



Review

Ethanol standard in halal dietary product among Southeast Asian halal governing bodies

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ABSTRACT

Background: The term halal has been associated with Islam in various areas including services, foods, and product. One of the main focus of halal research is halal certification and standard. The certification process involves verification of halal authenticity of the foods and adherence to Islamic principles. Despite the growing issuance of halal accreditation and efforts in uniting of halal certification, there are significant differences in determining the standard of halal accreditation and halal food regulation particularly between Singapore, Indonesia, Brunei and Malaysia, regardless of being neighbouring nations. Such instance is the variability of standards in determining the content of ethanol in the foods products. Thus, this review endeavours to study the standards in determining the permissible content of ethanol products and to investigate the reasons behind the contradiction in halal food regulation.

Scope and approach: The review is conducted through the literature regarding the dissimilarities of ethanol permissibility in halal dietary standard between the four countries, and at the same time, in-depth interviews with the corresponding from halal authorities in each country were also carried out.

Key findings and conclusions: Findings from the analysis suggest that authorities in those four countries differ their judgement based on these four factors; the material of preference for ethanol content; the technique of preference in ethanol detection laboratory; the undetermined constant in Blood Alcoholic Concentration calculation; and Islamic worldview on the usage of Alcohol. This review will be able to provide clarification and future references in constructing universal halal standard of ethanol content in the dietary product.

1. Introduction

Halal is synonymously associated with the production of food and products that certified as legally permissible according to Islamic Law (Alzeer, Rieder, & Abou Hadeed, 2017). In defining halal in accordance to Islamic law and principles, all issues concerning halal or haram and all disputes should be referred to the Islamic jurisprudence primary and secondary sources; Quran, Sunnah (prophetic tradition) and consensus (Ijma') among the scholars. One of the main principles of Islamic jurisprudence that accepted among the Islamic scholars is that "everything is permissible except that which has been explicitly prohibited" (Ibn Taimiyah, 1997). It is therefore understood that food or consumer product becomes haram by Shariah Law (Islamic legal) if it is proven by any means violate the shariah ruling that based on the abovementioned sources. Therefore, there is a need to rely on another source, i.e. Fatwa (religious edicts) issued by a competent Islamic Authority.

Huge demand by Muslim consumers to the need of halal verification

led to the issuance of halal certification by the halal authority. Amid the growing interest in halal consumption, halal does not only apply to foods/poultry but also covers other products for consumption, such as pharmaceuticals, medicine, and cosmetics. Discourse on halal and haram especially on the consumption matters has been very central among Muslim. In the early stage of halal certification, there was no system to assure foods and materials, especially meat, imported from abroad were slaughtered according to Islamic law, and authentically halal, or any particular products were not mixed with non-halal materials, such as alcohol or pork-related ingredients.

The halal credential is particularly important for the processed foods, raw materials for the processed foods, medicines, etc. which are imported from abroad or produced by non-Muslims. However, in countries like Malaysia and other Muslim countries in Southeast Asian; Brunei and Indonesia, the halal certification is also applied to Muslim producers who want their product to be certified halal. Religious authorities in the Southeast Asian region, namely Brunei, Malaysia,

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Indonesia and Singapore, are among the pioneers in the halal certification and credential. The countries are independently issuing their halal certificate and at the same time collaborating with each other on any new and emerging issues of halal food and products. Under the spirit of Association of Southeast Asian Nation (ASEAN), those countries collaborate to form governing bodies known as MABIMS (The Informal Meeting of Religious Ministries of Brunei, Indonesia, Malaysia and Singapore). One of the main functions of MABIM is to monitor the rules and regulation of halal certification to assure there is no dispute among the members. As MABIMS works as a mediator for the countries in Southeast Asian, each country is represented by their halal governing bodies; Malaysia is represented by the Department of Islamic Development Malaysia (JAKIM) in Malaysia, Indonesia by the Assessment Institute for Foods, Drugs and Cosmetics (LPPOM MUI), the Islamic Religious Council of Singapore (MUIS) for Singapore and the Religious Council of Brunei (MUIB) for Brunei.

JAKIM, LPPOM MUI, MUIS and MUIB are the governing Authorities of halal certification and responsible for the halal matters and the expansion of halal industry. Despite the fact that, those countries are in the same region and follow the Sunni *Mazhab*, to be more exact they follow the Syafie school of thought in Islamic Law, there are dissimilarities on certain issues in halal certification and standard. One might argue that cultural difference between the nations lead into dissimilarities of practice in determining the halal standard for each Halal Certified Authority (Mohd Al'ikhsan Ghazali and Siti Salwa Md. Sawari 2015a,b). The non-uniformity of the halal standards between the countries would likely to cause significant complications in achieving the aim of the standardised global halal certification and accreditation (Mohd Al'ikhsan Ghazali & Sawari, 2015a,b). The most profound issue in the halal accreditation between the countries' Halal Authority is the variability in resolving the percentage of permissible ethanol for halal food production (Ahmad, Yang, Norziah, Wan, & Abdullah, 2014). The alcohol and its derivatives are the most critical ingredient in Islamic dietary laws. Generally, they are not permissible in food consumption. However, in several conditions, the amount of ethanol is permitted in the food and consumer products. The difference ruling among the Southeast Asian halal governing bodies on the acceptance level would lead to confusion among the industrial players and attract academic debate among the scholars.

Initial review of literature concludes that there has been limited research discussing the issue of dissimilarities of ruling on halal related issues for foods and beverages among the countries in Southeast Asian (Ahmad et al., 2014; Mohamad Aizat Jamaludin, Salleh, and Mohd Anuar Ramli 2015; Najiha and W.A. Wan Nadiyah 2014). Studies have been very much emphasised on the issues of consumer behaviour, halal certification and accreditation, halal market and industrial growth and Islamic law related issues. As the different ruling on halal certification might lead into the authorities' credibility and acceptance of other countries' halal credential, this research endeavours to answer the question as for why there have been different ruling of halal issues concerning the alcohol products and derivatives and on what basis do they differ. This review will analyse the dissimilarities that appear in the determination of the Halal Standard of ethanol content in dietary production in each of the four nations and try to deduce the critical factor of the contrariety in ethanol presence in the halal dietary standard.

2. Methodology

Literature study, observation and interview methodologies are conducted to reach the objective of the thesis. In the methodology, a parameter is constructed to ensure a converge focus on the objective. The parameter outlined under these research question; firstly, what is the limit of the percentage of ethanol permissible in the halal dietary product?; Second, what is the argument behind the regulation of permissible regulation of ethanol? And third, what is the procedure of

ethanol detection used to the halal dietary product?

Semi-structured interviews were conducted with selected informants from each of halal governmental institution which are JAKIM (Malaysia), LPPOM MUI in Bogor (Indonesia), MUIB (Brunei) and MUIS (Singapore) with additional to experts of halal regulation standard in Malaysia from Jabatan Agama Islam Selangor (Malaysia) and Universiti Putra Malaysia. The interviews were conducted in semi-structured format to allow a potential discovery or clarification of information that was overlooked in the initial design of research methodology.

Literature searches were conducted on the topics of Halal dietary standards to get an overview of the latest developments on ethanol Standard in halal dietary product. First, an overview was made on the basic ethanol standard of halal dietary product in Brunei, Indonesia, Malaysia and Indonesia. In addition, an analysis was made on how each of the halal dietary standards is being conceptualized. Finally, each of these concepts are then compared to deduce why there are dissimilarities of ethanol standard in halal dietary product.

The literature research was conducted by using various databases like ScienceDirect, Springer Link, Elsevier, Taylor and Francis Online, Emerald Insight, Scientific Journals. Conference proceedings, reports, books, guidelines, online newspapers, open-access articles, governmental, various organisations' websites and legislation were included in the study. The latest peer-review articles on the topic were mainly used. Since the discussion of permissible ethanol standard in halal dietary product is a fledging area of research, conference papers were used to fill information gaps and include latest research.

2.1. Comparison of the permissible ethanol in halal dietary production

An alcohol defined as any organic compound in which the hydroxyl functional group ($-OH$) is bound to a carbon. One of alcohol organic compound configuration, is called Ethanol. Ethanol is defined as a chemical compound that has two single bonded carbon atoms, attached functional group $-OH$ group, with five additional five hydrogen atoms in its molecular formula. (National Center for Biotechnology Information, 2018). Ethanol is the main actor for alcohol intoxication. This is because the intake of ethanol in human body is associated with anxiolytic effect, short term memory loss, locomotor suppression, motor incoordination and the loss of righting reflex or narcosis (Correa et al., 2012). In this paper, the term alcoholic drinks is to describe any intoxicating foods and drinks such as beer, while the term ethanol is used portray the presence of hydrocarbon material with an $-OH$ functional group in foods product. Generally, ethanol can be divided into two major classes (Alzeer and Khaled Abou Hadeed 2016);

2.1.1. Naturally formed ethanol

Ethanol is produced through the natural fermentation process of yeast or bacteria, which converts sugar to ethanol and carbon dioxide in food categorized as natural ethanol. This ethanol group is formed usually through the fermentation process, can be found naturally present in fruits, cereals and legumes. Ethanol in small quantities is also present in fermented local food products such as miso, tapai, yogurt, sausage, and kimchi. (S. Park, KimLee, Jeong, & Shim, 2016). A random analysis shows the presence of ethanol in various foods such as 0–0.13% in vinegar, 2–3% in naturally harvested soy sauce or kanji and 2.2–4.9% in fermented rice or *Tapai* (Ahmad et al., 2014). This indicate that the present of ethanol in various food product occur naturally and not intentionally.

2.1.2. Industrial ethanol

There is a great demand on ethanol as the chemical compound can be widely utilized as personal care product, household product, and food additives due to the fact that ethanol can act as a powerful solvent (Li, Smith, & Hossain, 2006; Sultana, Anwar, & Ashraf, 2009). Therefore, there is an industry solely focus on the production of ethanol. Industrial ethanol can be produced by the means of fermentation; with

Table 1
Classification of ethanol in four nations halal certification bodies.

Type/Application of Alcohol	National Halal Certification Bodies	Verdict
Alcohol in General	Brunei, Indonesia, Malaysia and Singapore	Haram and Prohibited
Usage of Alcohol in Dining Preparation	Brunei, Indonesia, Malaysia and Singapore	Haram and Prohibited
Naturally Formed Ethanol	Brunei, Indonesia, Malaysia and Singapore	Halal and Permissible
Industrial Ethanol		
i. Ethanol from Fermentation Process	Indonesia, Malaysia and Singapore	Halal and Permissible
	Brunei	Haram and Prohibited
ii. Synthetic Ethanol	Indonesia, Malaysia and Singapore	Halal and Permissible
	Brunei	Haram and Prohibited

the present of oxygen or without presence of oxygen, and synthetically; through petroleum refining and ethylene synthesis.

Based on the types of ethanol mentioned above, there are similar and dissimilar aspects that conform to halal certification in Malaysia, Indonesia, Brunei and Singapore (Ahmad et al., 2014), which are illustrated in Table 1.

In Table 1, all four nations are shown to have similarities and dissimilarities concerning alcohol. Malaysia, Indonesia, Brunei and Singapore permit the utilisation of naturally formed ethanol in the dietary product as it is formed naturally, unavoidable and happened in every material that contains organic compound. Consequently, food and drinks that contain naturally formed ethanol such as fruits, grains and grain extracts or ethanol formed as a by-product of food preparation are halal and are permitted for consumption as long as the percentage of accumulated ethanol is ascertained to be below the threshold for human intoxication.¹ Examples include *rempeyek*, *budu*, *tempoyak* and soy sauce (Majlis Fatwa Kebangsaan Malaysia, 2015). All four nations prohibit the consumption of alcohol formed through fermentation, either liquor or any other beverage defined as liquor, because it is impure and illicit (*haram*) (Majlis Fatwa Kebangsaan Malaysia, 2015), as the fermentation is manually processed and the presence of ethanol in the drinks is involuntary action and not naturally formed.

Malaysia, Indonesia, Brunei and Singapore are divided on the issue of industrial ethanol. All nations except Brunei consider industrial ethanol as permissible under the argument that mostly industrial ethanol is produced for industrial impetus and not human consumption, however they have a small disagreement on the limiting threshold of permissible ethanol. In the same case, Malaysia, Indonesia, Brunei and Singapore have dissimilarities in the threshold of the permissible ethanol percentage in halal dietary products, which are presented in Table 2.

As displayed in Table 2, there are notable dissimilarities in determining the threshold of alcoholic percentages in food and drinks in the four regions. In Malaysia, alcoholic additives must remain lower than 0.5% of the final product, while the permissible ethanol level in processed beverages is less than 1% (JAKIM, 2015). Determination of the permissible ethanol percentage in halal dietary product is administered through the process of lab research and forensic study of human intoxication level through Blood Alcohol Content (BAC).²

In Singapore, MUIS prompted an extensive lab study on ethanol substances after receiving an inquiry about the utilisation of natural ethanol in the production of additives in halal dietary product. The finding is used as a base for Fatwa Committee to issue a ruling that allows the presence of ethanol as a food solvent must not exceed 0.5%, while the content of ethanol additives in the final product is capped at 0.1% (MUIS, 2012). The Fatwa Committee insists that this decision is exclusive only for additives and halal products that use food additives. Thus, the addition of alcoholic substances besides additive application

¹ Wajihah Zainuddin (Science Officer, Halal Food Control Unit, Majlis Ugama Islam Brunei, Negara Brunei Darussalam), in the interview, 10 November 2014.

² Dzulkifly Mat Hashim (Profesor Madya, Faculty of Food Science and Technology, Universiti Putra Malaysia), in the interview, 11 April 2015.

Table 2
The percentage of permissible ethanol in halal food and drinks in four nation.

Nation	Percentage of Ethanol	Type of Ethanol
Malaysia	1% 0.5% in final product	Naturally Formed Industrial Ethanol
Singapore	Not Stated Less than 0.5% additives, 0.1% remains in the final product	Naturally Formed Industrial Ethanol
Indonesia	1% 1% for additives, but in the final product must have 0.0% presence of ethanol	Naturally Formed Industrial Ethanol
Brunei	2% Haram and Prohibited	Naturally Formed Industrial Ethanol

will render the product prohibited for consumption.

Indonesia, however, contradicts Malaysia and Singapore in determining the method to determine the minimum percentage of ethanol in halal food. The resolution of 1% of permissible ethanol content is the result of laboratory research that involved ripening the essences of foods such as dates, grapes, pineapples and jackfruits for three days. The research found that on the third day, the percentage of ethanol in the fruit essence was approximately 1%. Indonesia, under the same argument, resolved that the utilisation of ethanol additives in halal dietary production permitted is below a threshold of 1%, with an additional ruling that the added ethanol remain untraceable in the final product.

In Brunei, the threshold of two percent ethanol in the halal dietary product is based on the content of ethanol in beer, which is 2%. The application of industrial ethanol in halal dietary products is forbidden,³ even at a deficient volume that has no chance of causing intoxication and unnoticeable harmful effects. (Fatwa of Mufti of Brunei Darussalam, 2010).

2.2. The factor of dissimilarities of permissible ethanol content in halal dietary product

There is a number of heterogeneous conclusions in permissible ethanol content in halal dietary product, most of it accompanied with sound arguments to support their conclusions. In this part, we try to examine why the dissimilarities occur.

2.2.1. The basis reference of ethanol content

In determining the threshold of ethanol content in the halal dietary product, there is a number of references which the threshold is built upon. For instance, Brunei judged the limit of naturally formed ethanol in the beverages is 2%. This judgement is based on the ethanol content of beer, which designated as the weakest type of beer. (Najihah and W.A. Wan Nadiah 2014). Indonesia on the other hand, as stated before, use

³ Dayana Alias (Nutrition Officer, Halal Food Control Unit, Majlis Ugama Islam Brunei, Negara Brunei Darussalam), in the interview, 10 November 2014.

Table 3
Ethanol content in dietary product.

Dietary Product	Ethanol Content (%)	Source
Soy Sauce	6.9	(Bali, 2017; S.; Park et al., 2016)
Tapai	2.0–5.2 on the second day	Ghani and Ismail (2010)
Teriyaki	1.5	Bali (2017)
Grape Juices	5.81 on the third day	M. A. Jamaludin et al. (2016)

the ethanol content of third-day ripe fruit.⁴ Indonesian's finding, while being supported by other lab research (Ahmad, Yang, Norziah, & Wan, 2010), is argued by Ghani as that the value standard of 1% ethanol limit is too vague because other food such as tapai has significantly higher concentration ethanol, which is around 2.0–5.2% on the second day (Ghani & Ismail, 2010). In fact, there are some current dietary product on the market that has higher ethanol presence than 1% consumed by Muslim every day. Such product is portrayed in Table 3.

This debate and variability demonstrate a grey area in determining the permissible threshold of ethanol in halal dietary product. This consequently making halal regulation standard of permissible ethanol content in dietary product subjected to interpretation thus weakening the integrity of halal regulation standard. In explaining this issue, a consideration that usually discounted is the consumption manner of a dietary product. It is not entirely justified to compare ethanol content of soy sauce or vinegar and *Tapai* against beer, because the consumption habit both dietary product is entirely different. While beer is consumed like regular drinks, soy sauce, vinegar and tapai are only consumed in a miniature manner along together with solid foods. Thus, even though soy sauce, Tapai, and vinegar have a significantly higher percentage of ethanol than other dietary product, due to the nature of human consumption of these products, it will induce higher threshold of intoxication (Lin, Garg, & Wagner, 1976; Sedman, Wilkinson, Sakmar, Weidler, & Wagner, 1976), making the comparison of soy sauce and tapai against beer is somewhat arguable. One way to ensure a justified comparison is by studying the relationship between the threshold of intoxication against the consumption of dietary in daily life particularly products that within the confine of halal research. A more crucial action that should be taken is to propose on a standardised set of fruits or material in a laboratory study of ethanol content will benefit in designing a unison halal regulation standard in ASEAN. A standardised baseline on dietary product references will provide an exhaustive regulation ethanol content on the halal dietary product.

2.2.2. Methods of ethanol detection

Currently, there is a number of the technique in detecting the ethanol content in the dietary product. Each of these techniques required a unique set of laboratory instrument and material that is different from one experiment to another. Only a few published articles discuss the technique limits, precision and accuracy, such as Park (S. Park et al., 2016; S. W. Park, LeeSim, ChoiPark, & Noh, 2017), while most of other published articles only on technique the result of ethanol detection, with a small note on its reliability and precision. The diversity of ethanol detection technique without a comprehensive review on each of the technique reliability, optimum capacity, precision and accuracy could perhaps explain the dissimilarities of halal regulation standard in Brunei, Indonesia, Malaysia and Singapore. The techniques available in the literature searches are listed in Table 4.

⁴ The reason for Indonesia determination of ethanol threshold on the third day fruit ripe is based on the famous Nabidh hadith, narrated by Ibnu Abbas, saying that the prophet will throw away any fruit juice that is more than three days old (Al-Naisaburi, 2002).

2.2.3. The undetermined value of intoxication threshold for Blood Alcohol Content (BAC)

One of the JAKIM⁵ and Singapore Office of Mufti⁶ methods of determining the regulation of ethanol content in the halal dietary product is using forensic study of BAC. This, however, proves to be a cause for the halal regulation dissimilarities and a complication particularly in resolving the threshold of intoxication of a person. This threshold is determined by quantifying the alcohol molarity in the human blood, or Blood Alcohol Content (BAC). Widmark (Widmark, 1981) offers a general equation for determining a person BAC.

$$C_t = \frac{0.8zA}{Wr} - Bt \quad [1]$$

Where,

A = Numbers of Drinks Consumed

W = Body Weight in Ounces

r = a constat relating the distribution of water in the body in L/KG (r = 1.0181–0.0121 BMI for men & r = 0.9367–0.0124 BMI for women)

B = the alcohol elimination rate in KG/L/hr

T = time since first drink in hours

Z = the fluid ounces of alcohol per drink.

Ct = the blood alcohol concentration (BAC) in KGV.

The most critical variable in this equation that pertains the halal regulation standard is the variable of Z, which is the percentage of ethanol in the drink or can be translated into the ethanol content in the dietary product. However, we cannot simply determine the value of Z since it is dependent on body weight, gender, time since first drink, and individual rate of absorption, cultural background and the alcohol elimination rate (Searle, 2015; Simpson, 1987, 1988; Wolff, 1972). To properly determine the limit of ethanol content in a dietary product, a constant on these variables must be discussed and established to reinforce the uniformity on the halal regulation standard between Brunei, Indonesia, Malaysia and Singapore.

2.2.4. The Islamic Worldview on Islamic Jurisprudence principle of alcohol

The primary factor of contrariety in the halal regulation standard of ethanol content is the distinctive Islamic worldview on each of these ethanol, which inconsiderably alters their principle of Islamic Jurisprudence on Alcohol particularly in defining the cause or *illah*⁷ of alcohol prohibition.

Malaysia and Singapore view the prohibition of alcohol due to its intoxication nature, not due to the presence of ethanol in the dietary product. Hence, they do not generally verdict the alcoholic dietary product as haram and *najis*.⁸ If the ethanol additives are in a small amount, too small for it to have intoxication effect, it is permitted to use as additives. This Islamic worldview on alcohol shared by Malaysia and Singapore enable them to grant permissible to the addition of tiny amount (0.1–0.5%) industrial ethanol for the dietary additive. The base for their argument is from the narration of Ibnu Umar (Al-Asqalani, 1993);

Every intoxicating ingredient is khamr (alcohol), and every intoxicating

⁵ Dzulkifly Mat Hashim (Profesor Madya, Faculty of Food Science and Technology, Universiti Putra Malaysia), in the interview, 11 April 2015.

⁶ Dewi Hartaty Bte Suratty (Head of Halal Certification Strategic Unit, Islamic Religious Council of Singapore), in the interview, 25 Ogos 2014.

⁷ Illah can be simplified as the apparent circumstances that exist on particular item in which contribute onto the imposition of Islamic legal law onto the item (Al-Zuhayli, 1986).

⁸ In Islamic law, *najis* are things or persons regarded as ritually unclean. It is prohibited for Muslim to consume any product that classified as *najis* (Bearman et al., 2008).

Table 4
Technique in ethanol detection.

No.	Technique	Reference
1	Ethanol Biosensor Based on Alcohol Oxidase Immobilized onto Polyaniline Film	Kuswandi, Irmawati, Moch Amrun Hidayat, and Ahmad (2014)
2	Dielectric Properties of The Ethanol Solution	(Abidin, Nordalila Omar, & Biak, 2014a,b; Abidin et al., 2014a)
3	Photonics Alcohol Detector	Maharom, Hussin, Idrus, Safar, and Zulkifli (2011)
4	Electric Nose of Cyranose 320 and machine learning library	Ordukaya and Karlik (2016)
5	Simple Liquid Extraction with Dimethyl-Sulfoxide and Gas Chromatography-Mass Spectrometry	S. Park et al. (2016)
6	E-nose Mass Spectrometry (Smart Nose 300 and ThermoStar™ GSD 320 T2)	S. W. Park et al. (2017)
7	Thermo Scientific Trace GC ULTRA gas chromatography FID system	Gunduz, Yilmaz, and Goren (2013)

ingredient is haram, and whoever drinks the khamr in the world then dies in that state (and) does not repent (in return) he will not be able to drink it in the afterlife".

Sadd al-dharai' is defined as blocking the means to an expected evil which is likely to materialise if the means towards it is not obstructed (Kamali, 1989). This method of reasoning is used as a main argument by Mufti Brunei to reject the usage of alcoholic additives in the halal dietary product. Mufti Brunei regard that utilisation of alcoholic additives in halal dietary product even at the small scale is to would welcome the element of evil and danger such as intoxication. Alcoholic additives is not *najis* in nature; thus, an external application that does not involve bodily intake is permitted. However, the consumption of alcoholic additives in halal dietary product is regarded as an adverse toxic substance thus is entirely prohibited. Brunei argument resemblance a propensity to condemns any dietary product that contains trace of ethanol to be deemed as haram, either the percentage of ethanol is too small to induce intoxication or not. This Islamic worldview on utilisation of ethanol is based on the narration of Abu Daud;

"Any drink if the large amount is intoxicating, then at least it is haram."

Istihalah means transformation and conversion or can be said a transformation of filthy (haram) materials into another material; such changes include physical appearance and properties such as name, odour, taste, colour and nature (Mohammad Aizat Jamaludin, Ramli, Hashim, & Rahman, 2012). Istihalah is a legal maxim that extensively used by School of Maliki and Hanbali while being abandoned by the school of Syafie and Hanafi, as they see it to be impure and only applicable to limited issues (Jahangir, Mehmood, Saifullah, Mehboob, & Ali, 2016). Malaysia, Singapore and Brunei have a strong propensity on applying Syafii school of thought. Therefore they tend to reject the application of Istihalah and only permitted it in limited usage. Indonesia, on the other hand, is more open in applying another school of thought in their Islamic law. Thus, this enables them to practice the methodology of istihalah in determining the limiting factor in the dietary product that contains ethanol. It is the reason why Indonesia permit the usage of wine vinegar or any dietary by-product of alcohol production,⁹ with the condition that the dietary by-product produced is free from any physicality of alcohol (Fatwa Majelis Ulama Indonesia, 2003). Consequently, it resulted in the tendency of Indonesia to enact the law of halal regulation standard that epitomised the methodology of istihalah. This can be seen when Indonesia permits the additive of 1% in the beverages and prohibits the final product to have ethanol more than 0%, in which the final product no longer has taste, sense and smell of any ethanol.

The heterogeneous of Islamic worldview on alcohol is found to act as a major contributor to the dissimilarities of ethanol regulation standard in halal dietary product. To reach the goal of unified halal regulation, a flexible practice of Islamic worldview of alcohol that builds upon the prism of harmonious, non-dichotomous Islamic law

⁹ Hendra Utama (Head of Standard and Quality Control, Lembaga Pengkajian Pangan Obat-obatan dan Kosmetika Majelis Ulama Indonesia, Kota Bogor, Indonesia), in the interview, 11 Mei 2015

that is germane to the Islamic culture of ASEAN must be discussed in the academical stage.

3. Conclusion

The discussion on the issue of this most critical ingredient in Islamic dietary laws shed a light on the regulatory requirements in these four countries in Southeast Asia. The most notable are dissimilarities standard in all four nations in determining the percentage of permissible ethanol in halal food and drink productions. These dissimilarities revolved on the axes of four main factors; the material of preference for ethanol content; technique used in ethanol detection laboratory; the undetermined constant in Blood Alcoholic Concentration calculation; and Islamic worldview on the usage of Alcohol. Coordinated action by all four nations is necessary to reassess the permissible ethanol percentage in halal dietary products to guarantee regional unification that is driven by religious principles and the welfare of Muslim society and thus achieving the notion of universal Halal regulation. Regional cooperation, especially in these four countries, will allow for greater opportunities for halal industry members to market their products to fulfil the global demand for halal products. The homogeneity of standard in the region can be a guideline towards the uniformed Global Halal Standards that other Muslim countries like Pakistan, United Arab Emirates (UAE) and other Arab Gulf Countries are interested in.

Compliance with ethical standards

Conflict of interest

The authors declare that they have no conflict of interest.

Ethical approval

This article does not contain any studies with human participants or animals performed by any of the authors.

Informed consent

Additional informed consent was obtained from all individual participants for whom identifying information is included in this article.

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