



كيفية إنتاج الغذاء الحلال: دليل شامل عن التشريعات الإسلامية والممارسات الصناعية الجيدة والبرامج الفعالة (دراسة مرجعية)

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How to produce Halal Food: A Comprehensive Guide on Islamic Legislation, GMP, and Effective Programs(Rivew Article)

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الملخص:

أصبحت كلمة حلال معروفة على نطاق واسع حول العالم وهي تعني ما أحل للمسلمين شرعاً حسب ما ورد في الشريعة الإسلامية، ويُقصد بالطعام الحلال الطعام والشراب أو مكوناتهما، إضافة للأدوية، المسموح بها والتي يجب أن تستوفي شروطاً تلزم صحة وسلامة المستهلك، ونتيجة لازدهار تجارة إنتاج الأغذية الحلال، والتي وصلت لما يقارب 4 ترليون دولار لعام 2022، اتجهت أغلب الدول المصدرة للغذاء بإنتاج الغذاء الحلال، ولا يخفى أن السبب الرئيسي للإنتاج هو ربحي وأن أغلب الجهات المصدرة للأغذية الحلال هي دول غير مسلمة، إضافة إلى اختلاف معايير اتباع الإسلام في تعريف ماهية الحلال والحرام بين الدول المسلمة، عليه؛ فإن صلاحية المنتج للمستهلك المسلم غير مضمونة وتفرض اتخاذ تدابير توفر وتؤكد إنتاج أغذية حلال تحت الشروط والمعايير المطابقة للشرع الإسلامي بدءاً من المكونات ووصولاً لأماكن توزيعها على المستهلكين، وتكمن هذه الحلول في توفير برنامج إنتاجي للغذاء الحلال يعتمد أساسها على تعريف الشريعة الإسلامية للأغذية الحلال والحرام والشروط اللازمة لتوفرها للحصول على المواد الخام وطرق التصنيع والتغليف والتوزيع، وفي هذه الدراسة سيتم تفصيل المعايير والاشتراطات المتبعة لإنتاج أغذية حلال وطرح أفضل البرامج المتبعة في إنتاج الأغذية الحلال.

الكلمات الدالة: الغذاء الحلال، التشريعات الإسلامية، المستهلكين، طرق التصنيع، ممارسات التصنيع الجيد.

Abstract

The word halal has become widely known around the world; it means what is legally permissible for Muslims according to what is stated in Islamic law. Due to the Halal food production trade, which reached nearly 4 trillion dollars in 2022, most of the food– exporting countries tended to produce halal food. It is not hidden that the main reason for production of halal food is financial and that most of the exporters of halal food are non– Muslim countries, in addition, the variation in the interpretation of Islam to identify the halal and haram among Muslim countries, so; the validity of the product is for the Muslim consumer It is not guaranteed and requires taking measures to provide and confirm the production of halal food under conditions and standards that comply with Islamic law, starting from the ingredients and ending with the places where they are distributed to consumers. These solutions lie in providing a production program for halal food, the basis of which is based on the definition of Islamic law for halal and forbidden foods and the conditions that must be met to obtain raw materials, manufacturing methods, packaging and distribution. In this study, the standards and requirements used for the production of halal food will be detailed and the best programs used in halal food production will be presented.

Keywords: alal food, Islamic legislation, consumers, manufacturing methods, good manufacturing practices(GMP)..

1. Introduction

Halal, meaning "permissible" in Arabic, refers to food and beverages that adhere to Islamic dietary laws. These laws outline the specific requirements and restrictions for the consumption of food by Muslims, while the basic principles of Halal food standards are universal. Islamic law is concerned with the law of Muslim consumption of pure food that is free from harm and contamination, results in preserves the health of the body and mind. The primary source for Halal food standards is the Quran, and the Hadith, the sayings and actions of the Prophet Muhammad (peace be upon him). However, the interpretation of these texts may differ among scholars and religious authorities in different Muslim countries. This variance often leads to variations in the understanding and implementation of Halal regulations . Halal food has negative effects on health, according to the Islamic religion, halal food is defined as the fact that none of its components contain any substance that contradicts the doctrine of Islamic law, also not prepared, manufactured, transported, or stored using any tool or method that violates the law of Islam, in addition, food must not be exposed to any direct contact with any prohibited substance during trading (Voak& Fairman, 2021).

Market opportunities are the possibilities that the market provides for the products and services demanded by the customers. These opportunities are determined by the trends and changes occur in the market due to the economic, social, cultural, technological, and political factors (Anderson & Coughlan, 1987). For halal food, as Hussein has published (2016), there are many market opportunities and trends that affect the production, consumption, and trade. Some of these opportunities and trends are: Increasing the number of Muslim population and the awareness of the halal food requirements, in

addition, technology development, innovation, standards, certification, and traceability to ensure the safety and quality of halal food that led to increase the demand for healthy, sustainable, socially and environmentally responsible food.

The surge in demand for halal food can be attributed to shifting food consumption patterns. Traditionally, halal foods were confined to Muslim households (Zaher, 2017). However, this landscape has transformed significantly. Nowadays, five-star hotels, popular eateries, and even fast-food chains offer halal options, responding to people's preference for hygienic and halal meals. To remain competitive, food caterers adapt to these changing preferences and prioritize halal offerings (Heri *et al.*, 2020). Notably, even airlines now provide halal food to their clients, reflecting a global trend in aviation. The growing awareness of the value of halal foods further fuels the demand for these commodities (Nor & Norizan, 2014). The need for halal food is increasing around the world to meet the requirement of Muslims and non-Muslims in various countries, especially after the increase in awareness about the health and cleanliness of halal products and its absence from harmful manufactured materials (Tohe & Kholisin, 2021). Increase the demand for healthy, sustainable, socially and environmentally responsible food was exploited to increase the investment, cooperative, and competitive opportunities in the global halal market (Hashed, 2023). However; this resulted in the necessity of providing the needy with this food, as the production revenues reached Halal, which is expected to reach about \$4.6 trillion in 2020, with an accelerated growth rate exceeds the barrier 5% (Nisreen, 2015; Tohe & Kholisin, 2021). All communities have come to exploit the production field of Halal Food as an economic door to provide financial return. It is not conceivable to trust imported products from countries that do not understand Sharia standards and focus only on profit measures due to the strong demand for halal foods by consumers around the world, as many of non-Muslims are interested in consuming halal food because they know about its purity and the absence of any pernicious or harmful substances to the body (Hamadah *et al.*, 2016).

The current status of food security, which focuses on providing food to consumers, does not consider revising issues related to halal food. Most food-producing companies are interested in gaining the trust of international organizations, such as the World Health Organization and the Food Safety Organization; on the other hand, these organizations do not accord with lawful implementation for halal food processing (Zaher, 2017). The situation has made the Islamic countries take special legislative decisions related to the production of halal food, setting standards and conditions required during trading. Halal food supply chain compliance is based primarily on the trust of all actors in the supply chain that will ensure cleanliness, safety and perfection of the products services they provide to the countries of consumption, which involves a basic commitment to product management, communication and financial practices within the supply chain to result with a comply with Islamic law (Voak & Fairman, 2020).

2. Basics of Halal food production

The basis for the production of any halal food depends on the application of what is stipulated in Islamic law, according to religious texts that included from Quran or the Sunnah stipulates forbidding, such as pig, wine, dead meat, blood, strangled, shot, head-butted and predatory animals except for hyenas, in addition, it prohibit all kinds of animals that ordered to be killed, like the snake, scorpion, crows, and kite bird, moreover, it is forbidden for Muslims to consume animals that that is prohibit to kill, like ants, and bees (Zaher, 2017).

2.1. Provide raw materials

Any raw materials, food ingredients (excluding live animals) or other materials used in manufacturing processes should be rejected if they contain parasites, unwanted micro-organisms, pesticides, toxic substances or decomposing materials (Nisreen, 2015). The ingredients used in food production and processing can significantly impact the Halal status of a product. While the basic principles of avoiding pork, alcohol, and other forbidden substances are consistent, there may be divergences in the acceptance of certain additives, flavourings, and processing methods (Voak & Fairman, 2020).

2.2. Manufacturing

Machinery, tools and production lines used in the processing of Halal food must not be made of non-Halal materials or contain non-Halal materials according to Islamic law, they must only be used for Halal food, for example, the amount of alcohol must be reduced to less than 0.5% in the final flavoured product. Some countries or customers require lower provisions or even no alcohol for products brought into their countries (Ricca, 2011).

2.3. Food transportation (including import and export)

Preventing cross-contamination is crucial to maintaining the integrity of Halal food. Muslim countries vary in their approaches to ensure the separation of Halal and non-Halal products during production, storage, transportation, and handling. The level of awareness and implementation of good manufacturing practices (GMP) and Hazard Analysis and Critical Control Points (HACCP 7 CCP) systems also varies, leading to differences in the overall quality assurance of Halal food (Anderson & Coughlan, 1987). To transport halal foodstuffs, a license must be obtained from the competent authorities, in addition to transporting foodstuffs at appropriate temperatures and in a manner of preventing contamination to maintain their safety. Food transport condition includes reusable containers that must keep clean and maintained (Made& Prima, 2022).

2.4. Workers in the productive sector

Building human capability is essential to ensure halal supply chain compliance. It is a vital step of the compliance for producing food at the required standards, human capability provides processing not only

in meets with regulatory requirements and halal certification, it is capable for establishing respectful practice and ensured products (Voak & Fairman, 2021). The most important example to clarify this point is slaughtering practices; it is one of the key aspects of Halal food standards. While all Muslim countries require animals to be slaughtered by a Muslim who recites the name of (Allah) before the act, there are differences in the specific slaughtering techniques permitted. Some countries may allow stunning before slaughter, whereas others prohibit it entirely. The use of mechanical methods, such as mechanical stunning or post-cut stunning, also varies across nations. This application has concerned importing countries, especially when it imported slaughtered animals from non-Muslim countries (Nisreen, 2015).

Job knowledge (the how) and Shariah knowledge (the why) are required for developing human capability along the Halal supply chain, the observant Muslim worker does not violate the rules of his religion and applies them to the fullest, unlike others who may evade the performance of duty and take advantage of the lack of supervision, which leads to a defect in the production process and lack of providing food in accordance with what is permitted by Islamic law (Voak & Fairman, 2020). Slaughter should only be performed by a mentally sound, articulate, practicing Muslim who fully understands the basic rules and conditions regarding slaughter (Zaher, 2017). The regulations of halal food production and processing are stringent and must be strictly followed. The most common steps taken include checking the ingredients used, making sure that any animal products used in the production process are slaughtered according to Islamic laws and regulations, making sure that the equipment and environment used in production are clean and free from any contamination that could violate Islamic law. Additionally, the storage and distribution of halal food must also adhere to Islamic regulations (Mansor, 2020).

2.5. Good Manufacturing Practices (GMP)

It is a set of standards for food and beverage industry which aims to ensure that products are consistently manufactured with a quality suitable for their intended use (Ricca, 2011). In the production aspect of halal food, these systems target all regulations that must be observed during all stages of halal food chain, including the processes of primary production, manufacturing, preparation, processing, packing, packaging, preparation, transportation, storage, distribution, display, and sales, with the aim of Producing food that is safe and fit for consumption under the terms listed accordance to Islamic law (Yunes *et al.*, 2020). Additional requirements for Halal and non-Halal products must be included, transporting these products should be in a separate and different manner to avoid any exposure to contamination of Halal products with a non-Halal product in the event of a leakage incident along the journey. Status in vehicles must also be controlled and maintained according to quality standards (Ricca, 2011; Yunes *et al.*, 2020). Quality control responsibilities shall be described in writing and shall include but not be limited to responsibility for approving specifications, approving test procedures, approving verification plans and reports, sampling, approving reference standards, analytical investigations and evaluation of results, testing materials, and providing analytical reports approval or rejection of raw

materials, packaging materials and active ingredients that collect data to support retest dates, or stability testing (Ricca, 2011).

2.6. Labelling of Halal food products

Halal food is clearly labelled as a sign for its availability for Muslim consumers. The label must include a name of the Halal certification organization added to the date of the certificate, Labelling is also important for the food producers as it allows them to distinguish between their products and non-halal food, this process leads to increase sales and build trust between producers and consumers (Nisreen, 2015). However; some Muslim countries have centralized bodies responsible for certifying Halal food, while others rely on various local or regional authorities. These differing certification processes can lead to variations in the recognition and acceptance of Halal products across borders, affecting trade and consumer confidence (Voak & Fairman, 2020). Malaysia serves as an excellent example of an exported country that excels in halal food production (table 1). This sector contributes nearly 10% of the country's Gross Domestic Product (GDP). The halal food industry intersects with and enhances a wide range of sectors, including food and beverage retail, food manufacturing, pharmaceuticals (Siddique & Moha, 2020).

Table 4: Major halal exported product in 2012 and 2013

MAJOR HALAL EXPORTED PRODUCT	2012 (RM MILLION)	2013 (RM MILLION)
Ingredient	10,615.18	10,621.45
Food and beverage	12,276.96	13,272.18
Palm oil derivatives	5,061.57	4,828.29
Industrial chemical	1,933.82	1,686.99
Cosmetic and personal care	1,731.83	2,025.95
Pharmaceutical	375.59	407.15
TOTAL	RM32 BILLION	RM32.8 BILLION

Source: Nor & Norizan, 2014.

Malaysia's commitment to halal standards, certification system, and proactive engagement have solidified its position as a halal food powerhouse, the Malaysian comprehensive standard for Halal food (MS1500, 2004) embodies the foundation of success (table 2).

Table (2): Halal food production practices as approved by the Malaysian Constitution (MS: 1500, 2009)

(Task 1) HHACCP team Assembling (Task 2) Product Description (Task 3) Identification of products intended use (Task 4) Construction of flow diagram (Task 5) Onsite verification and confirmation of flow diagram	Five Preliminary Steps
(Task 6) Conduct a Haram Substance Analysis & Hazard Analysis (Task 7) Determine the Halal Critical Control Points (HCCPS) &(CCPs) (Task 8) Establish Halal Critical Limits & Critical Limits (Task 9) Establish HCCP & CCP monitoring procedures (Task 10) Establish corrective action (Task 11) Establish Verification Procedures (Task 12) Establish Documentation and Record Keeping	Seven HHACCP Principles

Source: (MS: 1500, 2009).

According to what Ricca (2011) has published, many countries have developed a comprehensive standard for Halal food such as MS1500: 2004 and SFDA that helps food manufacturers to control and provide guidance in the processing of products in order to satisfy Sharia, HACCP, and Good Manufacturing Practices (SFDA, 2003). All of these lists lead to encourage food and drug producers to adapt and maintain additional requirements and standards other than GMP to meet Halal requirements. These requirements and standards include Hazard Analysis Critical Control Point (CCP), (HACCP), Sanitation Standard Operating Procedures (SOPs), ISO 9000, and Codex Alimentarius. The process of applying Sharia standards facilitates the production of halal food within Muslim countries; however, in time that is full with economic rapidity science and technology, Muslim nor become increasingly difficult in choosing and determining whether the foods and drinks that used daily life are fulfil in Islamic requirement or not and legitimate eaten (Tengku & Hasan, 2016; Abdul Rohman *et al.*, 2021). ensuring that imported food is free of any prohibited materials requires continuous investigation processes which include conducting analyses to reveal its validity and purity from any violations of Islamic law, such as pork fat, which is widely used in most industries nutritional (Ali *et al.*, 2021). There are multiple issues come up during the process of the halal products, such as halal counterfeiting, halal fraud, food cross-contamination. One of the most sensitive issues in the Halal industry is the integrity of the food supply chain. As a result of scientific development in the field of analysis in general and food analysis in

particular, modern techniques are used to detect and determine whether or not they are valid for a Muslim consumption. Among the most famous of these methods: PCR and Real time PCR (Hamadah *et al.*, 2016).

Polymerase chain reaction (PCR) is a technique that makes many copies of a specific part of the DNA by constantly transferring the content between varying temperatures and using a number of materials that help in the amplification process. The process requires DNA sample, DNA primes, Raw nucleotides and TAG polymerase. On the other hand, (RT-PCR) is a modified version of the PCR device. It is characterized by its ability to detect small amounts of DNA by using radioactive particles called fluorescent dyes to indicate the presence of the target acid, which is captured by a lens attached to the device. The greater the radiation of the radioactive particles, the more this indicates the presence of quantities of the target DNA (Abdul Rohman *et al.*, 2021). Food analysis methods differ according to the type of substance to be detected. There is no single chart provides a list of all possible food material that may contain forbidden ingredients (Tengku & Hasan, 2016).

3. Conclusion

While the underlying principles of Halal food standards are rooted in Islamic teachings, the interpretation and application of these standards vary across Muslim countries. Differences in religious interpretations contribute to this variation. It is essential to recognize and respect these differences, as they reflect the diverse cultural and religious practices within the global. Good Manufacturing Practices (GMP) provide scope for legal control over the manufacture of halal products across all production stages, through its most advanced control system in the Islamic world, due to its strict standards that guarantee more confidence and protection for Muslim consumers.

4. Recommendations

It is clear that there is a need to cooperate between authorities in order to ensure that halal products are produced to the highest standards. It is also important to ensure that the HACCP system is in place to ensure that all products meet the Islamic criteria for halal. Finally, having a unified halal logo on all products is important for customers to be able to trust all halal products are maintaining halal regulation.

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