

## Covid-19: Can Halal Food Lessen the Risks of the Next Similar Outbreak?

Fatya Alty Amalia<sup>a</sup>, Kung-Jeng Wang<sup>b\*</sup>, Arie Indra Gunawan<sup>c</sup>

<sup>a, c</sup>Lecturer, Department of Business Administration, Politeknik Negeri Bandung, Indonesia.

<sup>b</sup>Professor, Department of Industrial Management, National Taiwan University of Science and Technology, Taiwan.

Received 26 May 2020; Accepted 2 July 2020

### ABSTRACT

As COVID-19 is a zoonosis virus that involves wildlife as its primary host (i.e. bat) like the previous outbreaks (SARS and MERS), it is prudent to reduce the transmission risk from wildlife consumption. Such an approach should be enforced to mitigate the risk of a future outbreak akin to COVID-19. However apparently, it is not a simple task to change such a consumption culture in a short time, though the devastating socio-economic impacts obviously have been yielded. Concerned with the current outbreak impacts, this study attempts to propose a prophylactic strategy through Halal food, an Islamic diet tradition, as a way to lessen the risk of a future outbreak akin to COVID-19. *Tayyib* (wholesome) principle which is often associated with Halal food can make Halal food not only “permissible” upon Islamic teaching but also “good” and “clean” to consume. As *Tayyib* redefines the conventional Halal food concept, it underlines more strongly on the medical facet of Halal food, i.e. food safety and health. According to Islamic teaching, Halal food encourages the consumption of domestic animals and more plant-based food. Meanwhile at the same time, it also heavily establishes the procedures of food safety and maintains the integrity of its credence status. Based on these, this study claims that more Halal food consumptions can lessen the risk of future outbreaks like COVID-19.

### KEYWORDS

Halal Food  
COVID-19  
Food safety  
Healthy  
*Tayyib*

### INTRODUCTION

For more than a half-year, the world has to bear the devastating socio-economic crisis after COVID-19 being the pandemic in over 180 countries. The apparent crisis is observed from the increasing death cases which, by early June 2020, already reach the number of 371.000 from over six million confirmed COVID-19 cases globally (WHO, 2020a). Unfortunately, the crisis is getting worse as the rising number of job losses, homeless people, and xenophobia (United Nations, 2020). Such detriment impacts are apparently caused by SARS-CoV-2 which specifically attacks the respiratory system and be mainly transmitted through droplets from the infected person (Zabetakis et al., 2020).

\*Corresponding Author: [kjwang@mail.ntust.edu.tw](mailto:kjwang@mail.ntust.edu.tw); doi: 10.35313/ijabr.voio.112

Prior to being known as a human-to-human transmission disease, originally COVID-19 is a zoonosis virus whose genome sequence is found in bat, the natural host of the virus (Guo et al., 2020). Due to its high similar identity with SARS-CoV (80%) and MERS-CoV (50%), COVID-19 falls under the genus Betacoronavirus that can infect bats, humans, and wild animals (Rothan & Byrareddy, 2020). To reduce the transmission risk, applying the physical distancing and living in a healthy as well as hygiene life become the top priorities today for any individual worldwide (Bruinen de Bruin et al., 2020; Zabetakis et al., 2020).

In detail, Zabetakis et al. (2020) posit that COVID-19 is an infectious disease whose clinical manifestations are highly associated with the inflammatory system as a part of the normal immune response. The symptoms can be varied among the patients such as impaired respiratory function, spleen atrophy, hypercoagulability, and various organ damage even death. Furthermore, patients with non-communicable chronic disease (NCD), such as diabetes, cardiovascular disease, chronic lung disease, etc. can worsen the clinical manifestations of COVID-19 as they undergo immunocompromised, i.e. weakened immune system. Hence, the mortality risk of those is higher than people without NCDs (WHO, 2020b). However, to discover the right therapies of COVID-19 is not a simple task to accomplish since the understanding of its pathology is continuously developing as of today (Zabetakis et al., 2020).

Wuhan, China, was the city where the first confirmed case found. It quickly spread across countries worldwide which finally developed into a pandemic case today (Shereen et al., 2020). Daszak et al. (2020) note two noteworthy points coming up from COVID-19. First, though both originated from China, the spread of COVID-19 is quicker than SARS 2002-2003 as the business and trade activities of China have expanded rapidly and vastly, including to international level. Hence, China's inbound and outbound travels are increasing since 2003. Second, the initial cases were associated with a wet market that sells wildlife animals alongside the fresh products, and a bat was recognized as the natural host of the virus (Daszak et al., 2020; Guo et al., 2020; Shereen et al., 2020). Corroborating it, Greatorex et al. (2016) posit that poor biosafety (e.g. lack of good hygiene practice) is commonly found in such a market setting and can increase the potential of transmission from wildlife to human or to other animals. Realizing that wildlife consumption is quite dense in Chinese culture, Daszak et al. (2020) argue that changing such culture in a short time will not be a small matter although the decreasing trend is seen in some regions of China according to Zhang & Yin (2014). Addressing this, it is reasonable to perceive that a similar outbreak may be reoccurred in the future. Recalling how harmful the impacts of today's outbreak could be and might take much time to resolve it, it is clearly preferred to equip ourselves with a preventive strategy for anticipating future similar outbreak.

For a long time, religiosity is recognized to heavily influence consumer values, attitudes, and actions in their daily life, including the consumption pattern (Agarwala et al., 2019; Tey et al., 2018). Due to its importance, today the food industry even has accommodated the religious-consumer groups, such as Kosher and Halal food. Amongst all religious-foods, Halal food is currently receiving worldwide attention as it yields a large market value of US\$ 1,303 billion and may keep increasing (Reuters & Standard, 2018). It occurs since the prediction of the largest population worldwide will happen in Muslims by 2050, and their economic growth is getting

stronger as well (Amalia et al., 2020). Though Halal food is an Islamic diet tradition, apparently it is also consumed by non-Muslims since it represents health and safety issues (Zulfakar et al., 2018). Due to its coverage on medical welfare and being the leading food choice of majority worldwide, this study attempts to present Halal food as the preventive strategy to lessen the risk of a future outbreak similar to COVID-19. This approach is proposed as it is perceived to expand consumer's consumption choice and may encourage changing the current wildlife consumption.

To increase the quality of the article, this study is written in several sections. In the second section, the relevant discussion about the attributes of Halal food is presented. Further, the rationale of how Halal food can lessen the risk of a future outbreak is explained in the third section. In the last section, this study concludes the discussion and presents the limitation that can be addressed in future studies.

## THE ATTRIBUTES OF HALAL FOOD

Coined from Arabic, Halal is a term in the Quran (the Holy book of Muslim) which implies "allowed, lawful, or permitted"; meanwhile, the opposite meaning of Halal is known as Haram, i.e. prohibited (Al-Teinaz, 2020). Only Allah (the name of God in Islam) can determine Halal-Haram matters. Basically all things are Halal, except the following (Kamali, 2010; Tieman & Hassan, 2015):

1. harmful (e.g. poisonous fish or plants, snake, etc.),
2. intoxicants (e.g. narcotics, alcohol),
3. impurity, filthy, inducing natural revulsion (e.g. carrion, blood, swine, etc.), and
4. illegally obtained.

As Halal principles as a part of Islamic teachings, any Muslims is necessary to adhere to it in their action and products, especially foods, as it shows the devoutness of Muslims (Al-Teinaz, 2020; Riaz & Chaudry, 2019). Further, when Muslims are in uncertain circumstances that fall between Halal and Haram, called *Shubha*, they should refer to the Islamic school of thought to have a clear stance of either avoiding or endorsing it (Tieman & Hassan, 2015).

In Quran, Halal is commonly paired with *Tayyib*, which can be simply conceived as "wholesome", "good", "clean", or "pure", despite its broad connotations (Armanios & Ergene, 2018). Similar to Halal-Haram which is contrary to each other, *Tayyib* also contradicts *Khabith* (foul, filthy, or bad) and *Najs* (impure or soiled) from which the Muslim must keep themselves away (Alzeer et al., 2018; Armanios & Ergene, 2018). Hence, Halal-*Tayyiban* food can completely describe not only the "permissible" food in Shariah but also "good" and "clean" to consume (Alhariri, 2020). According to (Armanios & Ergene, 2018; Dahlan, 2020; Kamali et al., 2013), when *Tayyib* is incorporated into Halal, it becomes an ethos to upgrade the conventional Halal concept which merely focuses on the Shariah animal slaughtering, for instance. In addition, Alzeer et al. (2018) likely regard *Tayyib* as the "process" of consuming food with the maximum level of hygiene (clean) and purity (no contamination) by avoiding toxic, unclean, and impure ingredients.

*Tayyib* makes Halal food becomes fit to consume. Such interpretation has recently linked more to medical welfare than before (Armanios & Ergene, 2018). Tieman (2016) argues that healthy Halal can be realized once it is combined with a strict practice of *Tayyib* ethics. Al-Teinaz et al. (2020) also posit that *Tayyib* in Halal food encompasses the organic, natural, and free of

harmful chemicals. Halal food cannot be *Tayyib* if it contains excessive additives, sugar, and antibiotic residual from the previous food processing since it potentially leads to various diseases, such as diabetes, cancer, obesity, etc. (Ireland & Rajabzadeh, 2011; Tieman, 2016). The Halal-*Tayyiban* concept also obviously discourages consuming the genetically modified (GMO) food as it potentially contains genes from haram sources, such as pig, and changes the nature of organisms which may harm the health and environment (Alhariri, 2020). Moreover, Halal food which is clearly contaminated with pathogenic microorganisms or toxic ingredients cannot establish the *Tayyib* principle since it is closer to consumer health risk (Kurniadi & Frediansyah, 2017). More explanation on the rationale of *Tayyib*'s function in establishing food safety for Halal food has been affirmed by other extant researches (Alzeer et al., 2018; Armanios & Ergene, 2018; Neio Demirci et al., 2016; Ur Raheema, 2018).

## DISCUSSION

*Tayyib* principle in Halal food has made it to be more easily accepted as “wholesome” beyond merely “permissible” according to Islamic principle. Hence, it can expand its acceptance beyond Muslim consumers. Islamic teaching encourages Halal food consumption as a means to promote human well-being since any Haram things are prohibited due to its basic reasons for impurity and harmfulness. Noting to this, to address the risk of wildlife consumption (e.g. bat) which is highly associated with COVID-19 as well as the previous outbreaks (i.e. SARS and MERS), this study argues that Halal food consumption can be preferred to prevent future risks of such outbreaks. Zoonosis virus has a higher chance to exist in wildlife and may cause further transmission which results in emerging infectious diseases, than the domestic animals (Travis et al., 2011).

In Islamic teaching, wildlife consumption is not fully prohibited, especially in an emergency situation. However, the consumption of any carnivores and omnivores are strongly discouraged. Ur Raheema (2018) explains the reason for this discouragement is because both animals eat the flesh of other animals to survive. Besides, Jump (2002) adds that consuming “creeping animals” like reptiles and “animals that live on carrion” like insects (except locust) is Haram. Based on this, consuming wildlife is clearly a matter that must be avoided in Islamic teaching. While Islamic teaching underlines to consume wholesome food as presented in Halal food, the act of not consuming wildlife should be considered as a risk-averse trait from harmfulness (e.g. pathogenic microorganism and toxic substances) and impurity, though no science exists yet to reinforce the explanation of it. Therefore, Halal food highly recommends consuming Halal domestic animals rather than the wildlife.

As implementing Halal concept in terms of action to a product, Islamic teaching advocates Muslims to know the source of foods they consume well, including how well the animal welfare has been carried out. Animal welfare is important in Islam as it represents *Tayyib*, the wholesome, in Halal food. According to Riaz & Chaudry (2019), the animal welfare should consider the mental and physical facets, starting from housing, feeding, breeding, biosecurity, transport, and slaughtering; all align with the Five Freedom in the Brambell Committee Report in the UK by 1965, i.e. freedom from thirst-hunger, discomfort, pain-injury-disease, to express most normal behaviors, and fear-distress. Based on this, Halal food with its domestic animal consumption and supporting animal welfare is perceived to lessen the risk of future similar outbreaks. Furthermore, such consumption preference can promote the preservation of endangered animals due to large wildlife consumption and being traded globally, as Greatorex et al. (2016) and Travis et al. (2011) have argued. In Islamic teaching, conserving the endangered animal has been known for a long

time as a part of vicegerency practice to preserve the environment and all creations, as Allah requires to man (Laxman et al., 2014).

According to Zabetakis et al. (2020), the clinical manifestations of COVID-19 are highly associated with the inflammatory system, and the higher risk occurs at people with noncommunicable diseases (NCD) due to their lower immune response. Unfortunately, the number of NCDs (i.e. cancer, cardiovascular diseases, diabetes, and chronic respiratory diseases) worldwide is quite significant as it contributes 71% death causes over 56.9 million cases (Bennett et al., 2018). Comprehending that this world is highly indicated with the vulnerable ones, a healthy lifestyle through healthy diets is urgently needed in designing the preventive strategy for future outbreaks. Many dietary recommendations have pointed Mediterranean dietary, the indigenous food of North Africa and the Middle East (e.g. vegetables, whole grains, olive oil, nuts, fish, less dairy product, less processed and red meat, etc.), as the best diets to maintain human well-being. It is better compared to others, such as Western diets (e.g. sweets, red meats, processed foods), which commonly promote the risks of NCDs (Abenavoli et al., 2018; Aboul-Enein, 2015; Bower et al., 2016; Zabetakis et al., 2020).

As Mediterranean diets underline more on the plant-based foods, apparently such a diet also endorses Islamic teaching through Halal food. Muhammad SAW exemplified the preference for eating less meat for daily consumption. Besides, the Mediterranean diets are often mentioned in Quran, such as 2:61; 16:11; 36:33; 80:27-31; and so on (Aboul-Enein, 2015; Armanios & Ergene, 2018). Further, Halal food also discourages the usage of chemicals or pesticides in the planting process as it may leave some intoxicant residues while being consumed. Based on this, Halal food can act as a prevention to the risk of similar outbreaks, not only through consuming domestic animals with proper animal welfare but also recommending plant-based foods as the best diets for human well-being. Though processed foods and addictive foods are still considered Halal due to their raw materials, they are still considered far from *Tayyib* (wholesome) as many NCDs emerge due to such consumptions. Therefore, *Tayyib* can establish Halal food as healthy food to consume.

Agreeing Alzeer et al. (2018), *Tayyib* in Halal food should be realized as a part of the process to reach the maximum hygiene and purity. Thus, the safety of Halal food should not only be built by having a healthy and safe food source (i.e. domestic animal and plant-based food) but also by incorporating the HACCP system. Generally, to establish safety, the food industry has widely implemented Hazard Analysis and Critical Control Point (HACCP), a management system to eliminate the potential physical, chemical, and microbiological hazards. Though it sounds good to carry out, HACCP was only advisable at first until an outbreak of *Escherichia coli* occurred in Scotland in 1996 (Al-Mazeedi et al., 2020). Implementing HACCP does not become an exception for the Halal food industry as it clearly aligns with *Tayyib*. However, further criteria based on Islamic teaching should be added in HACCP, like avoiding Haram, najis, Mashbooh (doubtful), and Makruh (inappropriate) (Al-Mazeedi et al., 2020). In detail, how HACCP supports the *Tayyib* aspect of Halal food can be seen on the assessments of prerequisite programs in assuring the production environment already clean, safe, and hygiene (Al-Mazeedi et al., 2020, 2020; Kamali, 2010). Accordingly, such programs are implemented in wider scope such as management of material purchasing, waste disposal, personal hygiene, warehousing, etc. (Al-Mazeedi et al., 2020; Ur Raheema, 2018). These criteria should be fulfilled to establish the claim of safety in food products. Establishing food safety in terms of source and the management system like HACCP can strengthen Halal food to be recommended as the preventive strategy for lessening the risk of future similar outbreak.

The claim of Halal in Halal food is a credence status which is hard to prove (Sosianika & Amalia, 2020). Furthermore, many recent counterfeit cases have made Halal integrity be more necessary to notice, starting from the suppliers to the point of consumption, known as “from farm to fork”. Hence, Halal food must incorporate the principle of the Halal supply chain, which has been lately developed in the Halal industry. Principally, all members of the supply chain (i.e. supplier, production, distributor, and retailing) must ensure that each business activity does not involve any direct contact between Halal food and Haram substances. Further, Tieman (2011) adds that the risk management of contamination of Haram matters should be included while designing the Halal supply chain. For example, risks of contamination exists fewer in dry and unitized products than in wet and bulk products, thus the contamination risk during transportation should be considered based on such product characteristics knowledge.

Due to its challenging task, maintaining Halal integrity throughout the supply chain will need a right intention and strong commitment from all members who participate. To realize such a commitment, it is necessary for the members to obtain Halal certification from Halal certification bodies which can ease the consumers to trust their Halal integrity. Understanding the importance of Halal integrity in Halal food provides further assurance of Halal food that can lessen the risk of future similar outbreaks. According to Daszak et al. (2020) and Greatorex et al. (2016), the initial cases of COVID-19 were often associated with a wet market that commonly lacks concerns in biosafety as the trades of wildlife and fresh products are taken place alongside. In terms of Halal supply chain perspective, such a situation is necessary to avoid as the risk of contamination with Haram (e.g. pathogenic microorganisms, toxic substances, etc.) may highly occur. To maintain the Halal status, Halal integrity must be established in the distributor and retailer environment as well.

With these explanations, the food industry should not still perceive Halal food as the potential market only due to the increasing Muslim population worldwide. Yet, Halal food means more than that since through *Tayyib* (wholesome) it can solve more medical welfare issues, such as food safety and healthy food, and its integrity must be assured until the point of consumption. Further, due to *Tayyib*, Halal food can gain more acceptance in non-Muslim consumers since it accommodates contemporary issues like animal welfare, organic food, and vegetarianism which attempt to be closer to a sustainable lifestyle. It is necessary for the food industry to obtain Halal certification from official Halal certification bodies which acknowledge their commitment and realization to maintain Halal integrity. Thus, addressing the risk of future similar outbreaks, the food industry can focus on providing Halal foods from domestic animals with proper animal welfare and promoting more plant-based foods. It is chosen as both food sources can result in a smaller risk of infectious disease and promote human well-being.

Apparently, the responsibility for keeping the world far from future similar outbreaks heavily resides on the consumer side. Obviously, changing consumption choices can affect our sustainability. This study encourages consumers to take Halal food into consideration for their daily consumption due to its safety and health status. The Halal supply chain also exists for consumers to accommodate the integrity issue of Halal status. Moreover, Halal food can be a suitable choice for current “new normal” as demanding people to live in a healthier and cleaner way. Principally, a prudent act to lessen the risks of future similar outbreaks can be shown by our choice of consuming wholesome food, i.e. Halal food.

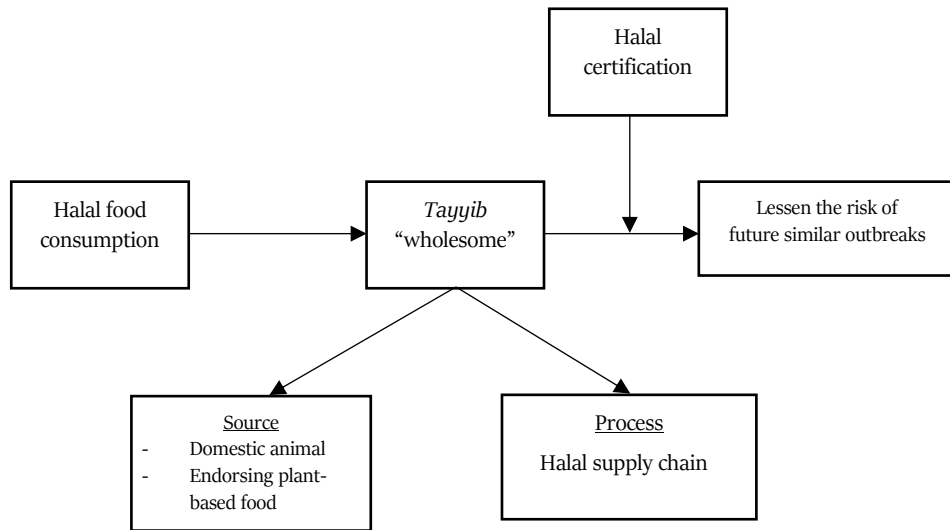


Figure 1. The conceptual model of Halal food consumption to lessen future similar outbreaks

## CONCLUSION

This study aims to propose Halal food as a preventive strategy to lessen the risks of future outbreaks similar to COVID-19. It can be realized by pursuing *Tayyib* (wholesome) in Halal food which more sounds the medical welfare. Domestic animals with proper animal welfare and plant-based foods are kinds of Halal foods that offer safety and healthy food to consume. The food industry is an important stakeholder as the provider of Halal food which needs to be equipped with Halal certification to support the integrity of Halal claim throughout its supply chain. However, this act should also be encouraged by the governments in facilitating Halal certification for the food industry by coordinating with Halal certification bodies. The shifting towards a more prudent consumption by consuming Halal food needs to be performed by consumers as they hold a vital role in creating demands. Apart from the contribution of this study on presenting Halal food as a way of dealing with future similar outbreaks, a limitation still exists to be addressed in future studies. This study was fully built on the reviews of relevant literature, hence the model proposed in fig. 1 should be tested in further study.

## REFERENCES

- Abenavoli, L., Di Renzo, L., Boccuto, L., Alwardat, N., Gratteri, S., & De Lorenzo, A. (2018). Health benefits of Mediterranean diet in nonalcoholic fatty liver disease. *Expert Review of Gastroenterology & Hepatology*, 12(9), 873–881.  
<https://doi.org/10.1080/17474124.2018.1503947>
- Aboul-Enein, B. H. (2015). Reflections of the Holy Quran and the Mediterranean diet: A culturally congruent approach to obesity? *Mediterranean Journal of Nutrition and Metabolism*, 8(2), 149–

154. <https://doi.org/10.3233/MNM-150041>
- Agarwala, R., Mishra, P., & Singh, R. (2019). Religiosity and consumer behavior: A summarizing review. *Journal of Management, Spirituality & Religion*, 16(1), 32–54. <https://doi.org/10.1080/14766086.2018.1495098>
- Alhariri, M. (2020). Halal and Genetically Modified Ingredients. In Y. R. Al-Teinaz, S. Spear, & I. H. A. Abd El-Rahim (Eds.), *The Halal Food Handbook* (1st ed., pp. 169–182). John Wiley & Sons, Inc.
- Al-Mazeedi, H. M. M., Al-Teinaz, Y. R., & Pointing, J. (2020). Halal and HACCP: Guidelines for the Halal Food Industry. In Y. R. Al-Teinaz, S. Spear, & I. H. A. Abd El-Rahim (Eds.), *The Halal Food Handbook* (1st ed.). John Wiley & Sons, Inc.
- Al-Teinaz, Y. R. (2020). What is Halal Food? In Y. R. Al-Teinaz, S. Spear, & I. H. A. Abd El-Rahim (Eds.), *The Halal Food Handbook* (1st ed., pp. 9–26). John Wiley & Sons, Inc.
- Al-Teinaz, Y. R., Regenstein, J. M., Lever, J., Katme, A. M., & Unsorfer, S. (2020). The Halal and Kosher Food Experience in the UK. In Y. R. Al-Teinaz, S. Spear, & I. H. A. Abd El-Rahim (Eds.), *The Halal Food Handbook* (1st ed., pp. 333–342). John Wiley & Sons, Inc.
- Alzeer, J., Rieder, U., & Hadeed, K. A. (2018). Rational and practical aspects of Halal and Tayyib in the context of food safety. *Trends in Food Science & Technology*, 71, 264–267. <https://doi.org/10.1016/j.tifs.2017.10.020>
- Amalia, F. A., Sosianika, A., & Suhartanto, D. (2020). Indonesian Millennials' Halal food purchasing: Merely a habit? *British Food Journal*, 122(4), 1185–1198. <https://doi.org/10.1108/BFJ-10-2019-0748>
- Armanios, F., & Ergene, B. A. (2018). *Halal food: A history*. Oxford University Press.
- Bennett, J. E., Stevens, G. A., Mathers, C. D., Bonita, R., Rehm, J., Kruk, M. E. (2018). NCD Countdown 2030: Worldwide trends in non-communicable disease mortality and progress towards Sustainable Development Goal target 3.4. *The Lancet*, 392(10152), 1072–1088. [https://doi.org/10.1016/S0140-6736\(18\)31992-5](https://doi.org/10.1016/S0140-6736(18)31992-5)
- Bower, A., Marquez, S., & de Mejia, E. G. (2016). The Health Benefits of Selected Culinary Herbs and Spices Found in the Traditional Mediterranean Diet. *Critical Reviews in Food Science and Nutrition*, 56(16), 2728–2746. <https://doi.org/10.1080/10408398.2013.805713>
- Bruinen de Bruin, Y., Lequarre, A.-S., McCourt, J., Clevestig, P., Pigazzani, F., Zare Jeddi, M., Colosio, C., & Goulart, M. (2020). Initial impacts of global risk mitigation measures taken during the combatting of the COVID-19 pandemic. *Safety Science*, 128, 104773. <https://doi.org/10.1016/j.ssci.2020.104773>
- Dahlan, M. (2020). Animals in Islam and Halal Ethics. In Y. R. Al-Teinaz, S. Spear, & I. H. A. Abd El-Rahim (Eds.), *The Halal Food Handbook* (1st ed., pp. 41–46). John Wiley & Sons, Inc.
- Daszak, P., Olival, K. J., & Li, H. (2020). A strategy to prevent future epidemics similar to the 2019-nCoV outbreak. *Biosafety and Health*, 2(1), 6–8. <https://doi.org/10.1016/j.bshealth.2020.01.003>
- Greatorex, Z. F., Olson, S. H., Singhalath, S., Silithammavong, S., Khammavong, K., Fine, A. E. (2016). Wildlife Trade and Human Health in Lao PDR: An Assessment of the Zoonotic Disease Risk in Markets. *PLOS ONE*, 11(3), e0150666. <https://doi.org/10.1371/journal.pone.0150666>
- Guo, Y.-R., Cao, Q.-D., Hong, Z.-S., Tan, Y.-Y., Chen, S.-D., Jin, H.-J., Tan, K.-S., Wang, D.-Y., & Yan, Y. (2020). The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak – an update on the status. *Military Medical Research*, 7(1), 11. <https://doi.org/10.1186/s40779-020-00240-0>
- Ireland, J., & Rajabzadeh, S. A. (2011). UAE consumer concerns about halal products. *Journal of Islamic Marketing*, 2(3), 274–283. <https://doi.org/10.1108/17590831111164796>
- Jump, T. O. (2002). Food rules in the Koran. *Scandinavian Journal of Nutrition*, 46(3), 137–139.



- <https://doi.org/10.1080/11026480260363279>
- Kamali, M. H. (2010). The halal industry from a shari'ah perspective. *Islam and Civilisational Renewal*, 1(4), 595–612.
- Kamali, M. H., International Institute of Islamic Thought, & International Institute of Advanced Islamic Studies. (2013). *The parameters of ḥalāl and ḥarām in Shari'ah and the ḥalāl industry*.
- Kurniadi, M., & Frediansyah, A. (2017). Halal Perspective of Microbial Bioprocess Based-Food Products. *REAKTOR*, 16(3), 147. <https://doi.org/10.14710/reaktor.16.3.147-160>
- Laxman, L., Ansari, A. H., & Zawawi, M. (2014). *The Islamic Approach to Conserving Biodiversity For Global Sustainability: An Exploration*. 18.
- Neio Demirci, M., Soon, J. M., & Wallace, C. A. (2016). Positioning food safety in Halal assurance. *Food Control*, 70, 257–270. <https://doi.org/10.1016/j.foodcont.2016.05.059>
- Reuters, T., & Standard, D. (2018). *State of the Global Islamic Economy 2018/19*. Thomson Reuters.
- Riaz, M. N., & Chaudry, M. M. (Eds.). (2019). *Handbook of halal food production*. CRC Press, Taylor & Francis Group, CRC Press is an imprint of the Taylor & Francis Group, an informa business.
- Rothan, H. A., & Byrareddy, S. N. (2020). The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *Journal of Autoimmunity*, 109, 102433. <https://doi.org/10.1016/j.jaut.2020.102433>
- Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection: Origin, transmission, and characteristics of human coronaviruses. *Journal of Advanced Research*, 24, 91–98. <https://doi.org/10.1016/j.jare.2020.03.005>
- Sosianika, A., & Amalia, F. A. (2020). Uncovering Indonesian Millennial's Halal Food Purchase Intention: Halal Value and Halal Logo as the Antecedents. *International Journal of Applied Business Research*, 2(01), 31–45. <https://doi.org/10.35313/ijabr.v2i01.91>
- Tey, Y. S., Arsil, P., Brindal, M., Liew, S. Y., Teoh, C. T., & Terano, R. (2018). Personal values underlying ethnic food choice: Means-end evidence for Japanese food. *Journal of Ethnic Foods*, 5(1), 33–39. <https://doi.org/10.1016/j.jef.2017.12.003>
- Tieman, M. (2016). Halal Diets. *Islamic and Civilisational Renewal*, 7(1).
- Tieman, M., & Hassan, F. H. (2015). Convergence of food systems: Kosher, Christian and Halal. *British Food Journal*, 117(9), 2313–2327. <https://doi.org/10.1108/BFJ-02-2015-0058>
- Travis, D. A., Watson, R. P., & Tauer, A. (2011). The spread of pathogens through trade in wildlife. *Revue Scientifique et Technique de l'OIE*, 30(1), 219–239. <https://doi.org/10.20506/rst.30.1.2035>
- United Nations. (2020, April 6). *The Social Impact of COVID-19*. <https://www.un.org/development/desa/dspd/2020/04/social-impact-of-covid-19/>,
- Ur Raheema, S. F. (2018). Assuring Tayyib from a food safety perspective in Halal food sector: A conceptual framework. *MOJ Food Processing & Technology*, 6(2). <https://doi.org/10.15406/mojfpt.2018.06.00161>
- WHO. (2020a). *Coronavirus disease (COVID-19) Pandemic*. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- WHO. (2020b, March 23). *COVID-19 and NCDs*. <https://www.who.int/who-documents-detail/covid-19-and-ncds>
- Zabetakis, I., Lordan, R., Norton, C., & Tsoupras, A. (2020). COVID-19: The Inflammation Link and the Role of Nutrition in Potential Mitigation. *Nutrients*, 12(5), 1466. <https://doi.org/10.3390/nu12051466>
- Zhang, L., & Yin, F. (2014). Wildlife consumption and conservation awareness in China: A long way to go. *Biodiversity and Conservation*, 23(9), 2371–2381. <https://doi.org/10.1007/s10531-014-0708-4>

Zulfakar, M. H., Chan, C., & Jie, F. (2018). Institutional forces on Australian halal meat supply chain (AHMSC) operations. *Journal of Islamic Marketing*, 9(1), 80–98. <https://doi.org/10.1108/JIMA-01-2016-0005>