

The Application Of E Coding And Cosmetic Labelling In Halal Cosmetic Screening

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Abstract: Recently, Halal lifestyle and Halal accreditation have become a world phenomenon, which have extended their scope to include industries other than food such as cosmetics. The Halal cosmetic industry has brought the impetus growth for a new market segment. Complying with the existing cosmetic regulations as well as the halal cosmetic guideline has become a new challenge to move forward. Malaysia has introduced the Halal cosmetic guideline under MS2200-1: 2008. One of the criteria is to ensure the “Halal” status of the materials and sources used. Through the Halal E Code databases from muslimconsumergroup.com, a preliminary survey had been conducted on 50 cosmetic products from the market to check their Halal status. All the products selected were checked for their ingredients based on the compulsory labelling requirement on the packaging or packaging insert. From the results, it was observed that all the ingredients used fall under the category of “Mushbooh” which means further clarification and investigation is required for the ingredients listed in the product label. The “Mushbooh” status was given to those E-Numbers where the source of raw material was unknown; it could be from a plant source or an animal source. From the result mentioned above, it is quite critical for the regulatory and certification body to come up with a Halal ingredient or Halal Pharmacopeia database in order to certify the halal status. As deduced from the results, the cosmetic ingredients included an abundance of stabilisers, emulsifiers and emollients in their formulation that require a validation to determine their certificate of origin and halal status.

Keywords: Halal E Code; Mushbooh; Halal Pharmacopeia

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Introduction

Halal (حلال), is an Arabic word which can be translated as “lawful” or “permissible” under Islamic Shariah (law) (Sadeeqa & Sariff, 2014). The jurisdiction from Allah in consuming Halal substances upon His servants is stated a few times in the Quran. For example, a clear command for Muslims to consume everything that is halal is stated in verse 168 of Surah Al-Baqarah:

“O mankind! Eat of that which is lawful and wholesome on earth and follow not the footsteps of the devil. Lo! He is an open enemy for you” (Quran 2:168).

Needless to say, Muslims are required to be on a constant search for Halal alternatives in every aspect of their lives. Thus, a Halal system has been established in various industries including food and fashion, making global Halal industries worth approximately USD 2.3 trillion excluding Islamic Finance (Alaabed *et al.*, 2013). Indeed, the increasing awareness of Halal necessities among the ever-growing Muslim population, which is estimated to reach 2.2 billion by 2030, as well as the global expenditure of Muslims across these industries with a value of \$1.8 trillion in 2014, contributes to the positive growth of Halal industries across the world (Global Islamic Economy, 2016). There is no specific initiation date on the novel work in establishing Halal in pharmaceutical industries. The development of a Halal system has been supported by many

Muslim and non-Muslim countries such as Korea and Japan. In addition, some of the world’s most renowned pharmaceutical companies such as Glaxo Smith Kline and Novartis showed some interest in Halal Pharmaceutical industries, when they invented a vaccine for meningococcal disease; namely Mencevax and Menvio respectively, which are derived from bovine and have been approved by Saudi Arabia for the Hajj pilgrims which reached a global total of 3.25 million in 2012 (Hajj Statistics, 2012). Malaysia is one of the leading countries in implementing Halal Systems in Pharmaceutical sectors; achieving a great milestone when its first Halal pharmaceutical guideline, MS2424: 2012 was officially established in early October of 2012. The Department of Islamic Development Malaysia (JAKIM) is an official regulatory for Halal system management in Malaysia. It imposes scrupulous procedures in certifying and regulating the Halal-certified products. Contrary to Malaysia, which fully supports the development of Halal systems in the Pharmaceutical industry, other countries depend solely on private organizations in certifying their pharmaceutical products with a Halal certificate. JAKIM might accredit some of these private bodies in regulating the Halal system in their countries (Ahmad *et al.*, 2015).

However, plenty of issues in Halal Pharmaceutical industries remain unsolved. For example, many non-Halal pharmaceutical products used in hospitals do not have Halal alternatives for the consumption of Muslims. Although some research and developments are still on-going; for instance the world’s first Halal vaccine, Halal alternatives for gelatine and

other substances, more research and novel work are needed to provide Shariah-compliant solutions for the Muslims.

Rising concerns on the sources of ingredients used in cosmetics and personal care products are the initiator of the establishment of a Halal system in the global cosmetic industry. Halal, in the cosmetic industry, produces a positive impact on the consumers as well as the manufacturers. The market demand on Halal and safe products has driven more manufacturers to certify their products as Halal. Halal is not limited to the source of the product only, other aspects such as the safety of the ingredients used, the practice of good manufacturing, as well as the quality of the product, need to be considered in order to obtain the Halal certificate.

Based on the statistics of the Global Islamic Economy report 2015/16, Singapore has the best developed Islamic economy for Halal pharmaceuticals and cosmetics, followed by Egypt and Malaysia coming at second and third places respectively. It is measured by the Halal Pharmaceutical Indicator which comprises a total of 73 selected countries. Other countries, especially in the Middle East such as the United Arab Emirates, Jordan and Yemen, are actively involved in the growth of the Halal cosmetic industry (Md Nor, 2016).

The new Halal wave has revitalized the global cosmetic industry resulting in earning an approximate revenue of US\$514 billion in tandem with the numbers of concerned cosmetic users with Halal issues of the cosmetic products available in the market (Hunter, 2012; Ireland & Rajabzadeh, 2011).

The lack of a global standardized certification guideline on cosmetic and personal care as well as the pharmaceutical industry has imposed a challenge on the Halal industry to expand especially in non-Muslim countries (FMI, 2015). Nonetheless, some countries are still in the process of developing a standard guideline of their own while others have established a Halal guideline in cosmeceutical industries such as Malaysia and the United Arab Emirates. Requirements of Halal Cosmetics have been established by the UAE committee; this guideline has been implemented as the UAE Regulation for Cosmetic and Personal Care by Emirates Authority for Standardization & Metrology on 29th November 2014 (ESMA). Malaysia's Halal general regulation of cosmetic and personal care, MS2200-1: 2008 has become one of the references of the UAE Regulation for Cosmetic and Personal Care.

The labelling of the cosmetic product ingredients follows the system of the International Nomenclature of Cosmetic Ingredients, known as INCI (Admin, 2013). INCI is a standardized international format used for listing the ingredients on cosmetic and personal care products; it was developed to form a uniform, science-based method for labelling that aids in consumers' understanding and eliminates the language barrier which resolves international trade issues (Hampton, 2014). It has been established under the co-operation between the U.S Cosmetics, Toiletry and Fragrance Association (now known as PCPC) and the European Cosmetic, Toiletry and Perfumery Association.

Codex Alimentarius or as commonly known, E-numbers comprise a list of codes specifically used for food additives that have been approved by the Codex Alimentarius Commission, a body established by the Food and Agriculture Organization (FAO) supported by the World Health Organizations (Codex, 2016). It was developed to investigate the safety of food additives and to ensure fair international trade.

Malaysia's Halal General Guideline of Cosmetic and Personal Care

To make Malaysia a Global Halal Hub, the Technical Committee of Halal Food and Islamic Consumer Goods, under the authority of the Industry Standards Committee of Halal Food, have developed a series of Halal General Guidelines on Islamic Consumer Goods which are MS2200-1:2008 and MS2200-2:2013. The former guideline is concerned with cosmetics and personal care while the latter touches upon the usage of animal bones, skin and hair. Practical standards and basic criteria for the Halal cosmetic and personal care industry, and a business which is aligned with Shariah legislation in Malaysia is discussed under MS2200-1:2008; this particular parameter should be used in tandem with the Guidelines of Control of Cosmetic Products in Malaysia and Guidelines on Cosmetic Good Manufacturing Practice by the National Pharmaceutical Control Bureau.

The contents of Islamic Consumer Goods Part 1 – Cosmetic and Personal Care – General Guidelines or known as MS2200-1:2008 consist of the definition of terms used, basic requirements of the Halal guidelines, the compliance to the basic requirements listed, Halal certificates, Halal certification mark and the method of washing and ritual cleansing (*dibagh*) according to Shariah Law for *najs al-mughhallazah* in Annex A. This guideline serves as a fundamental recommendation for cosmeceutical industries which are interested in manufacturing Halal certified products. The scrupulous inspection on the source of the ingredients used and the site of manufacturing will be conducted by JAKIM which has been appointed as the official Islamic authority in Malaysia. The inspection will be carried out frequently with the cooperation of the Islamic bodies in each state (Ahmad *et al.*, 2015).

Methodology

This study was based on the review of various guidelines around the world for cosmetic labelling requirements by the US FDA, European and Malaysian National Pharmaceutical Regulatory Agency (NPRA). 50 cosmetic products were chosen randomly from the market based on the country of origin and classes of products which do not have the Halal logo.

The selected products were assessed based on their ingredient labelling through the Halal E Code databases from muslimconsumergroup.com. The Muslim Consumer Group for Food Products is a non-profit, non-political and an Islamic scientific organization, incorporated in 1993 as a Halal food educational and Halal certification organization for Muslim consumers and the food industry.

Results and Discussion

From the US FDA, European, ASEAN and Malaysian guidelines, all the cosmetic ingredients must be declared in the label. In the guideline, it is required to state the full list of ingredients, including the weight in descending order, and colouring agents may be listed in accordance with the colour index number. The ingredients shall be specified using the nomenclature from the latest edition of standard references. Botanicals and extracts of botanicals should be identified by their genus and species.

In accordance with the above-mentioned statements, a specific declaration of ingredients from animal origins is required:

- i. There must be a statement (of any format) on the product label signalling the presence of ingredients of animal origins
- ii. For ingredients of bovine (cow) or porcine (pig) origin, the exact animal must be declared.
- iii.

The nomenclature system used in INCI is based on the scientific name of the ingredient which is often Latin-based and is shown in Table 1.

Table 1. Common name and INCI name of certain ingredients in cosmeceutical products

COMMON NAME	INCI NAME
Shea Butter	<i>Butyrospermum Parkii</i>
Aloe Vera Leaf Gel	<i>Aloe barbadensis</i>
Sunflower Oil	<i>Helianthus Annuss</i>
Saponified oil of palm	<i>Sodium Palmate</i>
Vegetable Glycerine	<i>Glycerin</i>

The cosmetic manufacturers in the USA are obliged to adopt the INCI system in listing the ingredients used. This system is also implemented by the European Union as their regulatory standard as well as other countries, namely Canada, Argentina and Japan to ensure the transparency in cosmetic ingredients disclosure (Admin, 2013). To date, there are more than 22,000 ingredients listed in the INCI system; which is the most comprehensive list available for cosmeceutical products.

As for the colour ingredients used in cosmeceutical products, a different system is followed according to the respective legislation in the country. A colour ingredient can have several names as in Table 2. Colour Index (CI) numbers are usually used in listing the colour additives and the coding system is designated with five digits, sometimes with a suffix and a colon to show the relationships.

Table 2. The nomenclature of colour additives

COMMON NAME	CI NUMBER	CAS NUMBER	FDA NAME
Tartrazin	CI 19140	1934-21-0	FD&C Yellow No. 5
Sunset Yellow	CI 15985	2783-94-0	FD&C Yellow No. 6
Iron Oxide	CI 77491	1309-37-1	-
Acid Red 14/Azorubin	CI 14720	3567-69-9	-

E-numbers are used specifically for foods; this system of ingredient listing is not implemented in cosmetic products. However, some food additives are used in the manufacturing of cosmeceutical products. For that reason, and the availability of Halal status of E-numbers online, the list of E-numbers with Halal status from muslimconsumergroup.com is made as a reference to the ingredients used in cosmetics and personal care.

Table 3. Classification of E-numbers

E NUMBERS	TYPE OF ADDITIVES
100 – 199	Colours
200 – 299	Preservatives
300 – 399	Antioxidants, Phosphate & complexing agent
400 – 499	Thickeners, gelling agents, phosphates, humectants & emulsifier
500 – 599	Salts & related compounds
600 – 699	Flavour enhancers
700 – 899	Not used for food additives (For feed additives purpose)
900 – 999	Surface coating agents, gases & sweeteners
1100 – 1399	Miscellaneous additives
1400 – 1499	Starch derivatives

Examples of list of E-numbers with Halal status, Mushbooh and Haram

Tables 4, 5 and 6 show some examples of ingredients with their E-numbers with halal, mushbooh and haram status respectively.

Table 4. Ingredients and their E-numbers with Halal status

E-NUMBER	INGREDIENTS	DESCRIPTION
E160c	Capsanthin / Capsorbin	Colour- It has a plant origin and is available in oil or water-soluble form.
E163	Anthocyanins	Colour. Anthocyanins is a water-soluble pigment obtained from plants by extracting with water and is Halal.
E170	Calcium Carbonate (Chalk)	It is an inorganic chemical.
E171	Titanium Dioxide	It is an Inorganic chemical used in food products to provide a white colour.
E172	Iron Oxides and Iron Hydroxides	Iron is a metal. Iron Oxide and Iron Hydroxides are inorganic chemicals.
E173	Aluminium	It is a metal.
E174	Silver	It is a metal.
E175	Gold	It is a metal.
E200	Sorbic Acid	Chemical Preservative
E201	Sodium Sorbate	Chemical Preservative
E202	Potassium Sorbate	Chemical Preservative
E203	Calcium Sorbate	Chemical Preservative
E203	Calcium Sorbate	A chemical preservative

Table 5. Ingredients and their E-numbers with Mushbooh status.

E-NUMBER	INGREDIENTS	DESCRIPTION
E1101	Protease Enzyme.	Can be obtained from animals or plants. A green dot on food packages in India indicates that it is from a plant. A Halal or kosher symbol on food products in the USA/Canada containing protease enzyme is Halal as it is obtained from plants
E319	Tertbutylhydroquinone (TBHQ).	TBHQ is not available in its 100% pure form and it has to have a carrier for mixing purposes. If it has vegetable oil as a carrier, then it is Halal. If it has an animal based fat then it is not Halal; maybe haram if pork fat is used. TBHQ is a chemical; its 100% form without a carrier is Halal
E100	Curcumin/Turmeric.	Colour; Halal only when it is 100% pure, but in the food industry it is not available but made with fat based emulsifiers such as polysorbate 80
E101	Riboflavin (Vitb2).	Colour; Halal if it is made from synthetic sources. Otherwise, an investigation is needed for its source
E103	Chrysoine Resorcinol.	Colouring e-number. Halal if the solvents are Halal. It is obtained from plants
E104	Quinoline Yellow.	Colour. It is a chemical dye; Halal if used as a dry powder. Its Liquid form is Halal only if Halal solvents are used.
E105	Fast Yellow AB.	It is a chemical dye and is Halal if used as dry powder; its liquid form is Halal only if Halal solvents are used. It is forbidden in the USA and Europe
E122	Carmoisine/Azorubine.	Colour; It is a chemical dye and is Halal if used as powder. Liquid colour is Halal only if a Halal solvent is used. It is used in fermented heated food products which may not be Halal
E123	Amaranth Dye.	Colour. It is a dry form petroleum base. It is Halal if used as a powder dye. Its Liquid dye is Halal if Halal solvents are used
E127	Erythrosine BS.	Colour. It is a chemical dye which is Halal only in its dry form. Its Liquid form is Halal only if Halal solvents are used

E128	Red 2G.	Colour. It is a chemical dye Halal in its dry form and liquid form only if Halal solvents are used
E131	Patent Blue V.	Colour. It is a chemical dye which is Halal only in its dry form. Its Liquid form is Halal only if Halal solvents are used
E132	Indigo Carmine/ Idigotine.	Colour. It used to be extracted from plants but now it is synthetically produced. It is Halal if it is synthetically produced from Halal sources. Its Liquid form is Halal if the solvents used are Halal
E140	Chlorophyll.	Colour. It is a plant pigment; Halal if the extracting solvents used are Halal, not alcohol
E141	Copper Complex Of Chlorophyll.	Colour. It is a plant pigment; Halal if the extracting solvents used are Halal, not alcohol
E1410	Mono Starch Phosphate.	Phosphate in Europe is also obtained from animal bones. So it is essential to check the source of phosphate. "Suitable for Vegetarians" label on food packages indicates that it is obtained from minerals. In the USA, it is obtained from minerals, thus it is Halal.

Table 6. Ingredients and their E-numbers with Haram status

E-NUMBER	INGREDIENTS	DESCRIPTION
E124	Ponceau 4R / Cochineal Red A	Colour Cochineal Red A is Haram. Ponceau 4R is a synthetic colour. It is Halal if used in its dry form from Halal sources but its liquid form is Halal only if Halal solvents are used.
E354	Calcium Tartrate	It is the by-product of wine-making in many countries except the USA and Canada. Tartrate or Tartaric acid is made from unfermented crushed grapes. A synthetic sweetener, but alcohol is used during its processing.
E951	Aspartame	A synthetic sweetener, but alcohol is used during its processing.

All the samples collected fall under the category of "Mushbooh" which means further clarification and investigation is needed for the ingredients listed on the product. The Mushbooh status was given to those E-Numbers where the source of the raw

material was unknown; it could be from a plant source or an animal source.

Ingredients like glycerine as humectant, palmitic acids, creatine are from animal origins, hydroxypropyl starch phosphate is extracted from animal bones, sodium hyaluronate (Humectant), glyceryl stearate (Emulsifier), potassium cetyl phosphate (Surfactant/Emulsifying Agent) are also from animal bones, sorbitan stearate, stearic acid, bis-diglyceryl polyacyladipate-2 (Emollient), ethylhexyl palmitate, disodium stearyl glutamate, ethylhexyl glycerine, hydrolysed glycosaminoglycans, propylene glycol, stearate ethylhexylglycerin, disodium stearyl glutamate, ascorbyl palmitate, polyglyceryl-2 triisostearate, bis-diglyceryl polyacyladipate-2, retinyl palmitate PEG-150, distearate collagen, hydrolysed sodium, hyaluronate glyceryl, monostearate polysorbate 85, polyglyceryl-3 diisostearate, ethylhexyl stearate, polyglyceryl-4 isostearate, hydrolysed collagen, butyl hydroxytoluene (BHT), isopropyl isostearate PEG-100, stearate and isopropyl isostearate were considered as Mushbooh based on the E code determination.

From the above results, it is critical for the regulatory and certification body to establish a Halal ingredient or Halal Pharmacopeia database in order to certify the halal status. As observed, most of the cosmetic ingredients used a lot of stabilisers, emulsifiers and emollients in their formulation which requires an investigation to determine their certificate of origin and halal status.

Plant-derived Collagen

Collagen is one of the most commonly used ingredients in cosmetic products which effectively works to rejuvenate dry and damaged skin and replenish its suppleness, and it can enhance the texture of damaged hair. Since collagen is mainly available in animals, it causes concern from a Halal perspective. Nonetheless, the term plant-collagen or known as phycollagen that acts as pseudo-collagen has been introduced in the world of cosmetics; claiming that it can replace the collagens derived from animals (Begoun, 2016). These collagens are manufactured from hydrolysed wheat proteins containing an extension that is composed of hydroxyproline; a similar amino acid residue comparable with that in mammals which is rich in hydroxyproline and hydroxylysine that contributes to its characteristics (Collfix, 2016.; Colltech, 2016). However, the structure of extensions in plants completely differs from collagen, and the effect of phycollagen in replenishing the skin might not be as effective as the animal-derived collagen.

Conclusion

The Halal cosmetic industry is considered to be an untapped industry where many issues still need to be tackled. The sources of ingredients for cosmetics and personal care products are still a major concern in the Halal industry. The search for Halal alternatives for the non-Halal ingredients needs to be urged. The consumers can help in highlighting this issue by creating a great demand for Halal cosmetic products which will inevitably become a driving force for the manufacturers to take this issue into consideration.

The Halal status of the selected products in this research is roughly evaluated by comparing the ingredients used in the products with a list of E-numbers with a Halal status. However, further investigation of the products with *mushbooh* status is required to determine the source of the ingredients before the Halal status is determined. It is ideal that the sources of the ingredients used in the products are verified with the manufacturers.

Conflict of Interest

The authors declare that there is no conflict of interest in this work.

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