyal, and Dindyal, 2003; Feeley-Harnik, 1995; Freidenreich, 2011; Just, 2007; Moira, et al, 2017; Patience, 2016). There are several studies that have examined the acceptability of insect consumption in the Western countries and other various places (Barennes, et al, 2015; Hartmann and Siegrist, 2017; Megido, et al, 2016; Orsi, et al, 2019). As for the Muslims, their acceptability across the world is hinged strongly on the religious rules which guide halal food certification bodies. However, the books of Fiqh (Islamic Canon law) contain diversely opposing views on insect consumption. This ununified stand has impacted the contemporary scholars and certification bodies. For instance, there are two opposing views on the halalness of Carmine (or E-120) which is an insect extract and used as a food dye in some spices and flavor. In addition, some of the arguments raised by some writers on this subject matter have not been well-grounded in rigorous analysis; they are mere narrations of opinions without a juristic analysis. With this dearth in the literature, the future of the insect market and the Muslim's perception on insect consumption are obscured to the international food industry and key players in Halal food industries.

The thrust of this paper is to elucidate on the juristic opinions on insect consumption, as documented in the books of Islamic canon law. This elucidation would serve as a theoretical framework to pinpoint some practical issues that surround the halal certification of insect-based food. The novelty of this paper lies in paving way for a unified Islamic stand vis-à-vis insect consumption, which is being popularized by the United Nation's agency recently. This would allow halal certification bodies to stay aloof of controversies among the classical scholars which may not be feasible in this era of globalized and trans boundary food production. It would also expose various non-Islamist stakeholders in food production industries and researchers, to some pending issues that must be addressed in order to enhance the quality of fatwaa (Islamic verdicts) on insect consumption.

LITERATURE REVIEW

Entomophagy and Halal Food Industry

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The halal food market is so huge than to be ignored by the insect-food industry. According to the International Market Analysis Research and Consulting (IMARC) Group report titled "Halal Food Market: Global Industry Trends, Share, Size, Growth, Opportunity and Forecast 2018-2023" it revealed that the global halal food market reached a value of US$1.4 trillion in 2017. The report projected market value to reach US$2.6 trillion by 2023, exhibiting a compound annual growth rate (CAGR) of more than 11 percent during the period between 2018 to 2023. With the growing number of Muslims in the world, and with the continued agitation for healthier and trusted food products, the Halal food market has emerged as one of the most profitable and influential markets in the contemporary business world.

On the other hand, the various reasons advanced as convincing exigencies that are beyond the cultural milieu (e.g. see: Van Huis et al, 2013) require that Halal certification bodies take a clear, unified and an unshakable stand towards edible insect consumption. Notably, nutrition and environmental benefits have been the most paramount benefits stressed by advocates of edible insect consumption. Ronald Taylor (1975), as cited by vane-Wright (1991) was perhaps one of the relatively earlier researchers who carried out a comparative nutritional value of edible insects. In a book titled: "Insects in Human Nutrition" Taylor (1975) collated data on food values for a range of insects, comparing their protein, fat, carbohydrate, mineral, vitamin and calorific values with those for beef, lamb, pork, chicken, fish, milk, and eggs. Taylor (1975) found out that insects contain a lot of protein, some being leaner than trimmed beef with fewer fat calories. The amino-acid composition, although not ideal (tending to be low in methionine, cysteine, and tryptophan), is easily balanced by the addition of suitable plant protein, such as corn gluten. Insects contain calcium, iron, other minerals, and some vitamins, notably riboflavin (Vane-Wright, 1991 p.1). These results were corroborated and reconfirmed by a relatively more recent study. Kouřimská and Adámková, (2016) cited Rumpold and Schlüter (2013) and concluded that the Nutrient Value Score of crickets, palm weevil larvae and mealworm was significantly healthier than in the case of beef and chicken and none of the six tested insects were statistically less healthy than meat. Most edible insects provide sufficient energy and protein intake in the human diet, as well as meeting the amino acid requirements. This justifies the assertion of Vane-Wright, (1991) who concluded that insect protein could substitute for almost all vertebrate protein (p.4). According to Kouřimská, and Adámková (2016), insects also have a high content of mono and polyunsaturated fatty acids; they are rich in trace elements such as copper, iron, magnesium, manganese, phosphorus, selenium and zinc, as well as vitamins like riboflavin, pantothenic acid, biotin, and folic acid in some cases (Kouřimská, &Adámková, 2016 p. 23). In the work of Hartmann and Siegrist (2017), they concluded that insects have lower concentrations of cholesterols alongside favourable n-3/n-6 fatty acids ration (p. 31). According to the International Centre of Insects Physiology and Ecology (ICIPE), several essential amino acids, especially lysine, threonine, and methionine, which are limited in cereal and legume-based diets, are present in adequate quantities in edible insects. Compared to conventional sources, edible insects are rich in zinc. For instance, while 100 g of beef contains only 12.5 mg of zinc; the same amount of palm weevils contains 26.5 mg (https://www.entomofago.eu/en/2018/07/02/edible-insects-as-food-in-africa/).

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In recent time, the halal logo has gone beyond an indication of religious permissibility, to become a symbol of clean, hygienic, humane, and trusted food products that is well sought after by Muslims and non-Muslims alike (Golnaz et al, 2010; Hussain, et al, 2016; Krishnan, et al, 2017; Mathew, 2014; Muhammad, 2007; Wibowo, 2016; Wilkins, et al, 2019; Yunos, 2018). It would, therefore, be an antithesis to halal paradigm to ignore the various benefits of insect-consumption, without a rigorous and convincing scholarly prove. In addition, as it is prohibited in Islam to consume non-halal substances, it is a more grievous sin to prohibit things without an Islamic valid evidence. As we shall see later, the Qur'an frowns at those who prohibits food or provision that is *Tayyib* (good, nutritious, healthy) without a tangible justification and call them transgressors.

Further, the general dietary base rule in Islam states that: "All foods are considered halal until proven to be haram". In this regard, where there are opposing views on insect consumption, there is a need for a critical examination of the scholars' opinions to analyse the evidences put forward, to uncover the validity of each opinion.

Insect Consumption in Islam

Insect Consumption in Arabian Culture

Prior to the advent of Islam in Arabia, Arabs were well accustomed to locust consumption as a favourite food. Locust was so significant to Arabs that they consider it as both food and medicine fused in one, hence the Arabic adage: "When locusts appear, throw away all the medicines". An Arab would hail his wife for preparing locust delicacies. They equally consume locust eggs which they consider to be special eggs that quenches appetite for meat.

The gastronomic importance of locust to Arabs was perhaps responsible for Arabs detail knowledge about different stages of locust metamorphosis. When it first hatched, they call it (*Qummus*), and call it (*Ad-dabaa*) when it began to grow wings but cannot fly, and (*Khayfaan*) when it first flies and (*Katfaan*) when it flies and balances its wing. They equally ascribe a different name to their grouping and gathering. In love of locust, they name their male children '*Jundub*' the name of a male locust, and '*jaradah*'; name of a female locust for their female children.

When Islam came to Arabia, locust was further sanctioned as halal where the Holy Prophet Muhammad (peace upon him) was reported to have said: "There are two dead (animals) that are permitted to us (to consume without slaughter); the fish and the locusts" (Ibn Majah, Chapters on Hunting, Hadith No.3218). Further, it is narrated in Sahih Bukhari (Volume 7, Book 67, Number 403) on the authority of Abdullah Ibn Abi Awfa who said: "We participated in six or seven *Ghazawat* (expeditions, battles) with the Prophet, and we used to consume locusts (the Holy Prophet)". This point to entomophagy that has been accustomed to, in all the battles that span, at least, through nine years, during the lifetime of the prophet of Islam in Madinah. Locust consumption is not limited to the time of exigency at war, Ibn Majah narrated from Anas ibn Malik that the wives of the Prophet (peace and blessings of Allah be upon him) used to gift each other trays of locusts." (Chapters on Hunting, Hadith No. 3220). This hadith further confirms that the locust being consumed was in large quantity. Abdullah the son of 'Umar (the second successor of the prophet of Islam of

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Allah) narrated that his father 'Umar was asked one day about locust, and he said: I wish we could have a scuttle (full) of it so that we could eat from it. Abdullah then remarked: He ('Umar) loves locust so much.

All of these narrations and many more have established convincingly that insect consumption is part of Arab tradition. Up till the present time, locust consumption is a traditional food in Saudi Arabia, Kuwait, Yemen, Libya, and some other Arabian countries. Locust business is more lucrative in Saudi Arabia and Yemen, the two major Arab ancestral origins, where life locust is sold in sacks, at around US$40.0 per kilogram, more expensive than meat.

Classical Muslim Scholars' opinions on Insect Consumption

There is consensus among scholars of the four Sunni Madhabs (schools of Islamic canon law) that locust, a type of insect, is halal for consumption. This consensus is inevitable, as there are clear-cut hadith (Prophet's sayings and traditions) that supports locust consumption. However, the fuqahaa' (Islamic jurists) differ on other types of insects. This difference arises, due to the fact that all of the hadith narrations on the permissibility of insects have centred on locust alone, and silent on other insects. Summarily, two out of the four Sunni schools of Islamic canon law hold two extremely opposing opinions, while the remaining two took a middle course with slight differences. However, all the four Sunni Schools agree that insects that grow out of food, such as food worms, are halal and permissible (Yasin, 2007 pp. 364-379).

Before we venture into detail of the scholars' opinions, there is a terminological ambiguity in the classical books of Islamic canon law that must be clarified. The word hashrah popularly translated as an insect is used in the fiqh (Islamic canon law) literature for a meaning broader than insect (see for review: Yasin, 2007, pp. 32-35). When the word hashrah (plural: hasharaat) is mentioned in the book of Fiqh, it refers sometimes to insects, rodents (such as hyrax, rats, mouse, hedgehog, etc) and reptiles (such as lizards, wall gecko, snakes, etc). It is, therefore, pertinent that a researcher studies the scholarly verdicts and opinions on hasharaat (plural of hasharah) on a case-to-case basis. In the following paragraphs, we shall stick to the word hasharaat in discussing the views and opinions of the four Sunni schools.

The Hanafi School, which has the majority of followers in the Islamic world, amounting to forty-five percent (45%) of the Muslim population (Schleifer, 2019), consider all types of hasharaat (including insects) as haram, and food containing insect is prohibited. They based their argument on a verse of the Holy Qur'an (e.g. Surah A'raf vs 157) that prohibits the consumption of khabeeth (malice, malignant and filthy thing). The Hanafi consider hasharaat (including insects) to be filthy and malignant, and are abhorrent that a normal person would be disgusted with them (Yasin, 2007).

The Maliki School, on the other hand, holds a divergent and an extremely opposite view to the view of the Hanafi school. The Maliki School, with followers amounting to fifteen percent (15%) of the Muslims in the world (ibid), adjudicates that all types of hashraat are halal, except the ones that are harmful to health or disgusted by the people. They based their opinion on some verses of the Qur'an (e.g. al-Ma'idah vs 93) that permit the

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consumption of all that is on the earth except the ones that are made prohibited by Shariah or harmful to health. Since there is no clear-cut evidence as to the prohibition of all hashraat including insects, any edible insect that is nutritious, non-harmful and acceptable by people is considered halal. However, the Maliki school recommended that rodents and reptiles should be slaughtered, and edible insects should not be consumed (put into the mouth) alive, it must be killed either by plucking off the head, roasting or other permissible means, and invoke the name Allah (Bismillah) on it while causing it to die (Al-Baji, Vol. 3, page 129).

As for the Shafi'i school that command eighteen percent (18%) of Muslims in the world, and the Hanbali school whose followers amount to two percent (2%) of the Muslim population in the world, they both adopt a selective approach, not generic like Hanafi and Maliki, but both schools differ from one another in some of the categories of hasharat is halal. For instance, the Shafi'i ruled that hedgehog is halal while the Hanbali consider it to be haram. However, both schools regard all insects, except locust, as khabeeth (filthy), and therefore not halal.

Summarily, whereas there is consensus among all the scholars of Islam on the prohibition of anything that is khabeeth, there is no consensus among them on the labelling of some hasharat including insects as khabeeth. It is equally clear that the basis of argument and divergencies among scholars of all the four Sunni Schools on insect consumption is hinged on whether the insect is khabeeth (malignant and filthy thing) or tayyib (good, nutritious, acceptable by people). While the majority of scholars opined that insect is khabeeth, the Malik school does not regard it as khabeeth except the one that is harmful to human health, and the ones that are culturally unacceptable.

METHOD

This paper adopts Critical Discourse Analysis (CDA) as a research methodology to solve the problem of this research. This methodology is suitable for this research as it usually used for studying written language in relation to its social context (see for review: Wodak and Meyer, 2009). In this research, CDA was used to contextualize the classical juristic opinions on insect consumption within the socio-cultural framework of the Islamic Jurists. Qualitative Content analysis remains the central research method which draws largely on literature review.

DISCUSSION

Analysis here would be premised on the general Islamic law that guides food consumption as contained in the following verses of the Qur'an: "O you who believe! Do not make unlawful the tayyibat (all that is good as regards foods, things, deeds, beliefs, persons) which Allah has made lawful to you, and do not transgress. Verily, Allah does not like the transgressors. And eat of the things that are Halalan-Tayyiban (lawful and good) which Allah has provided for you, and fear Allah in whom you believe" (Surah Ma'idah vs 87-88).

According to the Qur'an linguistics, when a verse of the Qur'an is opened with the sentence "Yaa Ayuhal-ladheena aamanu" meaning: 'O you who believe', as in the verse 87 above, such verse is likely to contain legal responsibility rules, which may either be a compulsion rule (obligatory to do, or forbidden to do), or non-compulsion rules

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(recommended, reprehensible or neutral). However, the last sentence of the verse 87 that reads: "Verily, Allah does not like the transgressors" is a clear indication that the rule here is compulsion ones. In other words, it is a punishable sin for a Muslim to prohibit whatever that is Halal and Tayyib. Consequently, any prohibition of food substance must be substantiated with a valid evidence that would prove it not to be halal and not tayyib.

Having said that, it should be noted that no Madhab out of the four Sunni schools presents a direct or clear-cut verse of the Qur'an or narration from hadith that prohibits insect consumption. Therefore, to adjudicate the halalness of insects other than locust would be a matter of Ijtihad (legal reasoning, deductions, and inferences) which allows further research. It should be remembered here that when there are divergently opposing opinions based on Ijtihad, the right opinion would be judged based on the quality of its arguments, not by counting the numbers of those who hold such opinion; qualitative approach precedes quantitative approach in Islamic epistemology and theory of evidence. What follows is that the choice of opinion on insect consumption between the Jumhur (majority) or the Maliki school would be based on whether on or not insect is tayyib as the opposite of khabeeth.
To do this, we need to define what is tayyib, a component of Halalan-Tayyiban which is the regulatory conceptual framework laid down by the Qur'an, and used by halal certification bodies for halal certification of food items which are not clearly stipulated in the Qur'an or the Hadith (prophetic sayings and tradition).

Halalan-Tayyiban as an ethical regulatory conceptual framework

Literature abounds on the topic of Halalan-Tayyiban, explaining what the duo means in halal consumption parlance (see for review: Pusparini & Setiaji, 2019; Omar et al, 2013; Halim & Salleh, 2012; Zainuddin and Shariff, 2016). However, most of the studies did not attempt an in-depth study of the underlying principles and implications. For instance, the majority of the previous studies have reduced Halalan Tayyiban to a mere concept rather than a comprehensive conceptual framework where the two sacrosanct components have mutual interrelationship. While a comprehensive study of the two words 'Halalan' and 'Tayyiban' as an Islamic terminology is beyond the scope of this paper, we shall discuss, in the following paragraphs, albeit briefly, the meaning of *tayyib* as the opposite of *khabeeth* from Qur'an linguistics perspective.

The Qur'an emphatically enjoins and commands mankind, including Muslims, to consume what is halal (Islamically permissible) as well as *tayyib* (good and acceptable, hygienically and spiritually wholesome). These two components are mutually sacrosanct in conceptualizing halal food consumption. As it will be clearer later, the word *tayyib* is broader in meaning than halal and is key in determining what is halal.

To elucidate, the word tayyib, according to the theory of 'Perfect Semantic Matching' of the Qur'an language, should be regarded as a unique word which perfectly convey the intended meaning and cannot be replaced with another word that may be used interchangeably with it in the general Arabic usage, such as '*tahir*'. In Arabic etymology, the word *tayyib* is derived from the root word '*taaba'* which means 'to be good', 'to be delicious', 'to be pure', 'to be acceptable', and 'to be clean and uncontaminated' (Tajudeen and Abdurahman, 2019). In the Qur'an usage, *tayyib* refers to the opposite of *khabeeth* (impure,

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adulterated and contaminated) which applies to both human and non-human entities. *Tayyib* shares the same meaning with the word '*tahir*' which also mean 'to be pure' and free from contaminant, but *tayyib* is broader in meaning in the sense that it refers to a purity that enhances a substance's (or a human being's) ability to fulfill the demanded quality and actualize the end result (Mustafawy, n.d. vol. 7, p. 182).

Further, the word '*taaba'* has an affective dimension. Unlike '*tahir*' which is more objective as it only refers to meeting the purity standard, the word "*tayyib*" is subjective as it takes into consideration individual views towards an object in question. In other words, what may be "*tayyib*" in the view of someone may not be "*tayyib*" in the view of another. This is evident in various verses of the Qur'an where '*taaba'* or "*tayyib*" appears, such as in the choice of a woman to marry and gifts a wife offers her husband. In those contexts, *tayyib* connotes individual taste and self-willingness (see for instance Surah Nisa' verses 2-4).

From the foregoing, we may conclude and define *tayyib* as something that is ' good' and 'acceptable' in accordance with the laid down standard or norms. In dietary parlance, a *tayyib* food is the one that is capable of providing the body with the required nutrients, suits the taste in accordance with the cultural norms, and is safe for both mundane and Islamic spiritual health (Tajudeen &Abdurahman, 2019). Therefore, any insect that is confirmed to be nutritious, safe for human health and culturally acceptable has met the qualities of a tayyib food, which then qualifies it to be halal. In the following paragraphs, we shall take a relook into the opinions of the *Fuqahah* (Islamic jurists) based on this definition of *tayyib*.

Analyzing the opinions of the Fuqahah (Islamic jurists)

To start with, the consensus of scholars on the halalness of locust which is also an insect is convincing evidence that negates the generic opinion of the Hanafi School that considers insect family as *khabeeth* or not *tayyib*. In addition, the plethora of evidence that proves that some edible insects are nutritious, medicinal and are favourite foods of many races around the world, further counter the arguments of those who consider all insects as being "disgusted which no normal people would like to consume". It can be equally argued that locust that remains Arabs' favourite food till the present time, and ruled permissible in Islam, is equally a disgusted insect to some other races in the world who are also insect eaters but do not consume locust (e.g. the Yoruba in the West Africa). In the absence of a clear-cut evidence that prohibits insect consumption, it may perhaps be said that locust, as an insect, is ruled halal due to its acceptability in the Arabian culture as we have detailed earlier, and that some of *the fuqaha* considered other insects that are not consumed by Arabs as *khabeeth*, because they are disgusted in Arabian culture. We can, therefore, conclude that the opinions of the *fuqahaa'* are arguably based on a subjective analysis which is informed by the limited information available to them on the subject matter.

In the Islamic jurisprudence, subjective opinions of the *fuqahaa'* on food is informed 'solely' by their culture such opinions are bound to change in accordance with space and times (for detail review see: Ibn Al-Qayyim, 2009, Vol. 3). Therefore, foods that are prohibited by *fuqahaa'* based on cultural grounds, such prohibition is not binding on all Muslims, with different custom or culture that accept such food. This is evident in narration, in Sahih Bukhari (Volume 7, Book 65, Number 312), where Khalid bin Walid said: "A

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roasted *dabb* (mastigure, a kind of wild lizard) was brought to the Holy Prophet (peace be upon him). When he stretched his hand towards it to eat it, they said to him, "It is a mastigure." So; he withdrew his hand. Khalid asked, "Is it unlawful to eat?" the Prophet said, "No, but it is not found in the land of my people and that is why I do not like eating it." So, Khalid started eating (it) while Allah's Apostle was looking at him".

It can be inferred from this narration that if we arguably accept the opinion that insect family is disgusted, this opinion is subjective and relative as there are Muslims whose culture allows consumption of certain insect and do not consider it disgusted. This makes the opinion that permits insect consumption to be preferred and more acceptable. The opinion is supported by the Islamic general principle on food consumption that says: "All foods items are halal except it is established with valid evidence that it is haram", as well as the universality of the Islamic message and law which transcends races, tribes, and nations.

Therefore, what should be the major concern in certifying an insect as halal are the nutritional qualities and safety for human health, while the choice to consume it is left to an individual's culture and taste. It is enough to mention the insect used in the food in the table of ingredients, for a consumer to make a choice. As for the safety, it is a general rule in Islam to consume what is hygienic and safe for human health (Surah Baqarah vs 196). Therefore, before an insect could be considered as tayyib, it is must be established with clear evidence that it is safe for human consumption. Based on this, there are many issues that need to be further addressed with regards to halal labelling of insect-based food. For instance, a risk analysis by European Food Safety Authority (EFSA) in the year 2015, and cited by Bußlereta al (2016) emphasized that there are numerous uncertainties and knowledge gaps regarding the use of insects and products thereof as food and feed. According to Hartmann and Siegrist (2017), the use of insects as food or fodder on large scale requires research on the technological treatment and processing methods and on toxicological, microbial and hygienic safety as well as possible allergenic potential (p. 31). Despite the abundance of studies that show that insects could make valuable economic and nutritional contributions to the food or feed systems, there are no clear regulations in place to bring insects into such supply systems. Future research needs to examine how the nutritional value of insects can be managed systematically, establish clear processing and storage methodology, define rearing practices and implement regulations with regard to food and feed safety (Dobermann, et al, 2017).

CONCLUSION

Insect consumption is not totally alien or prohibited in Islam, and condemnation of all insects as Haram without an exception, is a technical error and fallacy of generalization. This is evident in the consensus of the four Sunni schools that locust and food worms that grow out of it are halal. However, there is no consensus among them on other edible insects. Based on juristic analysis, the opinion which allows insect consumption with some conditions, is considered more evident and preponderant. However, one of the major requirements that must be looked into before certifying an insect-based food product as halal is the results of risk analysis as well as the nutritional quality of each and every insect that is being marketed. It is then left to the consumer to choose such food item, as a matter individual acceptability, but such food item should not be denied halal certification.

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Recommendation for Future Research

More researches should be done to fill the existing knowledge gap, regarding toxicological, microbial, hygienic safety and possible allergenic potential of edible insects. It has been argued that some insects contain some scientifically unwanted substances which may not be useful or suitable for human consumption. In this regard, Halal food research needs to play an active role in the on-going research on the edible insect, by bringing to the fore the Islamic requirements which may include other Islamically unwanted substances that may be contained in some insects. This will lead to the lists of insects that could be certified as halal.

Now that global entomophagy is driving people towards mass production of edible insects, it is pertinent for halal certification bodies to be proactive in laying down rules that would govern the process of insect farming, regulations on permitted feed and its safety based on the biochemical process that takes place in the insect thereafter, which may be harmless to the insect metabolism but dangerous to human health.

With the ongoing campaign for insect consumption, a new treasure and huge market are opening up for the Halal food industry, as a trusted and ethical food industry. Any active role played by a Halal certification body would not only provide a clear path for the rising insect-based food industries around the world but equally give it the recognition as a reliable body which is keeping abreast of contemporary needs and discourse in the field, within the ambit of Islamic red lines.

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