

Development of a Framework on Prohibition of Adulterating Surimi Products with Animal Plasma: A Qualitative Research Approach

Pembinaan Kerangka Kajian Terhadap Larangan Mencampurkan Plasma Haiwan dalam Produk Surimi: Suatu Kajian Pendekatan Kualitatif

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Received: 17 January 2022 /Accepted: 15 March 2022

ABSTRACT

The adulteration of commercial food products with muharramat (prohibited) ingredients exposes Muslims of the present time to food fraud. One of the muharramat sources is animal plasma food grade powder in surimi products. This adulteration using prohibited substance is regarded as a critical halal issue that should be addressed to strengthen the justification for its prohibited status. The current study employs a qualitative approach using semi-structured interview data with Shariah experts, Halal executives, and food technologists as the main source of data collection, and a literature review as supportive argument. The application of thematic analysis to analyze the collected data enabled the identification of the main themes and sub-themes of the interview data. Based on the results, the identified main themes are: the principles of Istihlak fasidah (imperfect transformation), Istishab (presumption of continuity), and Maslahah (preservation of public interest); while the identified several sub-themes are: the involvement of human intervention, the residual traces of animal plasma properties in/the end product, and the prohibition of spilled-out blood that is attributed to all of the blood components, as supportive arguments to justify the reasons for Istihlak fasidah (imperfect transformation) process. Last but not least, several principles of Qawaid Fiqhiyyah (Islamic Legal Maxim) become part of the identified sub-themes applied by the interviewees to enhance the prohibited status. Subsequently, a framework is presented to visually present the data to clarify the interrelatedness of the identified themes. The research findings can potentially contribute significant knowledge to the Contemporary Fiqh Consumerism field, particularly in understanding the issue of intentionally adulterating halal with non-halal sources. The developed framework also meets the criteria of future new research since no comprehensive study has been conducted to highlight the prohibition of using animal plasma in food products.

Keywords: Adulteration; animal plasma; Istihlak; Maslahah; qualitative

ABSTRAK

Pada zaman kontemporari ini, umat Islam semakin terdedah dengan ancaman penipuan makanan akibat amalan memasukkan sumber muharramat (terlarang) ke dalam produk makanan. Salah satu sumber muharramat ialah serbuk plasma haiwan (plasma gred makanan) yang mempunyai potensi dicampurkan ke dalam produk-produk surimi. Ianya merupakan salah satu isu halal kritikal yang perlu dijelaskan secara terperinci bagi menekankan status pengharamannya. Pengkaji menggunakan pendekatan kualitatif sebagai metodologi kajian melalui kaedah temu bual dengan pakar Syariah, Eksekutif Halal dan Pakar Teknologi Makanan sebagai kaedah utama pengumpulan data disamping sumber-sumber kepustakaan sebagai data sokongan. Untuk menganalisis data, analisis tematik digunakan untuk mengenal pasti tema utama dan sub-tema data temu bual. Berdasarkan analisis, pengkaji telah mengenalpasti prinsip Istihlak Fasidah (larutan yang tidak sempurna), Istishab (kesinambungan daripada hukum asal) dan Maslahah (memelihara kepentingan umum) sebagai tema utama. Manakala, pengkaji juga telah mengenalpasti sub-tema iaitu melibatkan campur tangan manusia, sifat-sifat semulajadi plasma haiwan kekal pada akhir produk dan pengharaman darah mengalir tertakluk kepada semua komponen darah sebagai justifikasi akan ketidaksempurnaan proses Istihlak. Selain itu, beberapa Kaedah Fiqh (Qawai'd Fiqhiyyah) adalah sebahagian daripada sub-tema yang telah dikenalpasti

untuk menguatkan hujah akan status pengharaman plasma haiwan dalam produk surimi. Akhirnya, suatu kerangka kajian telah dibina untuk mempersembahkan data secara visual bagi memahami hubung kait antara tema-tema yang telah dikenalpasti. Hasil kajian mempunyai potensi untuk memberi sumbangan dalam meluaskan ilmu bidang Fiqh Kepenggunaan Kontemporari terutamanya dalam memahami isu mencampurkan sumber-sumber halal dan tidak halal secara sengaja. Kerangka yang telah dibina juga merupakan kajian yang baharu dan unik lebih-lebih lagi tiada kajian yang mendalam pernah dijalankan untuk mengupas tentang pengharaman plasma haiwan dalam produk-produk makanan.

Kata kunci: Percampuran; Plasma Haiwan; Istihlak; Masalah dan Kualitatif

INTRODUCTION

Rapid development in food technology allows food technologists to be creative and innovative in recycling waste materials into an alternative source of food additives in the present and future (Fadzillah et al. 2020). The program to recycle these wastes has been considered a sustainable effort to minimize the environmental problems due to ineffective waste materials management (Lynch et al. 2017). Collected animal blood from slaughterhouses is an example of waste materials that can be transformed into animal-blood derivatives such as plasma-based additives (Siti Jamilah et al. 2021). Animal plasma is a preferable component compared to other blood constituents due to its natural characteristics, which are tasteless and appears to be natural in color, while the other cellular components are less appealing in terms of their metallic tastes, odor, and color (Mohd et al. 2017). Helped by the innovation of separation techniques such as centrifugation, there have been high demands for animal plasma among food additive producers since the good quality of plasma can be easily extracted and separated from the other blood components (Mohd Kashim et al. 2017).

As one of the potential customers of food additives, the surimi market has been expected to grow globally from 2020 until 2030 due to the increasing demand from consumers worldwide and the growth of investors in seafood-based products. Surimi producers are currently centered in the regions of South Asia and Oceania, and they have been expected to turn the market into a globally competitive sector for investors. The demand for surimi products among consumers was expected to increase significantly since the world has been facing the COVID-19 pandemic, and the community requires products that have a longer shelf-life like surimi (Surimi Market Forecast, Trend Analysis, and Competition Tracking -Global Review 2020 to 2030 2021). In 2017, it was estimated that 820,000 million tons of surimi products were produced globally, where leading surimi producers were located

in Thailand, Vietnam, India, China, Indonesia, Pakistan, Myanmar, Argentina, USA, France, and Japan (Surimi Market Update November 2018). Furthermore, Sultan et al. (2021) noted that surimi products contributed to the export values of seafood products at around 2.5%, which was equal to \$7.08 billion, between 2017 and 2018.

The Ministry of Health of Malaysia previously warned about the presence of transglutaminase enzyme (TGASE), which was classified as a critical ingredient in the production process of surimi products (Anuar 2015). The term *surimi* was directly obtained from its Japanese word, which refers to the mixing process of minced fish and other ingredients to produce well-mixed surimi dough (Çağlar et al. 2018). Kashim et al. (2017) reported the practice of some surimi producers who generally used animal plasma as an alternative food additive, particularly for seafood products such as fish balls, crab balls, and other similar products. Sahilah et al. (2016) highlighted the suitability of animal plasma as an alternative food additive since it is comprised of complex proteins such as albumin (3.3%), globulin (4.2%), and fibrinogen (0.4%). The addition of food additives improves the surimi textures in terms of elasticity (Sa'dom et al. 2017), emulsifying (Silva 2003), gelling (Parés et al. 2011), and binding (Lu & Chen 1999) activities. However, some of the surimi producers preferred to add plasma additive instead of gelatin due to its effectiveness in improving the quality of surimi products (Sun & Holley 2019).

According to Shariah, animal blood derivatives are prohibited mainly from spilled-out blood sources. Spilled-out blood is classified as *muharramat lizatihi* (Mahaiyadin & Osman 2017). This is based on a Quranic verse; Surah Al-Baqarah (173) stated that:

“He has only forbidden you ‘to eat’ carrion, blood, swine, and what is slaughtered in the name of any other than Allah. But if someone is compelled by necessity—neither driven by desire nor exceeding immediate need they will not be sinful. Surely Allah is all-Forgiving, Most Merciful” (Khattab n.d.).

Based on the preliminary literature study, most of the researchers emphasized that the use of any blood derivatives is prohibited from the Shariah perspective and regarded plasma as part of the *muharramat* (prohibited) sources (Mahaiyadin 2019; Amir & Saidi 2019; Mohd Anuar Ramli et al. 2018; Mahaiyadin & Osman 2017; Sahilah et al. 2016; Ghanem 2015; Nakyinsige et al. 2012; Jamaluddin & Radzi 2009). However, the current study found very scarce information regarding its prohibition. Most of the previous research discussed the scope of prohibiting animal plasma on a surface level that requires a more detailed explanation. Only a few articles mentioned the status of utilizing animal plasma in food products, but they are shallow in manner. Meanwhile, the Halal guidelines recently considered the use of animal plasma in modern food products as systematically ambiguous and underdeveloped in Malaysia and other Muslim countries, as emphasized by Mohd Izhar Ariff Mohd Kashim during his interview with Berita Harian. He stressed that a proper halal guideline and more research related to animal plasma needs to be developed since its utilization in food products, particularly surimi, has been increasing worldwide (Arifin 2019). Due to this concern, the current study came out with a framework for the prohibition of animal plasma in halal surimi products, which will form a standard for the future and broader scope development of this research. In summary, the findings of this research meet the novelty criteria mainly because no former studies came out with a framework to represent the prohibition status of incorporating animal plasma in any modern food products.

METHODOLOGY

CASE STUDY AS A RESEARCH DESIGN

A case study is a research design that is used to understand a specific issue in its real-life context through an in-depth interpretation, particularly in the social sciences field. Sometimes, it is called a “naturalistic” design, which is different from an “experimental” design in which the investigator seeks to test the variables. It seeks to gain a broader appreciation of the studied issues or phenomena by exploring involved ‘actors’ or participants’ original perspectives (Crowe et al. 2011). The design was

helpful in examining the data generated in this study at a certain depth instead of demanding at the surface level. Zaidah (2003) suggested that a case study demands the qualitative researcher to explore the reasons why the involved participants prefer to apply certain strategies or approaches in highlighting the studied case. The current research discussed the issue of animal plasma (food grade) insertion into surimi products as a case study due to the topic’s peculiarity and rare deep investigations made by the previous studies.

DATA COLLECTION

The primary sources of data collection in this research were the semi-structured interviews, consolidated with a literature review that has been extracted from primary and secondary sources as supportive arguments as recommended by Bowen (2009). The review was helpful in expanding the discussion on the data obtained from the interviews. There were nine experts from different backgrounds and specializations who participated in the semi-structured interviews; hence, data from different perspectives could be obtained. Similarities and non-similarities opinions among the experts were grouped for analyzing the data thematically. Close-ended and open-ended questions were also applied to obtain rich and thick qualitative data, as suggested by Turney (2010). In this case, a careful questionnaire design was critical to obtain maximum information from the experts (Gill et al. 2008). The experts were chosen based on their credibility in *fiqh* and *Usul Al-fiqh* knowledge to obtain information related to the safety of consuming blood-derivatives products and the standpoints of the Halal Certification Body (JAKIM representative) regarding the issue of adulterating animal plasma into surimi products.

In addition, four expert reviewers, who were academicians from Shariah Laws (*Fiqh* and Consumerisms) and science food technology, were appointed to improve the reliability and validity of the questionnaires. Corrections to the questionnaires were then implemented after receiving comments from the expert reviewers. These two experts specialized in Shariah Laws and Islamic jurisprudence. Meanwhile, nine experts from different backgrounds of specializations are appointed as interviewees. The list of the interviewees is in the table below.

TABLE 1. List of the interviewees

Position	Specialization/Expertise	Institution/ Company	Interview Code
Senior Lecturer	Halal Fiqh and Consumerism	International Institute for Halal Research and Training (INHART)	Interviewee 4
Senior Lecturer	Halal Fiqh and Consumerism	Islamic Science University of Malaysia, USIM	Interviewee 6
Senior Lecturer	Halal Fiqh and Consumerism	Universiti Malaysia Pahang (UMP)	Interviewee 5
Senior Lecturer	Fiqh and Usul Al-Fiqh	University of Malaya (UM)	Interviewee 3
Senior Lecturer	Fiqh and Usul Al-Fiqh	University of Malaya (UM)	Interviewee 1
Senior Lecturer	Fiqh and Usul Al-Fiqh	University of Malaya (UM)	Interviewee 2
Asst. Director	Department of Halal Management (JAKIM)	JAKIM (Halal Certification Body)	Interviewee 7
Senior Lecturer	Specialized in Food Technologist Lecturer Faculty of Science and Technology	Islamic University Science of Malaysia (USIM)	Interviewee 8
Halal Executive	Halal Assurance System Management	QL Foods Sdn. Bhd.	Interviewee 9

TABLE 2. The list of verified interview questionnaires

Questions to Fiqh and Usul Al-Fiqh Experts	Questions to Halal Fiqh Consumerisms Experts	Questions to Food Technologist and Halal Executive (Industrial Player)	Questions to Halal Certification Body (JAKIM Representative)
<p>What is your opinion regarding the issue of incorporation of animal blood plasma powder such as bovine and porcine plasma powder into surimi products as an alternative food additive?</p> <p>In surah Al- Maidah (5:3), Allah SWT prohibited Muslims from consuming spilled-out blood. How about blood plasma powder? Is it the prohibition attributed to blood plasma powder too?</p> <p>Allah SWT prohibited to consume blood as a food source because it has fallen under the category of najis and has hazardous elements. How about the blood plasma powder being free from hazardous elements? Is it possible to consider it as 'pure' and allowable for Muslims to take benefit from it?</p> <p>Regarding determining the halal status of blood plasma powder incorporated into surimi products, how Istihlak is applicable as the determination of hukm?</p> <p>Is it possible to consider the usage of animal blood plasma powder as falling under forgiven najis category? (Yes/ No) – Can you please elaborate more?</p>	<p>What is your opinion regarding the issue of incorporating animal blood plasma powder into <i>surimi</i> products as an alternative food additive?</p> <p>Some of the researchers considered animal blood plasma powder as a sustainable source of food additives that can minimize environmental problem. What is your opinion on this statement?</p> <p>Is there any difference between <i>illah</i> for the prohibition of spilled out blood and the blood has been separated from its whole component, such as the separation of blood plasma from the other blood component? (Yes/No)- Can you elaborate more on your opinion?</p> <p>Is there any difference between the halal status of blood plasma powder derived from halal animals which follow the Islamic ritual slaughtering process and non-halal animals? Can you elaborate more on your opinion?</p> <p>Allah SWT prohibited to consume blood as a food source because it has fallen under the category of najis and has hazardous elements. How about the blood plasma powder being free from hazardous elements? Is it possible to consider it as 'pure' and allowable for Muslims to take benefit from it?</p>	<p>In your opinion, what are the core elements in spilled-out animal blood that would be hazardous to consumers' health if consuming animal blood-based products?</p> <p>In your opinion, how the prohibition of spilled-out animal blood is in line with the principle of <i>maslahah</i> from scientific perspectives?</p> <p>Some of the non- Muslim countries approved the use of animal blood-based food products, such as The United States Meat Inspection Act. What is your opinion view regards to this issue?</p> <p>To what extent the production of animal blood-based food products is regarded as one of the environmentally friendly methods to reduce and minimize the issue of environmental pollution? Can you give some comments on this claim?</p> <p>What are the characteristics of non-spilled-out blood? Can the transformed animal plasma into food-grade additives be categorized as non-flowing blood?</p>	<p>To what extent does JAKIM take seriously the ban on the use of blood plasma powder in surimi products?</p> <p>What is your view on the ability of science and technology to transform animal plasma into blood plasma powder that is potentially adulterated in surimi products? Does the transformation process is in line with the perfect <i>Istihalah</i> method?</p> <p>Is the <i>Istihlak</i> process classified as perfect dilution if the halal authentication method is unable to detect the plasma powder properties? Can you comment further?</p> <p>Does the use of a small amount of plasma powder that has been mixed into surimi products classified as tolerable najis? If the answer is yes, what is the benchmark to allow its consumption?</p> <p>How about the halal status of plasma blood powder that is found to be free from harmful elements? Does its consumption is tolerable?</p>

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<p>Is the process of Istihlak acceptable by looking at the physical characteristics of surimi products which are color, taste, and smell as indicators solely after being incorporated a small quantity of plasma powder? Can you elaborate more to support your answer?</p>	<p>Is it possible to consider a small quantity of blood plasma as <i>'forgiven najis'</i>?</p>	<p>Why the use of non-spilled blood such as the spleen and liver are permissible for the Muslim consumer, although it is a type of blood as well? Can you comment from a scientific perspective on the safety of this type of blood?</p>	<p>Why does JAKIM strictly insist on not giving halal certificates to surimi producers who apply plasma powder as an additive?</p>
<p>How can a process of Istihlak be considered as a perfect Istihlak? Can you elaborate more?</p>	<p>Is the process of Istihlak acceptable by looking at the physical characteristics of surimi products which are color, taste, and smell, as indicators solely? Can you elaborate more to support your answer?</p>	<p>How the food product is considered completely safe and free from harmful elements from scientific perspectives?</p>	<p>What are the efforts taken by JAKIM as the authoritative body in Malaysia to ensure the surimi producers are strictly complying with determined halal standards?</p>
<p>In your own opinion, is it sufficient to consider the process of Istihlak is acceptable if laboratory tests cannot trace the characteristics of plasma animal powder after being mixed into surimi dough?</p>	<p>How can a process of Istihlak be considered as a perfect Istihlak? Can you elaborate more?</p>	<p>What is your opinion on the capacity of science and technology to transform animal plasma into plasma additives which are potentially used in surimi products?</p>	<p>Are there other alternative methods that may be used to determine the halal status of animal plasma powder?</p>
<p>What are other alternative methods, according to Islamic perspectives, can be used to determine the halal status of blood powder mixed into <i>surimi</i> products despite the Istihlak approach? Can you elaborate more to support your answer?</p>	<p>In your own opinion, is it sufficient to use amino acid profiling analysis as an authentication method according to Shariah to determine the presence of blood plasma characteristics in <i>surimi</i> products?</p>	<p>How do halal authentication methods such as amino acid profiling confirm surimi products are completely free from animal plasma sources? What benchmark will be considered to ensure the surimi products are completely safe and free from any prohibited sources?</p>	<p>In your opinion, what suggestions shall be applied to improve this research?</p>
<p>Do you have any suggestions and recommendations to improve the research in the future?</p>	<p>What if amino acid analysis cannot trace the presence of blood plasma powder in surimi products after being incorporated in a small quantity, is it halal for Muslims to consume it?</p> <p>What are other alternative methods, according to Islamic perspectives, can be used to determine the halal status of blood powder mixed into surimi products despite the Istihlak approach? Can you elaborate more to support your answer?</p> <p>What are your suggestions to improve the research quality in the future?</p>	<p>Why should the issue of utilization of plasma additives in surimi products be monitored by the Malaysian Halal Certification Agency (JAKIM)? How can it threaten the safety of Muslim consumers in Malaysia?</p> <p>Do you have any comments or suggestions to vast up the scope of discussion in the future?</p>	

On the other hand, the list of the verified interview questionnaires is listed in Table 2.

The current study ensured the accuracy of the collected data through the appropriate selection of sampling technique, i.e., by selecting the respondents who were best to represent and familiar with the research topic. This was performed to guarantee the data could reach the optimum quality and be saturated (Morse 1991). A purposive sampling technique was employed where certain individuals were purposely selected as the respondents. The technique provided an insight into the research questions while obtaining rich and thick opinions since data was collected from the individuals who have vast knowledge or were specialized in the studied phenomenon (Miles & Huberman 1994). The technique also minimized the possibility of poor description in representing the data that would be subjected to criticism due to inappropriate sampling designs (Devers & Frankel 2000). In terms of sample size, there are no specific rules in qualitative-based research. It depends to what extent the responses given and collected data are sufficient enough to answer the proposed research objectives, particularly when there is no new information has been identified and there are redundancies in answers and opinions (Patton 2002).

DATA ANALYSIS

The implementation of thematic analysis to examine the interview data successfully identified the main themes and subthemes highlighted by the respondents. The process of thematically evaluating interview transcripts always begins with

data familiarization by repeating the transcripts multiple times until the researcher gains an elaborate understanding before the coding process takes place (Thematic analysis n.d.). In this study, thematic analysis was used to analyze the opinions of the experts that had been formerly collected in the interview transcripts. In analyzing such data, a researcher can flexibly decide whether to use specific software or a conventional method based on the researcher's preference (Bowen 2017). The current study employed constant comparison analysis to organize the transcript into smaller meaningful data and label each classified group with codes, which later would be grouped based on the similarity and differences of the organized data before identifying the main themes and sub-themes. The notion of organizing the collected data in such a manner mainly came from the constant comparison analytical technique (Leech & Onwuegbuzie 2007). The organization was helpful in finding the important key points in the interviewees' responses. In the subsequent process, the unimportant themes were then excluded from the data analysis.

A literature review was also used in this study to ensure a thorough explanation of the reported themes and to find the consistency of data findings (Polit & Beck 2008). All the short and long quotes related to the identified themes were also included in a written report to guarantee the transparency of reporting data, as proposed by Tong et al. (2007). At the end of the analytical process, the results obtained were then applied to the framework developed for the prohibition of animal plasma in surimi products.

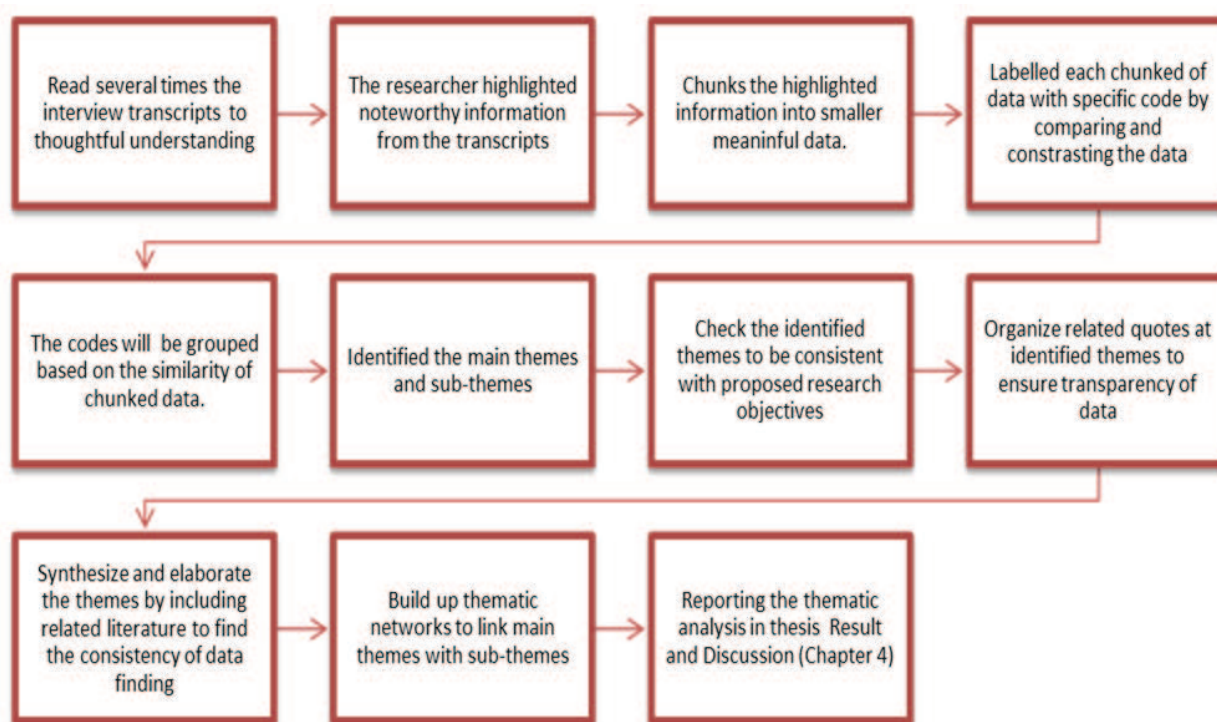


FIGURE 1. Steps of conducting Thematic Analysis

The steps in conducting the thematic analysis are summarized in Figure 1.

TABLE 3. List of main themes and sub-themes

Main Themes	Sub-Themes
<i>Istihlak Fasidah</i> on Adulteration of Animal Plasma in Surimi Products	<ul style="list-style-type: none"> The process of <i>Istihlak</i> involves human intervention The animal plasma properties remain at the end of products The prohibition of spilled out blood attributes to all blood component
Achievement of <i>Maslahah Al-Mulgha</i> as Supportive Arguments	<ul style="list-style-type: none"> The use of animal plasma is not considered a necessity (<i>dharuriyyah</i>) The use of animal plasma is in line with Tahsiniy characteristics as food additives There is a concept of <i>ta'abbudi</i> that needs to be followed instead of <i>ta'qquli</i> Islam will never forbid anything good and <i>tayyib</i>. Meanwhile, the prohibition is subjected to harmfulness The use of animal blood is harmful due to its biological (microbiology) and chemical contaminants Its utilization is not acceptable by the Muslim community (<i>u'rf</i>) because it is considered as disgusting and unpleasant material
<i>Istishab</i> (Presumption of Continuity) as Supportive Arguments	<ul style="list-style-type: none"> Any prohibited source will remain prohibited, and abstaining from <i>khilaf</i> is preferable Islamic legal maxims: Everything is permissible unless there is evidence signifying its prohibition Islamic legal maxim: The origin of anything remains as it was before Halal and Haram will have remained the hukm. Anything free from elements of harmfulness cannot be a justification to make something permissible Islamic legal maxim: A certainty may not be declined due to doubtfulness

Meanwhile, the identified themes and sub-themes are summarized in Table 3.

STRATEGIES TO ENSURE RELIABILITY AND VALIDITY OF DATA

Several strategies are available to improve the reliability and validity of research data, and more than one technique was applied in this study to collect the said data. In a qualitative study, the triangulation technique strengthens the findings by combining the methods of data collection (Patton 2001). Generalizations of findings also can be attained if several sources of data that probe for deeper interpretation are used rather than surface features being examined (Johnson 1995). Paiva et al. (2011) emphasized that this technique is helpful in constructing a clear, rich, and detailed description of the research being performed, which consists of the interrelationship between the information obtained from the data that was collected from different sources while increasing the sequence explanation of answerable research questions. A careful interpretation of data could establish a convergent and comprehensive explanation (Jick 1979). Furthermore, triangulation was useful in cross-checking and comparing the collected data as it helped to assess the consistency of information so that the studied phenomenon could be properly represented (Patton 2001).

The present study used interviews as the primary medium of data collection and a literature study to collect supportive arguments. The development of the literature review utilized both primary and secondary sources from electronic and non-electronic media to expand the discussion. Data saturation was identified when there was no additional useful information could be added, and the framework has been well-developed. The clear, rich, and detailed descriptions were presented in the findings, and the analyses were made to be consistent with the collected data from the literature study and

interview opinions (Hayashi et al. 2019). The data consistency resulted in clarity and audibility, i.e., where the data were transparent, and several themes and main points were successfully identified (Noble & Smith 2015). The current study also implemented the member 'checking' practice to increase the credibility of the interview data, where two expert reviewers from Shariah's background checked the quality of the drafted questionnaires. This technique was helpful in checking and correcting errors and misinterpretations from what has been stated or observed (Lincoln & Guba 1985).

Prior to the questionnaire submissions, the interviewees must review and check their answers thoroughly according to their knowledge and specializations. This practice reinforced the interview data by having the respondents who were willing to confirm their opinions. The current study also put effort into identifying any data discrepancy to ensure the consistency of the established themes. Any theme modifications were carried out as necessary and stated in the text to alert the readers of the discrepancy (Maxwell 1996). Last but not least, the analysis of the case study was designed to be thick and rich with descriptions that could represent the bigger picture of the studied phenomenon. Open-ended and close-ended questions were used to maximize the collection of information by capturing respondents' emotions, feelings, standpoints, and experiences through their expressed opinions (Creswell & Miller 2000).

All collected data from both the interviews and literature study should enhance the details, thoroughness, and appropriateness in answering the proposed research objectives (Miles & Huberman 1994). Immersive data review and analysis were then carried out until they could provide insight into the identified research questions. The analysis produced detailed descriptions based on the interpretation of the data according to the identified themes and main points. To support the findings, the interviewees' quotes were properly stated so that the narrative of the work could be well-understood and comprehended. This style of writing was also adopted by Butina (2015) to represent her qualitative data in the clinical research field.

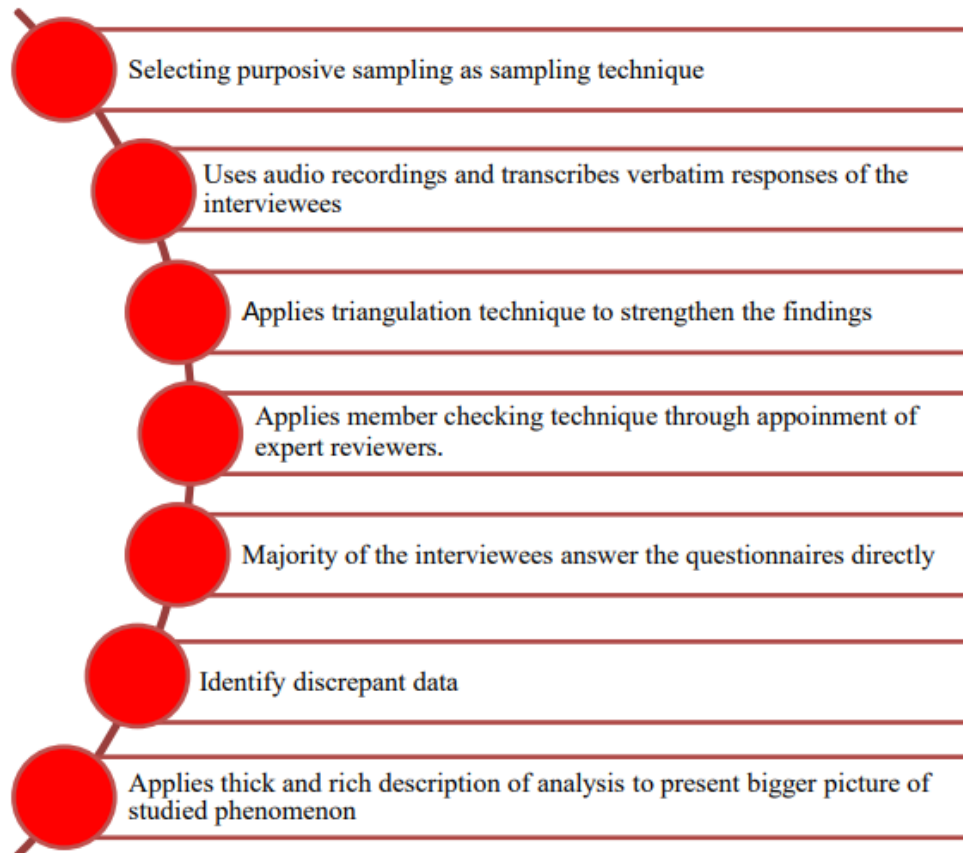


FIGURE 2. Strategies to ensure reliability and validity of data analysis

RESULT AND DISCUSSION

ISTIHLAK FASIDAH ON THE ADULTERATION OF ANIMAL PLASMA INTO SURIMI PRODUCTS

The interviewees with Shariah's background highlighted that the adulteration of animal plasma leads to *Istihlak Fasidah* or imperfect dilution. This is because plasma is a part of blood components, and these components, with their natural properties, are mixed with the surimi products. This is based on the interpretation of the word *ad-dam*, which specifically refers to spilled-out blood (Wan Ahmad et al. n.d.). The prohibition includes the whole blood components (Sharifuddin et al. 2016). The separation of plasma does not change the fact that the substance is still a part of spilled out blood (Ghanem 2015) and is biologically the largest part of the blood (Mohd et al. 2017). Any activities that intentionally adulterate prohibited sources are completely forbidden in Islam (Zaini & Abd.

Rahman 2020); hence, the process of *Istihlak* must be rejected and nullified. Moreover, animal plasma is considered as a part of *rijs* (something unpleasant and disgusting from Shariah's perspective).

The opinions of the experts are as follow:

1. If the plasma components or properties have the same natural properties as the blood, therefore, the process of *Istihlak* is not applied based on my opinion (Interviewee 1).
2. The prohibition status is in total regardless of small or large quantity (Interviewee 1).
3. In the context of utilization of animal plasma, it is the prohibited material mixed into halal ingredients intentionally to improve the quality of the product. If the *Istihlak* process occurs, it is imperfect, *fasid*, and not halal (Interviewee 3).
4. The use of animal plasma powder in surimi products as an alternative food additive in the process of *Istihlah* or *Istihlak* is not allowed among the National Fatwa Committee members (Interviewee 6).

Three main sub-themes that lead to imperfect

dilution (*Istihlak Fasidah*) were identified to ensure rigorous and comprehensive explanation, including: The involvement of human intervention, the remains of animal plasma properties at the end products, and the prohibition of spilled-out blood and the whole blood components.

THE PROCESS OF *ISTIHLAK* INVOLVES HUMAN INTERVENTION

All of the interviewees stressed that intentional adulteration of any spilled-out blood components is not acceptable, although it can improve the quality of surimi products in terms of stability, emulsification, and volumes of foam improvement in the surimi dough (Lynch et al. 2017). This is because the interviewees upheld the Shafii School of thought and only accepted the process of purification through natural decomposition. The opinions are as follows:

1. The fuqaha' from the Shafites school of thought only accepted the process of natural transformation (Interviewee 4).
2. According to the Shafii School of thought, the process of transformation is accepted on natural transformations which do not involve other technology or human intervention that intentionally leads to dilution processes (Interviewee 3).
3. Intentionally inserting any filth or impure materials is prohibited, although in small quantity, and it is not accepted as justification to be considered as part of the tolerable *najs* (Interviewee 3).
4. The use of animal plasma in the industry due it leaves impact; hence it is not included in *Istihlak* category (Interviewee 5).

Similarly, the jurists who upheld the Hanbali school of thought accepted the process of dilution only through the natural dilution process (Mamat 2019). The main purpose of this limitation is to block any means of harmfulness in the future (Azri et al. 2017). Meanwhile, the other groups of jurists, including Hanafites, Zahirites, and Malikites, were inclined to widen the scope of *Istihlak*. Ibn Taymiyyah emphasized that *Istihlak* is accepted as a purification instrument, where there is a mixture between halal and non-halal ingredients, with a requirement that the mixing process occurs unintentionally. Intentional adulteration of any prohibited sources does not comply with the integrity of halal food production (Rosman et al. 2020), which will lead to the widespread of doubtful food sources among the

Muslim community (Amir & Saidi 2019).

The argumentation on the rejection of intentional adulteration is crucial to achieving the preservation of public interest (*maslahah*). This should be a basic guideline in determining the prohibition status of any commercialized products with a mixture of halal and non-halal ingredients (Jamaludin et al. 2011) to safeguard the determination of Islamic legal rulings looks from being too lenient in the present and future (Afifi et al. 2014). In addition, Allah s.w.t has mentioned in surah Al-Nahl regarding the prohibition status of spilled-out blood derivatives (173):

“He has forbidden you only *Al-Maitah* (meat of a dead animal), blood, the flesh of swine, and any animal which is slaughtered as a sacrifice for others than Allah (or has been slaughtered for idols or on which Allah’s Name has not been mentioned while slaughtering). But if one is forced by necessity, without wilful disobedience, and not transgressing – then, Allah is Oft-Forgiving, Most Merciful (Khattab n.d.).

In addition, there are Islamic legal maxims that correspond to the prohibition of adulterating animal plasma, such as:

1. The halal is that which Allah has made lawful in His Book and the haram is that which He has forbidden, and that concerning which He is silent He has permitted as a favor to you (Reported by al-Tirmidhi and Ibn Majah).
2. When halal and haram meet, the haram prevails (Omar et al. 2012).

Hammad (2004) also noted that the key point of *Istihlak* validity emphasized that the *muharramat* sources should not be added intentionally and must leave an insignificant effect toward the end products. Ibn Taymiyyah presented an analogy for the said circumstance with an example of clean water being mixed with a drop of *khamr* and yet leaving insignificant effects on the characteristics of the water. To extend the discussion on the analogy further, some Muslim scholars even apply the amount of water to be at least two tanks as analogical reasoning for perfect decomposition (Dogan 2019). However, some literature opined that these examples (of the analogy) are not applicable to the adulteration of animal plasma into surimi base materials since the added substance will leave desirable, significant effects on the quality of the products. Djazuli (2019) highlighted that the intentional or unintentional mixing of halal and non-halal materials results in the prevalence of the non-halal that leads to the diffusion of halal into *najs* properties (Abdullah et al. 2011).

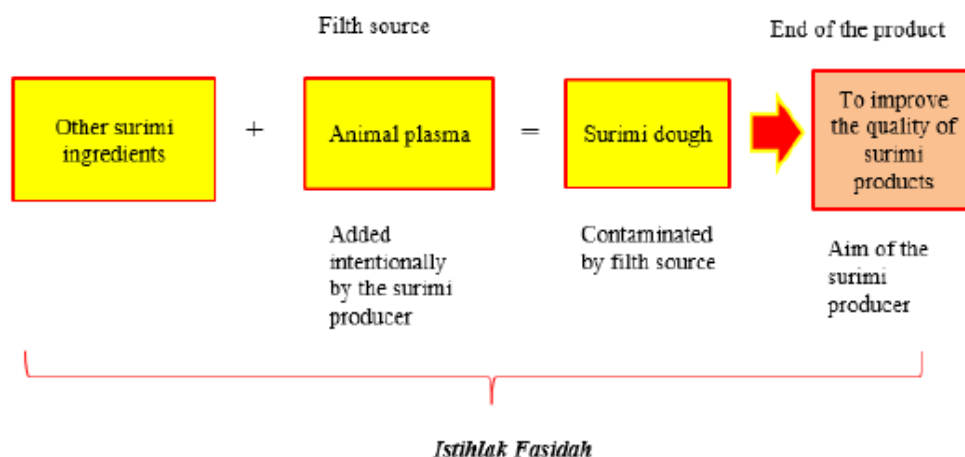


FIGURE 3. The process of imperfect *Istihlak* due to the involvement of human intervention

Due to these mixtures, Al-Khin et al. (2005) and Al-Qurtubi (1997) opined that the process of *Istihlak* is not applicable.

REMAINS OF ANIMAL PLASMA PROPERTIES AT THE END PRODUCTS

The second identified sub-theme is the plasma nutrients or properties that remain at the end products. Their presence leads to the process of imperfect dilution. One of the important requirements for the benchmark of perfect dilution demand that *najs* properties must be completely diluted with other ingredients, both chemically and physically, at the end of the production process (Mahaiyadin 2019). Today, the tracing of impurities properties relies on the mechanism of halal authentication since it is impossible to trace such substances with naked eyes (Rab et al. 2018); the interviewees opined that it is impossible to filter the part of the dough that are contaminated with *najs* properties once the animal plasma is added into the surimi dough. Therefore, adulterating animal plasma into surimi dough definitely contaminates the surimi products with '*najs*' source. The contaminated surimi with plasma is known as *mutanajjis* food. The process of extracting plasma from the remaining blood components could not be used as a justification to deny plasma as part of spilled-out blood.

The response of the interviewees are as follows:

1. Istihlak method is to destroy the original component to produce a new component in contrast to the blood plasma, which involves the process of extraction (Interviewee 1).
2. This is because the plasma powder is not

perfectly diluted in the surimi dough to produce the end of the product. Yet, there is no available tool to filter *najs* components in the surimi products, particularly involving the usage of plasma-based additive. The *najs* properties (filth component) remain at the end of the product. Therefore, the *Istihlak* process that takes place is imperfect (Interviewee 3).

Syeikh Mohd Arshad bin Abdullah Al-Banjari, in his masterpiece, *Sabil Al-Muhtadin*, stated that Muslims are prohibited from consuming any contaminated food with (*najs*) regardless of its condition (Ramli & Jamaludin 2012). Moreover, it is impossible to purify *najs a'ini* characteristics, specifically pig and spilled-out blood, based on *jumhur u'lama* opinion (Kashim & Mohd Tahir 2015). Al-Zuhaily (n.d.) noted that any sources originating from spilled-out blood is classified as *najs mughallazah* (severe filth status), and its utilization is completely prohibited according to the Shariah perspectives. Although the naked eyes could not detect the substances, previous scientific studies have proven that the plasma properties still existed.

Alina et al. (2013) used Polymerase Chain Reaction (PCR) method to design and detect oligonucleotide primers of blood plasma species for chicken, bovine, and porcine sources. Sa'dom et al. (2017) also recommended the same method for other non-labeled surimi products. Their results indicated that three out of twelve surimi samples were contaminated by *Bos Indicus* (cow) species, based on the gene sequence encoding of mitochondrial cytochrome b. In a different study, Aravindran et al. (2014) employed the Polymerase Chain Reaction (PCR) – Southern Hybridization method to detect the existence of plasma properties in surimi-based

products. The method was capable of detecting DNA species at 0.1 ng, where four out of seventeen surimi samples that were randomly selected from a few supermarkets at Klang (a district in Malaysia) were found to be positive with chicken and goat plasma. Hence, based on the results obtained, PCR-Southern hybridization method can be used as an alternative to detect DNA primers on non-labeled surimi products. The nano-particles of animal plasma can also be detected with Enzyme-linked immunosorbent assay (ELISA) by evaluating the presence of nano and micro-scale plasma components (Bode et al. 2015). The capability for accurately detecting the substance signifies that adulteration of animal plasma into surimi dough will not make the plasma to be completely diluted, although it has been mixed up with other ingredients. This strengthens the justification for the nullification of *Istihlak* process.

One interview with a food technologist from JAKIM reminds Muslims to be more careful in selecting surimi products. This is because food producers have been enthusiastically innovating prohibited sources to resemble other different entities in terms of physicochemical characteristics, such as animal plasma transformation into food-grade plasma additives. Thus, presenting a great challenge for contemporary Muslim consumers. She pointed out that:

1. It is undeniable that there is a high potential for surimi products that are not certified by JAKIM to use animal plasma as a source of alternative protein. Therefore, Muslim consumers should select certified products to guarantee the products are completely free from any doubtful sources (Interviewee 7).

2. Since the use of animal plasma is prohibited by the Halal Certification Body, the food producers, specifically from China and Taiwan, produce animal plasma from microbial synthesis techniques, which until now there is no single research has been conducted to explore its halal status from Shariah perspectives. Therefore, need more research to clarify its halal status. It has proven that the rapid development of food science and technology leads to the emergence variety of doubtful ingredients (Interviewee 7).

Another interviewee, who was an academician from the Department of Food Science and Technology, Islamic Science University of Malaysia (USIM), also opined that the adulteration of animal plasma into surimi is an example of hidden ingredient utilization, and there are other tremendous hidden ingredients that are still not being identified. She stated that:

There are many other additives or biological substances unknown to the consumers and hidden away from Muslims, particularly concerning industrial processes, as long as the whole meat supply chain is controlled by non-Muslims. This issue will keep reoccurring as Muslims lack the analytical methods to detect contaminants and adulterants from haram and *syubhah* sources (Interviewee 8).

She pointed out that an authentication method is currently an important mechanism for discovering food fraud activities. Furthermore, it is strongly recommended to send the food samples only to the government-recognized laboratories to ensure the analysis process is conducted by entrusted laboratory analysts. She stated that:

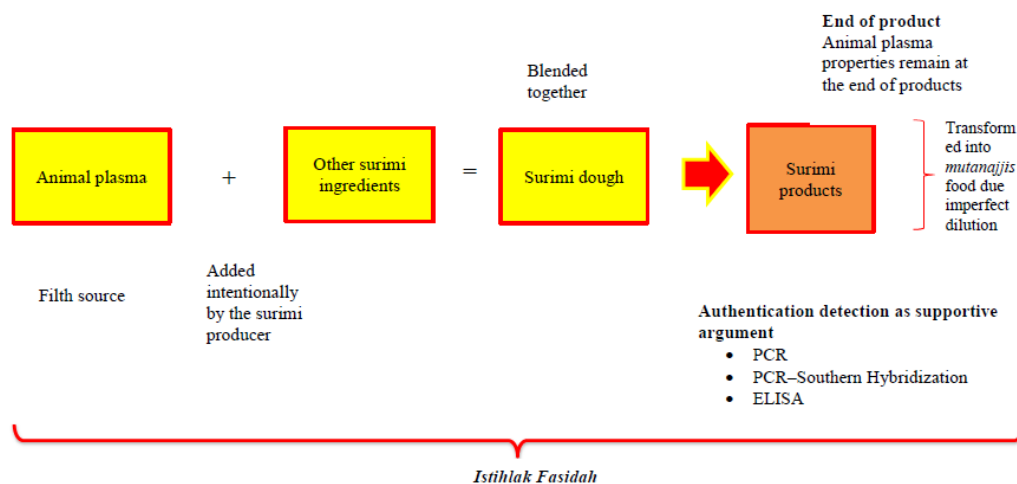


FIGURE 4. The process of imperfect *Istihlak* due to animal plasma properties remained at the end of the surimi product

Please refer to laboratory analysts at Malaysia Halal Laboratory Analysis (MyHAC), KIHIM laboratories, and laboratories at the Department of Chemistry Malaysia since they are the civil servants entrusted by the government of Malaysia to develop new methods according to their job scopes as food technologists, chemists or laboratory specialists (Interviewee 8).

THE PROHIBITION OF SPILLED-OUT BLOOD ATTRIBUTES AND ALL BLOOD COMPONENTS

The third sub-theme is the prohibition of adulterating any part of blood components, particularly the blood components that are extracted from spilled-out blood sources. All of the interviewees reached a unanimous agreement that the *najs*' properties can be attributed to all blood components. There is no exception regarding the blood sources, whether it is collected from halal or non-halal animals. The prohibition of consuming spilled-out blood is mentioned in al-Quran; there is no excuse to take benefit from the substance unless in an extreme hardship that requires one to find other edible sources for survival purposes. Blood utilization is completely prohibited in any food products, whether it is collected from halal or non-halal animals, based on the interpretation of the word *ad-dam* in al-Quran. The interviewees' responses are as follows:

1. The prohibition of blood is clearly stated in Al-Quran. Therefore, the use of spilled-out blood as a food source, whether internally or orally, is prohibited in Islam (Interviewee 3).
2. The characteristic of the filth (*Najs*) is subjected to the whole blood component (Interviewee 1).
3. Based on the Shafiites point of view, the determination of any product's status depends on the source of the material. If the source of the material is prohibited, then the final material is also illegal, although it has transformed into a new material (Interviewee 4).
4. The prohibition of animal blood applies to all blood components, including plasma, although the plasma's physical characteristics have been transformed. Therefore, the plasma is still considered as part of *najs* (Interviewee 9).

According to Shariah's perspective, the jurists unanimously agreed that the spleen and liver from halal animals are permissible for Muslims to eat (Anshori 2020). On the other hand, fish blood and blood from insects are part of the issues of *khilafiyah* (non-unanimous) agreement among the jurists (Zuhaili n.d.). This is in contrast to the

utilization of plasma as the biologically largest blood component (Mohd et al. 2017), where its filthy properties remain (Sharifuddin et al. 2016). Several contemporary Muslim scholars, including Khalid Abd al-Alim, Mutawalli Abd al-Fattah Muhammad Idris, and Egyptian Mufti Nasr Farid Wasil and Yusuf al-Badri, highlighted that the prohibition of recognized filth sources is definite and final since the prohibition is clearly stated in al-Quran. Hadith of the prophet Muhammad mentioned:

“The halal is that which Allah has made lawful in His Book, and the haram is that which He has forbidden, and that concerning which He is silent He has permitted as a favor to you”. Reported by al-Tirmidhi and Ibn Majah (Kamali 2011).

Furthermore, there are several Islamic legal maxims reiterated by the interviewees to support the arguments that the prohibition of spilled-out blood is attributed to all of the components of blood. The responses are as follows:

1. The term blood in Quranic verses is *mutlak* (absolute) that imbued all the blood components (Interviewee 1).
2. Some will take the entire law, which states that blood plasma is a blood component; therefore, it is subjected to the hukm of whole blood (Interviewee 1).

In the context of halal food production, the utilization of *rijs* sources, including the plasma-based additives, will not compromise and affect the halal integrity. There is no excuse to permit their usage since halal alternatives are abundant (Ramli & Salahudin 2016; Amir & Saidi 2019). An interviewee who works as a halal executive in QL Foods Sdn. Bhd. (the biggest surimi producer in Malaysia) pointed out that if a company is truly complying with Shariah's requirements, it will not tolerate the utilization of plasma-based additives. She stated that:

In terms of the halal requirements, we will not compromise our integrity with the use of any blood- derivatives in surimi products since its utilization deviates from Shariah (Interviewee 9).

In addition, another interviewee, a food technologist from JAKIM, pointed out that Shariah is still on top priority in determining the halal and haram status of certain products regardless of how sophisticated the technology is. Due to the tremendous food frauds, JAKIM listed transglutaminase enzyme as part of the critical ingredients in surimi products. It is important for Muslims not to misunderstand the

status of animal plasma, although it has a different physical entity from spilled-out blood. She pointed out that:

We need to consider the source of raw material. It is undeniable that the technology used is sophisticated. But, we must refer back to the Shariah guidelines where we know the blood is regarded as *najs* although the blood is collected through halal slaughtering “. Hence, it is JAKIM’s principle to follow

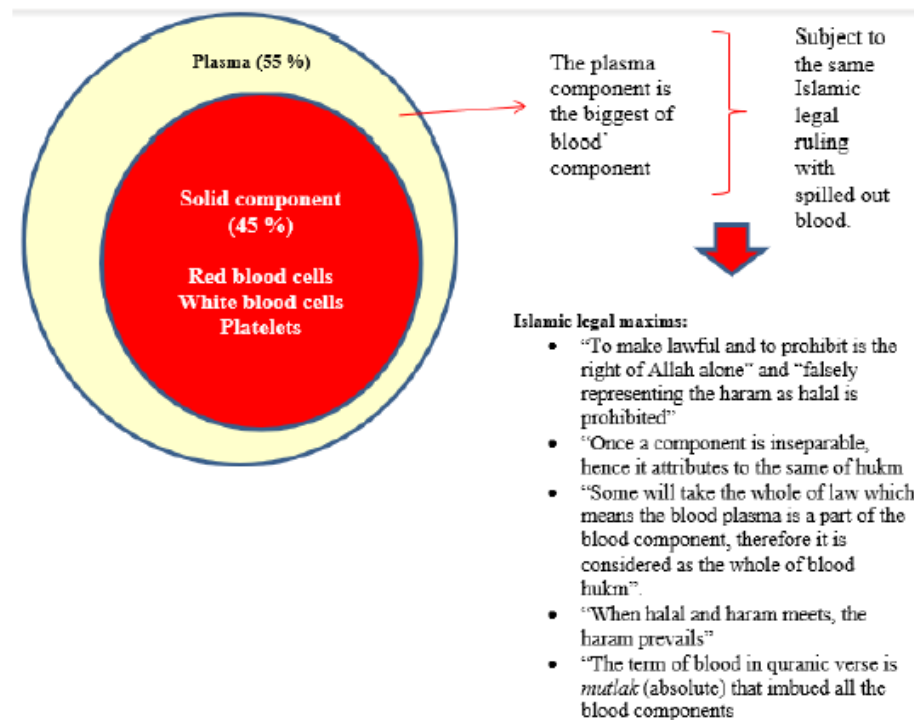


FIGURE 5. *Istihlak Fasidah* due to the prohibition of spilled-out blood attributes to all blood components

halal and haram guidelines according to Shariah Perspectives (Interviewee 7).

In summary, since the prohibition of spilled-out blood is applicable to all components of blood, the *Istihlak* is null and imperfect. Figure 5 illustrates a brief explanation of the third theme.

ACHIEVEMENT OF MASLAHAH AL-MULGHA AS SUPPORTIVE ARGUMENTS

From the Shariah perspective, Islamic laws must be integrated with other laws to establish a robust justification behind their legal decisions. In the case of animal plasma adulteration, *Istihlak* has been applied as a purification instrument to determine its prohibition status. However, to strengthen the arguments, the principle of *Maslahah* has been highlighted among the interviewees. This is to debate the arguments of non-Muslim researchers who claim that the use of animal plasma is part of the solutions to minimize environmental problems. For example, Lynch et al. (2017) Ofori & Hsieh (2014), and Toldrà et al. (2019), emphasized that the efforts

of transforming animal plasma into food additives are part of the sustainable effort for future food resources that can replace other alternative cheap protein sources. It is undeniable that transforming animal plasma into plasma additives can minimize environmental pollution, but the preservation of religion supersedes other *maslahah*. The opinions of the interviewees are as follows:

1. I agree that the application of animal plasma powder can minimize environmental problems, and it is a part of *maqasid* according to Islamic law, but other factors should be considered before making *ijtihad*, such as the human ‘urf, the possible risks, the availability of other halal alternatives and the priority of the products (*dharuriyyat*, *hajiyyat* or *tahsiniyyat*) and others”. (Interviewee 6).
2. When there is a clash between environment and human priority, the needs of human beings should be prioritized (Interviewee 5).

The achievement of *Maslahah* provides a clear foundation behind the wisdom on the principles of

Maqasid Shariah (Objectives of Shariah) in deciding certain Islamic laws in terms of the objectives, aims, and intentions (Jasser Auda 2014). In this context of research, the interviewees highlighted that the use of animal plasma is not considered a necessity (*dharuriyyah*) since there are abundant other halal sources with the same functions, such as transglutaminase enzyme that is produced with the recombinant technology (Jamaludin & Radzi 2009). The innovation of animal plasma into additives fulfills the *Maqasid Tahsiniyyah*; solely made for refinement purposes and not for fulfilling the necessities of human beings (Azhar et al. 2017; Jalil 2006). Although there will be a future discovery that can demonstrate the risk-free nature of animal plasma, it will still not be valid to justify their permissibility from the Shariah perspective. Obedience toward Allah's commandments is absolute, even if there are conflicting opinions between scientific discovery and Islamic Laws. This is in line with the Islamic legal maxims, which state that the right to determine halal and haram belongs to Allah only (Fadzillah et al. 2020). This issue was highlighted by several of the interviewees:

1. The use of animal plasma is in line with Tahsiniy characteristics as food additives. Hence, there is no necessity to halalise its application while there are plenty of additives that are accessible that are derived from halal sources (Interviewee 2).
2. From a fiqh perspective, a small quantity of a prohibited source is allowed in unavoidable conditions. But in this context, the use of animal plasma only fulfills the *tahsiniy* purposes (Interviewee 2).
3. Regarding the issue of blood plasma, although it is scientifically proven to be risk-free, it cannot be used as a justification to permit its application. There is a concept of *ta'abbudi* that needs to be followed instead of *ta'qquli* (Interviewee 3).

However, Allah SWT knows the best for His creation. Any prohibition and permissibility will bring goodness to the whole universe. Without limitation from Allah, Muslims will blindly follow their desires (Tuan Sidek & Ridzwan 2017). Due to this concern, the interpretation of the concept of *Maqasid Shariah* must be carefully made among the jurists. The foundation of the interpretation must refer to al-Quran and Sunnah as the primary sources (Mohd Kashim & Muhammad Husni 2017).

An interviewee also highlighted:

1. It is also based on obedience and faith towards Allah as it is among the wisdom behind His command to educate the servant to obey His commandment. This is called the science of *maqasid* as *maqsid al-taa'bbudi* (Interviewee 5).
2. Any prohibition stated from al-Quran will lead to goodness to preserve Maqasid Shariah. Islam will never forbid anything good and tayyib. Meanwhile, the prohibition is subjected to harmfulness (Interviewee 5).

In general, jurists find *'illah* (legal causes) on doubtful statuses or disagreements on certain issues. *Maslahah* (goodness) and *mafsadah* (harmfulness) are the parameters in determining the most reliable opinions (Man 2016). For example, *'illah* of prohibiting blood is attributed to spilled-out blood, but not the other types of blood (Mohd Kashim et al. 2017). This is based on the interpretation of the word *ad-dam* in several Quranic verses, specifically in Surah al-Baqarah (173), Surah al-Maidah (3), Surah al-An'am (145), and Surah al-Nahl (115). Any sources originating from spilled-out blood will be an indicator of its prohibition, as unanimously agreed by the majority of Muslim scholars (Sharifuddin, et al. 2016). For example, Allah SWT mentions in Surah al-Nahl: 173:

“He has forbidden you only *Al-Maitah* (meat of a dead animal), blood, the flesh of swine, and any animal which is slaughtered as a sacrifice for others than Allah (or has been slaughtered for idols or on which Allah's Name has not been mentioned while slaughtering). But if one is forced by necessity, without wilful disobedience, and not transgressing – then, Allah is Oft-Forgiving, Most Merciful” (Khattab n.d.).

Imam At-Thabari, in his tafsir of Tafsir Al-Thabari, concluded that the prohibition of any kind of spilled-out blood is final and should not open for disagreement (At-Thabari n.d.). Imam Ahmad Al-Razi Al-Jashhash noted that if Allah SWT did not reveal Surah al-An'am verse 145, there would be a dispute among the jurists regarding the characteristics of blood (Al-Jashhash n.d.). Other *mufasssirun* like M. Quraish Shihab (2002) in his Tafsir: Al-Misbah, as well as Imam Jalaluddin Al-Mahalli and Imam Jalaluddin As-Sayyuti (Al-Mahalli & As-Sayyuti n.d.), highlighted that the prohibition of spilled out blood is final and all Muslims must unanimously agree of its prohibition status.

The plasma is a part of spilled-out blood, and its derivatives are harmful to the consumers' health. The fact was noted by Boxman et al. (2017), stating

that consumers could be exposed to zoonotic threats like hepatitis E virus (HEV), based on the tests using RT-qPCR that were conducted on the selected animal blood samples. The fibrinogen and plasma components were the most contaminated components. In addition, consumers were exposed to other risks of having the vulnerable tendency to toxic shock, septicemia, meningitis and endocarditis, foodborne infections, and diarrhea (Olum et al. 2017). In some cases, it resulted in organ failures, affected the nervous system, dehydration, low blood pressure, Bovine Spongiform Encephalopathy (BSE) (Barnes & Lehman 2013; Syukriya & Faridah 2019), and also Creutzfeldt-Jakob (vCJD) which affects the human mind's stability (Salahudin et al. 2015) as a result of consuming any blood-derivatives.

An interviewee highlighted the wisdom behind the prohibition of animal blood derivatives for consumption since their biological and chemical characteristics are not suitable for humans. She also suggested that the Food Act 1983, Food Regulations 1985, and Food Analyst Act must be reviewed consistently to enhance the food safety legislation. Furthermore, non-Muslims have been dominating the meat-based industry, where food frauds are potential. She stated that:

1. The use of animal blood is harmful due to its biological (microbiology) and chemical contaminants (Interviewee 8).
2. There are no legal clauses specifically related to animal blood in Food Acts 1983 and Food regulations 1985 in terms of the MRL (maximum residual limit, limitation of detection (LOD), and limitation of quantity (LOQ) blood usage in food products (Interviewee 8).

Due to these risks, an interviewee who works as a Halal Executive in QL Foods Sdn. Bhd. (the biggest surimi producer in Malaysia), highlighted that since 2013 or 2014, most industrial players, including non-Muslims, have been aware of the animal plasma risks in surimi products, particularly after the widespread of Bovine Spongiform Encephalopathy (BSE). Other alternative ingredients, such as egg whites, were then introduced to improve the elasticity quality of surimi products. Furthermore, most surimi producers, regardless Muslims or non-Muslims, have been attending a week-long course at the School of Surimi in Japan or Thailand every year to obtain the latest updates on surimi production. From this course, surimi producers learned about the risks of incorporating animal plasma additives as an ingredient. She strictly stated that:

I will be straightforward; in general, most surimi producers are aware of the harmful effects of animal plasma, particularly after the outbreak of the mad-cow disease around 2013 or 2014. In the school of surimi, the industrial players will assemble every year to obtain new information related to surimi production. This course is regularly organized in Japan or Thailand (Interviewee 9).

Apart from the harmful effect on human physical health, consuming blood derivatives is also detrimental to spiritual health, particularly for Muslims. Al-Qardhawi (2001) emphasized that the consumption of blood substances will grow and promote the spirit of cruelty among the human beings that imitate the *Jahiliyyah* practices during pre-Islamic times. Thus, the jurists unanimously agreed that the presence of *rijs* (filth) is a part of *'illah* (legal causes) that leads to the prohibition of spilled-out blood derivatives. The term *rijs* has a similar stance to *najs*, *khabaith*, *mustaqdharat* to signify its impurities' characteristics (Zamakhsyari n.d.). It refers to something unpleasant according to human inclination (Thaib 2002). Its filthiness is equal to carrion and pig, and its derivatives, regardless of their shapes, whether solid, liquid, animate, or inanimate, are recognized as part of the filth sources (Nurdeng 2009; Alias et al. 2020). Human beings should feel disgusted naturally for consuming any of its derivatives, according to the practice of the Muslim community (*u'rf*). Hence, the jurists who uphold the Shafi'i school of thought could never tolerate any activities to purify the so-called *rijs* materials (Mamat 2019). An interviewee highlighted the following statement:

Regarding the use of animal-blood derivatives, *jumhur u'lama'* has unanimously agreed towards its prohibition status that is clearly stated in the primary sources of Shariah. Its utilization is not acceptable by the Muslim community (*u'rf*) because it is considered as disgusting and unpleasant material (Interviewee 6).

Based on the interview and literature study, it is indicated that one of the rationales behind the prohibition of animal plasma is in line with the preservation of *Maslahah Al-Mursalah* (preservation of public interest). Although the transformation of animal plasma can minimize the environmental problems, the preservation of religion and life is more important than the other identified *maslahah*. This is in line with the Islamic legal maxim, which states: that abstaining from *mafsadah* (harmfulness) is preferable to adopting minor *maslahah* (Mohd Tahir et al. 2017). Therefore, the current study inclines to the notion that the adulteration of animal

plasma actually leads to the realization of *Maslahah Al-Mulgha*. According to the four schools of thought, the hierarchy of the current *nass* is situated at the top level. Therefore, any contradictory opinions for the *nass* should not be valid and applicable as argumentations to decide the final Islamic legal rulings (Mayangsari & Noor 2014). This does not mean that Islam rejects scientific innovation, but rather, any applicable breakthroughs made must be under the umbrella of Shariah. Any kind of innovations related to the transformation of haram sources into commercialized products will not be acceptable, despite the usage of sophisticated machines and technology. This is in line with the *qawaid fihiyyah* (Islamic legal maxim) principle; ‘when the lawful and unlawful things are mixed up, the unlawful prevails’ (Isa & Man 2014).

ISTISHAB (PRESUMPTION OF CONTINUITY) AS SUPPORTIVE ARGUMENTS

Optimistically, an interviewee also correlated the prohibition of animal plasma with the *Istishab* principle to enhance the arguments. This is based on the arguments that the determination of Islamic legal rulings must refer back to the original *hukm*, and the jurists should stay away from disputing and throwing arguments. The opinions stated are:

1. According to the *Istishab* principle, any prohibited source will remain prohibited, and abstaining from *khilaf* is preferable (Interviewee 5)
2. For me, as long as it can be detected, any plasma – derivative, even if it is free from harmful elements, is still illegal since Al- Quran forbids it, and it is also unpleasant in the eyes of the Muslim community (Interviewee 6).

Imam Shafii, Imam Hanbali, and Imam Zahiri upheld *Istishab* as part of the source to determine certain Islamic legal rulings. Most jurists from the Shafii school of thought employed *Istishab* as an argument, particularly when dealing with non-unanimous arguments among jurists (Ahmad et al. 2019). The term *Istishab* is also applied interchangeably with *Bara’ah Asliyyah* (Saidurrahman 2011). For example, in Malaysia, the jurists employ *Istishab* as part of the argumentations, particularly in finding solutions for the matters that are related to *fiqh at’imah* (Islamic jurisprudence related to eating

dietary practice). Tuan Muda & Ahmad (n.d.) noted that Muslims are free to consume certain foods unless there is clear evidence from the Shariah that demonstrates their prohibition. This correlates with an Islamic Legal Maxim (*Qawaid Fiqhiyyah*), which state:

“Everything is permissible unless there is evidence signifying its prohibition.”

This signifies that any recognized *muharramat lizatihi* sources such as *khamr*, pig and its derivatives, dog, spilled-out blood, and feces, are impossible to be purified because the *najs* (filth) characteristics will stay intact, although other permissible ingredients have been added as well (Mahaiyadin & Osman 2017). This is in line with a *qawaid fihiyyah* (Islamic Legal Maxim):

“The origin of anything remains as it was before.”

In addition, an interviewee stressed that:

Halal and haram will remain the *hukm*. Anything free from elements of harmfulness cannot be a justification to make something permissible (In fact, any discovery from scientific evidence is still relatively true) (Interviewee 5).

Upholding the *Istishab* is preferable to prevent jurists from being too lenient in justifying the Islamic legal rulings, particularly if the *hukm* is clearly stated in *nass* (primary Islamic sources) (Haika 2012). The jurists who follow the Shafites and Hanbalites schools of thought prefer to employ *Istishab* to ensure the *ijtihad* is in-line with the original *hukm* (Atjeh 2004). An Islamic legal maxim that can be correlated with this is: “Continuing an existing law is more preferable than beginning a new law” (Dzajuli 2019).

“Any prohibition from Shariah will lead to harmfulness (*mafsadah*)” (Dzajuli, 2019).

This is to prevent the Muslim from slipping into *sadd az-zarai’* (the state of harmfulness), a doubtful state (Al-Zuhaily n.d.), and to preserve the *maslahah* in the present and future (Wijayanti & Meftahudin 2018). However, if consumers are in doubt whether plasma additives are adulterated into surimi products or not, particularly if there is no label of ingredients or halal logo, then the Muslims are permitted to consume it based on the concept of *bara’ah asliyyah* (original absence of liability). Due to this

uncertainty, Muslim consumers can consume these products. Moreover, halal authenticity detection, like amino acid profiling, is also unable to detect the plasma properties. An interviewee highlighted that:

There are two issues: The presence of animal plasma additives can be proven through the product's labeling, which is COA or MSDS. If its existence is confirmed, the status remains haram or prohibited. If not, refer back to the principle of *Bara'ah Asliyyah*, which states that Muslims are allowed to consume it unless there is evidence proving its presence. Secondly, the presence of animal plasma cannot be proven due to the unavailability of labeling; hence, Muslims are allowed to consume it based on the principle of *bara'ah asliyyah* (Interviewee 4).

This is in-line with another Islamic legal maxim (*Qawai'd fihiyyah*) that is related to *Istishab*:

“A certainty may not be declined due to doubtfulness.”

A FRAMEWORK ON THE PROHIBITION OF ANIMAL PLASMA IN SURIMI PRODUCTS

In any research study, it is important to acknowledge research limitations. The conducted research employed a fully qualitative design that was capable of analyzing data from numerous literature and interview responses from the selected experts. In this study, the issue of intentionally adding animal plasma into surimi products was deeply analyzed at a fundamental level while integrating the principles of *Istihlak*, *Istishab*, and *Maslahah*. Since this issue has not been discussed in many previous studies, the current research contributes in terms of novelty through the development of a framework for presenting the bigger picture of the studied phenomenon. However, the research scope has been limited to the fundamental *hukm* of animal blood, *Istihlak*, *Istishab*, and *Maslahah* principles that are answerable in determining the research objectives. In addition, 7 out of 9 interviewees preferred to answer the questionnaires through email, reducing the face-to-face interviews, particularly during the COVID-19 outbreaks. However, the email survey

also limited the interviewees' responses, whereby no follow-up questions could informally be asked through a more natural and comfortable face-to-face interview.

It is easier to present large textual data in a framework to filter and classify the data in a more understandable format. Hence, the current qualitative research used a thematic framework to represent and explain the collected data. The framework was helpful in removing the redundant and overlapping data that had been collected from the interviews and other documents (Gale et al. 2013). Generally, the identified themes would be presented in a mapping-style framework where they need logical and intuitive thinking to connect the ideas and highlight the key points for concluding the findings (Srivastava & Hopwood 2009). Osman et al. (2020) also emphasized that thematically-presented data helps the readers to spot the important points of the said qualitative-based research writing.

Eppler & Burkhard (2007) highlighted that visual frameworks are usually preferable, although no specific software to design the frameworks was mentioned (Hackett & Strickland 2019), as long as the researcher can deal with the textual data (Bauer 2013). To develop the proposed framework, the current study adopted the style proposed by Othman et al. (2018), where they highlighted *Maqasid Shariah* as the main theme with the concept of *Halalan Toyyiban* in food products. Simultaneously, the main theme was linked with other sub-themes to demonstrate the relationship between the philosophies of *Maqasid Shariah* and the concept of *halalan toyyiban*. In contrast, the current research selected the adulteration process of animal plasma as the framework's main theme because it was the main issue of the research. The main theme was then linked with other themes, specifically *Istihlak*, *Maslahah*, *Istishab*, and Islamic legal maxims, to set up the whole framework on the prohibition of adulterating animal plasma into surimi products. Consequently, the designed framework helped to visually capture the key points of the research,

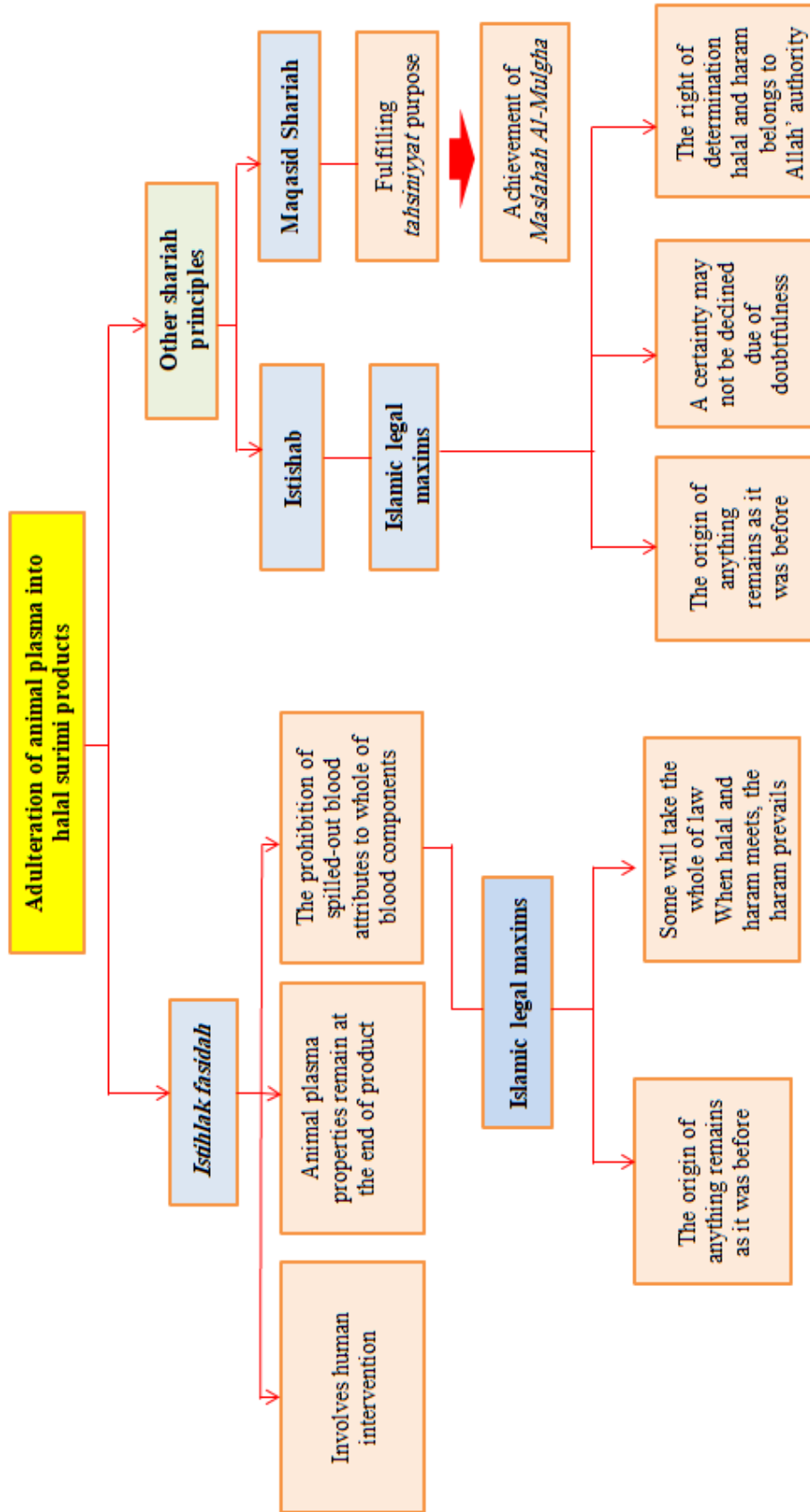


FIGURE 6. A framework on the prohibition of animal plasma in surimi products

which was previously applied and emphasized by Eppler & Burkhard (2007). The visual presentation of the framework on the prohibition of adulterating plasma into surimi products is illustrated in Figure 6.

CONCLUSION

In summary, the adulteration of animal plasma into surimi products is completely prohibited for Muslims. Biologically, plasma is a part of blood components that is usually separated from spilled-out blood with centrifugation. *Jumhur ulama'* (the majority of Muslim scholars) uphold the views that any derivatives originating from spilled-out blood are prohibited since their status has been mentioned clearly in al-Quran and Sunnah.

All interviewees, who were Shariah experts, unanimously agreed that the process of *Istihlak* (perfect dilution) is null and imperfect in the case of animal plasma additives since the surimi producers have been intentionally adulterating the filth source (plasma) into surimi dough. In this case, the plasma properties that remain at the end of the production process are part of the filth source with the category of severe filth source. To overcome the predicament, several halal proteins can actually replace the function of animal plasma in surimi products, such as the protein from plants, which is healthier for consumption. Finally, the prohibition of animal plasma also leads to the realization of *Maslahah Al-Mulgha* (Discredited of public interest) based on the *'illah* of prohibiting spilled-out blood in the preservation of halal food integrity, which is in line with the principle of *halalan toyyiban*.

ACKNOWLEDGMENT

We would like to thank the Ministry of Higher Education (Kementerian Pengajian Tinggi Malaysia) for the financial support via the Fundamental Research Grant Scheme entitled "Characterization of blood plasma structure in surimi products and adulteration status through scientific and shariah approach", FRGS/1/2019/STG01/UIAM/03/1 to publish this paper. The first author also would like to thank Yayasan Bank Rakyat for supporting her Master's study for two years period.

AUTHOR'S CONTRIBUTIONS

Siti Jamilah Mohd Sukri; Writing original-draft preparation and conducting data analysis, Nurrulhidayah Ahmad Fadzlillah; Provides main supervision, conceptualization and writing- review, Mustafa Mat Jubri@ Shamsuddin; Provides co-supervision, methodology guidelines and writing-review, Abdul Rohman; Writing –review. All authors have read and agreed to the published version of the manuscript.

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