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Halal Critical Ingredients in Cakes and Pastries Production

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Abstract

In cakes and pastries production, Halal ingredients are very essential and should be emphasized by the manufacturers. This is so because the Halal status of cakes and pastries is highly dependent on the ingredients utilized in their production. While there are many issues in the Halal food industry, adulteration of ingredients is one of the major issues in cakes and pastry production as the ingredients are primarily elusive and expensive. In fact, utilization of *mashbooh* (doubtful) ingredients especially among the groups of food additives is also a common issue. This research, therefore, attempts to identify the Halal critical ingredients in cake and pastry production by utilising a qualitative methodology involving interviews and library research as data collection methods. The findings of the research demonstrate that the common Halal critical ingredients in cake and pastry production are food additives, dairy products, processed meat and poultry, and microbial products. The findings of this paper could be made as a reference for those involved in cake and pastry production to ensure compliance with the Halal aspect and Shariah requirements of Muslim dietary law. It is also suggested that further research be conducted on the management of Halal critical ingredients in cakes and pastry production which involved the process of monitoring, selection, and storage management.

Keywords: Critical Ingredients, Halal Critical Ingredients, Halal Cake and Pastries

Introduction

In Halal cake and pastry production, the critical ingredient is the priority that must be strictly monitored as the ingredients used in cakes and pastries are easily exposed to non-Halal ingredients such as additives, preservatives, and food enhancers. In fact, not many bakery and pastry premises have been certified Halal by Jakim (Wan Ismail et. al) compared to other Halal food products, which may be resulted from difficulty in the sourcing of Halal-certified ingredients. Even though the industry of cake and pastry is just getting developed in the Halal food industry, there were various recorded cases involving ingredients adulteration as well as fabrication of Halal certificates by those involved in this industry (Ali, 2021; Abdul Rahman, 2014; Vanar, 2021; Harakahdaily, 2020; Rafiqah Dahali, 2021).

Compared to other ready-to-eat products, most ingredients and additives that are utilized in bakery and pastry production are processed food components with uncertain Halal status (Ismail et al., 2020). The situation becomes even more complex when many small home bakeries are depending on the repacked item from an independent bakery supply store, with unclear Halal status on the repacked supplies (Sari et. al., 2022). These arising Halal issue related to cake and pastries has led to consumer confusion and consequently will affect the selection decision of Halal product among consumers. Besides, consumers also tend to assess Halal products by the familiarization of ingredients labeled in the Halal product (Haryani et al., 2017).

Due to the arises issues related to Halal cakes and pastries, especially concerning ingredients utilized in the production, this study, therefore, attempts to identify the common Halal critical ingredients in cake and pastry production so that appropriate management of the Halal critical ingredients in cake and pastry production could be developed and be applied accordingly.

Literature Review

Most people acknowledge that cake and pastry require many critical ingredients as it was readily served and require utilization of food preservation and food additives which are respectively known as critical for their sources and process. The major issue that arises concerning the utilization of these Halal critical ingredients in cake and pastry production is the uncertainty of their Halal status. For example, food additives such as gelatin, enzymes, food coloring, and other related ingredients utilized in the production process may be sourced from non-Halal materials.

The issues are more complicated if the ingredient suppliers do not apply for Halal certification from the Halal authorities. This could be seen in an issue reported in 2014 where cake and pastry ingredient suppliers were found to fabricate the Halal logo and certification in a supermarket at Taman Midah, Cheras, Kuala Lumpur (Rahman, 2014). Besides from the Halal technical issue, the spread of fake news regarding Halal issues are also significant in the cake and pastry industry. This is because the cake and pastry industry has just evolved in the Halal industry and the emergence of fake news could bring down the image of this industry. The arisen issues could also increase fear among Muslim consumers in purchasing Halal products and eventually impact the Halal industry as well.

In addition, according to Fadzilillah et al (2011), the major issue that occurred in the Halal food industry was Halal authenticity as there were many cases reported involving adulteration of either *haram* (prohibited) or *mushbooh* (doubtful) ingredient in food production. For instance, in 2014, it was reported that three famous and recognizable cake brands had been reported of misusing the Halal logo on the label and packaging of their products (Rahman, 2014). In this report, the Assistant Director of the Inspection and Enforcement Department of Hab Halal JAKIM, Madam Mazlina Jalani said that the inspection operation has resulted in the products such as baking powder, shortening, gelatin, cream of tartar, peanut spread, and butter being confiscated (Rahman, 2014).

Furthermore, there is another case related to the Halal authenticity of the cake and pastry industry that happened on 9th October 2020 involving cake and pastry premises (Ali, 2020). On this occasion, cake and pastry premises in Teluk Intan operated using an expired Halal logo have been confiscated by the authority. The issue arises as JAIPk (Jabatan Agama Islam Perak) informed that there are a few ingredients in the premise that is not Halal-certified and have doubtful Halal status.

Based on the issues surrounding Halal cakes and pastries production in this country, it is evident that this issue needs serious attention among consumers and industry players. The safety, quality, and Halal status of the cakes and pastries should be maintained along the supply chain, especially during the production process where the introduction of unknown Halal status ingredients could be eliminated through an effective Halal management system. Besides, to produce Halal cakes and pastries, it is inevitable that Halal critical ingredients are identified. This study was therefore conducted to identify the types of Halal critical ingredients utilized in the cake and pastries production industry so that manufacturers and consumers can get clear information and adequate knowledge on this issue to ensure the maintenance of safety, quality, and Halal integrity of cakes and pastries produced and consumed in our country.

Methodology

This study utilized qualitative research methodology which involved library research and interviews as data collection methods. Most of the data collected through library research are derived from journal articles, books, and electronic sources such as websites (Google Scholar, Academia, UiTM Open Access Discovery, ResearchGate, Emerald Insight, Elsevier, and else), online news, online conferences, and electronic book. All these sources were evaluated for credibility to maintain the ethics and value in research practices. Besides, this research also utilized semi-structured interviews as an instrument to collect data from informants. The research flow for this study was stated in Figure 1.

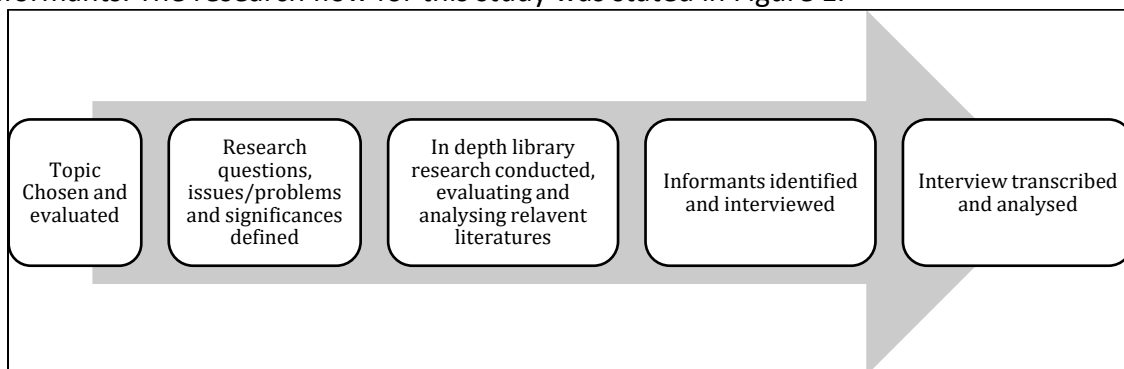


Figure 1: Illustration of qualitative research methodology flow utilised in the present study

The informants chosen in this study are practically responsible for managing the ingredient and production management in a cake and pastries company. They came from different positions as the Halal team needed to be specialized in various fields to ensure that the Halal product was consistent in maintaining Halal integrity, food quality, and food safety. The informants were provided with a set of questions during the interview session. The table below indicates the informants' detail such as their experience in the Halal cake and pastry industry and their current position in the cake and pastry company.

Table 1

Informant Details

Informants	Experience	Current position
A	7	Quality Control Leader & Halal Executive
B	3	Quality control & Quality Assurance Executive
C	3	Quality control Executive

Result and Discussion

Halal Critical Ingredients Selection - Importance of Halal Certification

It is undeniable that certification of food with Halal could increase the value of the certified products, besides assuring their safety and quality aspects. Based on data derived from the conducted interviews, all informants are ultimately of the same opinion that Halal critical ingredients have a significant effect on the selection process of ingredients in cakes and pastries production. According to Informant A (personal communication, 2021), Halal critical ingredients can affect the selection of ingredients because the company needs to select a Halal critical ingredient that meets the standard set by them. Informant B added that the critical ingredients must also be certified Halal due to the responsibility of the company as a Halal-certified company to only deliver Halal cake and pastry to the consumer (personal communication, 2021).

The most important criterion that must be assured in acquiring the ingredients was the Halal certification. The ingredients must be Halal-certified and be sourced only from Halal material to ensure that the Halal status of a product is solid and does not engage in doubtful elements. The advanced ingredients used in cake and pastry often became a concerning matter as the origin of ingredients' composition is hard to be discovered. Hence, it tends to be complicated if the ingredients acquired have not been provided with a Halal certification logo, especially the animal-based ingredients. Often, animal-based ingredients do not cause any concern anymore if the ingredients come with Halal certification (Wan Rusni Wan Ismail et al., 2020). Furthermore, Informant A and Informant B also stated the importance of acquiring ingredients with *Halal* certification during interview sessions.

“We have to find the ingredients which match the criteria of the production standard and most important we have to select the ingredients that have Halal certification. Those were the two crucial elements that need to be concerned upon selecting ingredients.”

(Informant A, personal communication, June 17, 2021)

“Besides, the ingredients must be Halal to secure confidence from the consumer. This was applied to pastry production where the poultry and meat product for pastry filling should be obtained from a certified Halal slaughterhouse. All the criteria for the selection of ingredients also must comply with Halal standards. If consumers knew that our ingredients came with secure Halal status, they will become more attracted to purchase our product.”

(Informant B, personal communication, June 18, 2021)

Meanwhile, according to Informant C, the selection process of the Halal critical ingredients was not a big deal as the company had established a dedicated team that is responsible to monitor the selection process. Informant C also added that all members of the team have acknowledged that all possible threats or Halal risks should be avoided and eliminated. For example, if there is no Halal certification provided for the ingredients, the ingredients should not be selected and shall be returned to the supplier. From that point of view, Informant C also emphasizes the importance of Halal-certified ingredients during the selection process (Informant C, personal communication, 2021).

The Identification of Halal Critical Ingredients in Cake and Pastries

The food and beverages industry has captured the highest observance and Halal awareness which makes it significant to be in total compliance with the existing Halal standard. In 2019, it was reported that primary meat, processed goods, confectionery, and bakery food accumulate about 60% of the Halal food industry (Malaysian International Food & Beverage Trade Fair, 2019). The concern of Halal is not only spotted in Halal meat products but also involves the whole mass of food categories and the development of the food ingredients. According to Aditami (2016), the application of Halal ingredient that has been used in bakery product enhances the system operation in Halal purchasing behavior. Besides, the contribution of the advanced ingredient also affected the purchasing behavior in the Halal food market. Hence, analyzing the critical ingredients in the production of cake and pastries is significant to maintain the Halal status of this kind of food product. Based on the interviews and analysis of previous research, it was found that two main sources of critical ingredients in this industry are food additives and processed meat and poultry.

i) The Food Additives

Cake and pastry production involved many critical ingredients as it was readily served and requires the utilization of food preservation and food additives which are respectively known as critical for their sources and process. In the production of bread, the utilization of food additives such as emulsifiers, flavor, coloring, bread improver, and other preservatives is common to improve the quality of the bread. The addition of food additives creates the necessity for a record of Halal control points and at this stage, the Halal status of the products became significant and has raised concern among consumers due to the emergence of complex and variety of bread ingredients (Perdani et al., 2018).

In fact, according to Perdani et al (2018), the wheat flour that is mostly used in bread production was added with an additive such as Vitamin A to enhance its nutritional value. The coating material used to coat the vitamin A in the flour has made the wheat flour became one of the Halal critical ingredients as the coating material may be derived from either Halal material such as gum or it may be derived from doubtful sources such as gelatin.

The widely used ingredients in baking and pastry production especially those with the e-codes number often caused controversy in the Halal industry as they were likely to be linked with porcine-based products. One of the examples is the E471 (glyceryl monostearate) which is produced from glycerin and fatty acid with the function of an anti-Staling (remain the water in starches) agent in baked goods (Ali, 2017). Besides, according to Uswan et al (2021), gelatin and collagen were categorized as Halal critical ingredients because their sources usually originated from porcine or bovine. Gelatin is widely used in cake production as a foaming agent, stabilizer, moisture retention, gelling agent, and emulsifier. Similarly, in pastry production, emulsifiers are utilized for extending the shelf life, adding the softness of the

crumb, preserving the freshness, and increasing the tenderness of pastries (Norrakiah, et al., 2015).

In addition, according to Ermis (2017), enzymes have also become a highly utilized ingredient in the production of beverages, baking, milling, and other food production processes. Enzymes are considered a Halal critical ingredient because some of them are derived from animal sources especially those extracted from animals' stomachs. Ermis (2017) also emphasizes that the Halal status of enzymes should be analyzed through three particular aspects; processing aids in the manufacturing of enzymes, the sources derivations, and the substance used as raw material for enzyme production.

Besides, the dye for bread production may become a critical ingredient as well because it consists of sorbitol and inorganic dyes (Perdani et al., 2018). Sorbitol may include a natural sweetener of extraction or enzymatic solution in the composition of glucoamylase and alpha-amylase enzyme in which alpha-amylase enzyme sources from animal-based. The article also stated that L-cysteine is also one of the widely used ingredients in the production of pastry, especially in bread making where it functioned as the dough conditioner and improver. The concern arises because L-cysteine is usually made from ambiguous sources such as human hair, pig bristle, or feathers (Ibrahim et al., 2020).

ii) The Processed Meat & Poultry

In Halal cake and pastry, processed meat and poultry are usually used as the filling of pastry. Processed meat and poultry became critical ingredients in Halal pastry production as the slaughtering process of the animals should be complying with the Islamic ritual. The slaughtered animals must be from lawful and permitted animals such as chickens, cows, ducks, and so on (Al-Teinaz, 2020). Besides, a few other requirements should also be observed during the slaughtering process such as the Halal animals should be slaughtered by sane Muslims, ensuring complete removal of blood from the carcass and humane handling should be implied during the slaughtering process.

a. The Doubtful Ingredient

The concern on Halal critical ingredients also includes the chemical food agent and the e-codes ingredients. Those ingredients have names other than their original names such as the use of Scientific's name which is often being doubted as ambiguous ingredients in cake and pastry production. As a matter of fact, it was difficult to determine the Halal status of ingredients especially when the ingredient no longer remained in their original forms (Ismail, et al. 2020). Aside from the sources that hold the ambiguity status, the scientific and technical terms can also lead to confusion and bring doubtful sense for the certain ingredient used in cake and pastry production such as L-cysteine, emulsifier, glycerin, hydrogenated shortening, and lecithin.

L-cysteine is one of the widely used ingredients in the production of pastry, especially in bread making where it functioned as the dough conditioner and improver. The concern arises as the L-cysteine is usually made from ambiguous sources such as human hair, pig bristle, or feathers (Ismail et al., 2020). The use of L-cysteine has been forbidden as reported on *Malaysiakini* news in 2016 as it was mainly derived from hog hair (approximately 90% of the L-cysteine), and can also be derived from human hair, chicken feather, duck feathers, cow horns, and petroleum by-products which is relatively also considered as doubtful sources (Idris, 2016).

On the other hand, the ingredients with an e-codes number were generally known to induce ambiguity and cause issues related to the status of Halal critical ingredients. The following table adapted from an article by Al-Teinaz (2020) showed the *mashbooh* and *haram* ingredients commonly used in cake and pastry production. Those ingredients should be avoided and eliminated if used in Halal cake and pastry production.

Table 2

Mashbooh & Haram E-Number Ingredient

E Number	Food ingredient	Mashbooh/ haram
E106	Riboflavin 5-sodium phosphate	<i>Masbooh</i>
E120	Chonineal, Carmines (animal)	Haram
E140	Chlorophyll, Chlorophy	Haram
E161b	Lutein	Haram
E252	Potassium nitrate, Saltpetre	Haram
E304	Fatty acid esters of ascorbic acid	<i>Masbooh</i>
E322	Lecithin from animal fat	<i>Masbooh</i>
E431	Polyoxyethylene	Haram

(Adapted From Al-Teinaz, 2020)

b. Substitute Ingredient for Halal Cake and Pastry

The Halal critical ingredient in cake and pastry production has its purpose and function for example as a dough conditioner or improver which usually be added into the dough for the purpose to improve the development of gluten, delaying staling, and becoming aids for yeast fermentation. The Halal critical ingredient that is suspected to be doubtful can be substituted with another ingredient. However, the substitution process is not easy since the function and suitability of the new substitute ingredient with a standardized formula are very complicated and complex. This is to ensure that the finished product has similar quality and consistent taste to the existing product. Besides, the product substitution can be problematic especially for the lean dough (which requires to have low sugar and low-fat yeast product) to suit with a savory filling. Other than that, glycerin is also the most common ingredient in fondant or rolled icing for cake production. It is difficult to substitute glycerin with other products as it was an excellent solvent and has dehydrating traits which are very vital in fondant making (Ismail et al., 2020).

There are many ingredients in the production of cake and pastry as the industry used various advanced ingredients which go through development and complex processes (Ismail et al., 2020). According to Jais (2019), the ingredients that go through various processes, especially advanced process that might change their original character is considered a Halal critical ingredient in food production. The group of ingredients which is likely to be categorized as the Halal critical ingredients in cake and pastry production mostly came from food additives, dairy products, raw chicken and meat, microbial products, wheat, and processed vegetables. The utilization of food additives in cake and pastry is a commonality as the production of both food categories in needing for complex ingredients composition to achieve an excellent result of the finished product. According to Perdani et al (2018), various

food additives agents such as emulsifiers, food coloring, and flavor, bread improvers were very common in bread production.

Based on the interview conducted with Informant B, it was ascertained that the previously mentioned group of food additives is mostly utilized in their company production, especially in cake production. Food coloring, for example, has been utilized in the production of the Absolute Durian cake to enhance the color of the cake to be more appealing (Informant B, personal communication, 2021). For that purpose, they have to make sure that the food coloring utilised has already been certified Halal. Besides, according to Informant B, gelatin is also categorized as a Halal critical ingredient and is extensively used in the production of yogurt cakes. Even yogurt itself is a Halal critical ingredient (Informant B, personal communication, 2021). Furthermore, all informants in this study agreed that almost all ingredients in cake and pastry productions were categorized under Halal critical ingredients and needed further monitoring process from the beginning of production. They also mentioned a few ingredients that were necessary to constantly be monitored and managed during the production process. The detailed ingredients list is as stated in the table below:

Table 3

Halal Critical Ingredients Listed by Informants

Category	Halal Critical Ingredients
Dairy Product	Butter (unsalted/salted butter), whipping cream, fresh milk, yogurt, cheese
Food additives	Emulsifier, coloring agents/food coloring, topping agent, gelatin,
Microbial product	yeast
Meat product	Processed & raw meat
Poultry product	Processed & raw chicken
Lightly processed food	Processed vegetables
Oil product	Cooking oil

(Analyzed by Researcher)

Conclusion

This study has elucidated the list of Halal critical ingredients used in cake and pastry production. The most common Halal critical ingredients identified in cake and pastry production are food additives, dairy products, processed meat and poultry, and microbial products. The findings of this study are expected to help in improving the management of Halal critical ingredients for cake and pastry production, especially for those involved in this Halal sector, besides could be the first step in dealing with issues and challenges in managing Halal critical ingredients and the post-impact of Halal critical ingredients management towards maintaining Halal integrity in cake and pastry production.

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