



## THE USE OF CERAMIC PRODUCT DERIVED FROM NON-*HALĀL* ANIMAL BONE: IS IT PERMISSIBLE FROM THE PERSPECTIVE OF ISLAMIC LAW?



Mohd Mahyeddin Mohd Salleh<sup>1†</sup> --- Nurdeng Deuraseh<sup>2</sup> --- Irwan Mohd Subri<sup>3</sup> --- Suhaimi Ab. Rahman<sup>4</sup> --- Shuhaimi Mustafa<sup>5</sup> --- Mohammad Aizat Jamaludin<sup>6</sup> --- Yasmin Hanani Mohd Safian<sup>7</sup>

<sup>1</sup> Lecturer, Faculty of Shari'ah and Law, Universiti Sains Islam Malaysia (USIM), PhD Candidate in Halal Products Research Institute, Universiti Putra Malaysia (UPM)

<sup>2,5</sup> Senior Lecturer, Halal Products Research Institute, Universiti Putra Malaysia (UPM)

<sup>3,7</sup> Senior Lecturer, Faculty of Shari'ah and Law, Universiti Sains Islam Malaysia (USIM)

<sup>4</sup> Senior Lecturer, Faculty of Economics and Management, Universiti Putra Malaysia (UPM)

<sup>6</sup> Senior Lecturer, International Institute for Halal Research and Training (INHART), International Islamic University Malaysia (IIUM)

### ABSTRACT

A ceramic product derived from the bones of non-halal animal has become an issue for Muslims in terms of its status whether it is halal or haram. The status can be determined by scrutinizing the transformation process or namely as *istihālah* either a complete change (*istihālah kāmīlah*) or an incomplete change (*istihālah ghayr kāmīlah*). This research used the qualitative research method via the approach of document analysis to examine various opinions of classical and current Islamic jurists on the status of using ceramic products derived from the bones of non halal animal according to the Islamic law. The research discovers an alternative method of processing ceramic products from animal bones through *istihālah*. It is a transformation of filthy or haram materials into other materials which includes physical appearance and its properties such as odor, taste and color.

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**Keywords:** Ceramic products, Bone China, Water filter, Non-*halāl*, Animal bone, *Istihālah*, *Fiqh*-jurisprudence, Halal industry.

Received: 20 July 2016/ Revised: 31 August 2016/ Accepted: 20 September 2016/ Published: 14 October 2016

### Contribution/ Originality

This study is one of the very few studies which investigated the non-*halāl* animal bone which has been used in ceramic products from the *Sharī'ah* perspective. The paper's primary contribution is finding that established *istihālah*; a principle of transformation of filthy or haram materials into other materials, can be applied as a legal method in determining the *halal* or *haram* status of a ceramic product.

### 1. INTRODUCTION

The art of ceramic is perhaps as old as human civilization. Initially, it started with clay and then passed through many stages and sources such as stone, shell and metal before reaching the age of ceramic and porcelain. Ceramic means the manufacture of any product made from a non-metallic mineral hardened at high temperatures (Peterson, 2003). The ceramic products which are used for fine art of dining and showcase are called ceramic tableware products. The tableware market can be categorized into three types: dinnerware (e.g.: plates, bowls, cups, saucers and mugs), glassware (e.g.: beverage ware, stemware and barware of both glass and crystal) and flatware (e.g.: eating

† Corresponding author

DOI: 10.18488/journal.1/2017.7.3/1.3.192.198

ISSN(e): 2224-4441/ISSN(p): 2226-5139

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utensils) (Forkan and Ahmed, 2011). Globally, the world ceramic market is worth of €120 billion, including the ceramic tableware sector (Cérame-Unie, 2007).

In the tableware ceramic industry, bone China is among the products that have gained high demand from consumers. The beauty of bone China products in various forms is appealing enough for people to collect this exclusive product, including Muslims. However, these products have become issues for Muslims, regarding the permissibility status of using them, due to their production from animal bone (Zakaria and Haron, 2013). Apart from bone China products, it was also reported that animal bones have been widely used in water filter products as a potential absorbent for eliminating excessive fluoride in drinking water (Medellin-Castillo, 2007).

Halal has become a major concern for Muslims using products derived from animal substances (Halim and Salleh, 2012). In general, the animal bone is considered halal if it is taken from halal animals which have been slaughtered in accordance with the Islamic law. However the scholars hold different opinions regarding the permissibility of using them, if the bone originates from ritually impure animals; such as pigs, or taken from dead animals which were not slaughtered according to the Islamic law. The majority of scholars are of the opinion that it is impure (*najs*) and therefore haram to be utilized (Al-Zuhaili, 2007). This ruling is based on the general prohibition of utilization of carrion and pig and their derivatives as stated in the Quran (al-Baqarah, 1:173; al-Mā'idah, 5:3; al-An'ām, 6:145). The haram substances can, however, change into halal under certain circumstances that are expounded under the principle of *istihālah*. In this case, the internal changes that alter the haram and converts it into halal; such as the transformation of alcohol into vinegar, or when pork falls into salt and over time becomes an indistinguishable part of it Ali (2013). Another classic example of *istihālah* is the changes of filth material to ashes (*al-ramād*) through the combustion process (*al-ihrāq*) (Al-Nadwī, 2006). This transformation can occur naturally, as in the case when an alcoholic substance is left in an open place or exposed to the sun, or when other substances such as onion, bread or yeast are immersed in it Kamali (2013). This paper is an attempt to propose the concept of *istihālah* as an alternative purification method and to analyze the issue of ceramic-based products from animal bones. The scientific evidence obtained will be used as a guideline for researchers to choose which opinions of Muslim jurists that is more relevant to be applied for this issue.

## 2. ANIMAL BONE IN CERAMIC PRODUCTS

In this study, the analysis is made on two types of ceramic products from animal bones, which are frequently used by Muslim consumers namely; bone China and water filter products.

### 2.1. Bone China

Bone China is a type of soft-paste porcelain that is composed of bone ashes, feldspathic material, and kaolin. It has been defined as a “ware with a translucent body” containing a minimum of 30% of phosphate derived from animal bone and calculated calcium phosphate (The British Pottery Manufacturers Federation, 1994). Developed by an English potter Josiah Spode, bone China is known for its high levels of whiteness and translucency, and a very high mechanical strength and chip resistance. Its high strength allows it to be produced in thinner cross-sections compared to other types of porcelain (Ozgundogdu, 2005). Bone China was almost exclusively an English product, with production effectively localized in Stoke-on-Trent, UK. The term “China” or “porcelain” refers to bone China, and “English porcelain” has been used as a term for it, both in the UK and around the world (Osborne, 1975).

Traditionally, bone China is made by firing a mixture of clay, bone ashes and a flux. Bone ashes used in the production of bone China is made by first treating the animal bone with hot or boiling water under pressure so as to remove gelatine, collagen and other organic matter. In this state, the bone is said to be degelatinised. It is afterwards calcined to a temperature of about 1000° C in order to burn off the remaining organic matter. Calcined bone or bone ash is substantially (about 80 percent) calcium phosphate, with some calcium carbonate and a little fluoride (Thompson, 1980).

Ceramic compositions for making bone china comprise of typically 50 % bone ash, 25 % China clay and 25 % Cornish stone. They are made into a ceramic body by intimately mixing and usually wet milling the particulate ingredients so as to produce aqueous slurry or slip suitable for casting in plaster molds; or at lower water content plastic clay which may be molded or shaped. After drying to evaporate the water, such shaped objects are then fired to a temperature in the region of 1250° C, in order to produce unglazed “China biscuit” ware of low porosity and characteristic translucency. The biscuit ware is subsequently coated with a glaze slip and re-fired to a temperature of about 1100° C to produce glazed China. One of the principal characteristics of ware produced in this way is its translucency, coupled with whiteness, for which bone China (sometimes called fine China or English bone China) is renowned for [Thompson \(1980\)](#). The raw materials for bone China are comparatively expensive, and the production is labor-intensive, which is why bone China maintains a luxury status and high pricing.

## 2.2. Bone Charcoal in Water Filtration System

Bone charcoal is a porous, black, granular material produced by charring animal bones. Its composition varies depending on how it is made, however it consists mainly of 57-80 % tricalcium phosphate (or hydroxylapatite), 6-10 % calcium carbonate and 7-10 % activated carbon. It is primarily used for filtration and decolourisation ([Fawell, 2006](#)). In production of bone char, dry animal bones are charred in a specially designed furnace with limited oxygen supply and charring temperatures between 350-400 °C. Due to the charring process, the bones are brittle and easy to crush followed by sieving into different fractions ([Korir et al., 2009](#)).

The tricalcium phosphate in the bone char can be used to remove fluoride and metal ions from water, making it useful for the treatment of drinking supplies ([Medellin-Castillo, 2007](#)). Bone charcoal is among the oldest known water defluoridation agent and was widely used in the USA from the 1940s to 1960s ([Horowitz, 1967](#)). It usually has a lower surface area than the activated carbons, but presents high adsorptive capacities for certain metals, particularly those from group 12 such as copper, zinc, and cadmium ([Ko, 2000](#)). Moreover, the substance of bone char is highly toxic metal ions, such as those of arsenic and lead may also be removed ([Chen, 2008](#)).

Other usage of bone char are as a decolorizing and dashing agent in sugar refining. Additionally, it is used as a part of the refining process for cane sugar but not beet sugar. Bone char possesses a lower decoloration capacity compared to activated carbon; however unlike carbon, it is able to remove inorganic impurities; most importantly sulphate and the ions of magnesium and calcium. The removal of these substances is beneficial, as it reduces the level of scaling in the refining process later when the sugar solution is evaporated.

## 3. ISTIHĀLAH AS A LEGAL METHOD IN DETERMINING PERMISSIBILITY OF USING CERAMIC PRODUCT

The term *istihālah* is derived from an Arabic root word, ‘*hāla*’ which means transformation or changes ([Jamaludin et al., 2013](#)). Synonymously, it refers to a change from one characteristic to another characteristic that is very different from its original form ([Abdul, 2012](#)).

Conceptually, Muslim jurists provided various definitions of the term *istihālah*. However, the common ground of these definitions is transformation of one material into another ([Qal’ahji et al., 2006](#)). According to [Ibn A’bidīn \(1992\)](#) *istihālah* refers to the changes of original material, either partly or the whole of substances and its nature. Meanwhile, the Islamic Organisation for Medical Sciences (IOMS) has adopted the definition of *istihālah* as the transformation of the natural characteristics of a forbidden substance to produce another substance with a different name, properties or characteristics ([Al-Kurdī, 2007](#)). Scientifically, the substance transformation refers to a chemical permutation, such as the process that changes oil and fat into soap or the decomposition of fats into fatty acids and glycerol through scientific intervention ([Kamali, 2013](#)).

In classical *fiqh* books, *istihālah* is described as the transformation of wine to vinegar, the changes of carrion to salt, or when a pig falls into salt and becomes an indistinguishable part of it, and tanning process (*dibāghh*) of haram animal skin except pigs and dogs. However, in the context of ceramic products, the most relevant example is the

transformation from filthy material to ashes (*al-ramād*) through the combustion process (*al-ihrāq*) (Abū, n.d). The *istiḥālah* principle can be determined based on three main categories of transformation which are; firstly, the transformation of physical characteristics; secondly, the transformation of chemical substances and; thirdly, the transformation of both physical and chemical characteristics (Mohammad and Jasimah, 2009). Physical transformation includes odor, taste and color, whilst chemical transformation is the change of chemical substances in the product. In the case of transformation of both physical and chemical characteristics, a substance undergoes complete change and transforms into a new material. Some examples of physical transformations are animal skins, except dogs and pigs, which are transformed into leather through the tanning process. An example of a chemical transformation is the change of wine to vinegar through the fermentation process. In the latter example, both wine and vinegar are still in liquid forms, but they are different in terms of chemical properties (Jamaludin *et al.*, 2013).

Juristic opinion tends to differ over the legality and effects of *istiḥālah*. Can a Muslim consume or use an unclean substance if its chemical properties have changed? The opinion of *Hanaḥī* and *Malikī* schools of thought hold this to be permissible based on the reasoning that haram exists due to unclean properties, and when they have disappeared, the original status of permissibility is restored; as in the case of alcohol changing into vinegar (Al-Khatīb, 2013). The rulings (*al-aḥkām*) of *Sharī'ah* are founded in their proper and effective causes (*al-'ilal*). In this case, when the effective cause of a ruling collapses and no longer obtains, its relevant ruling also collapses and should be replaced (Ibn Qayyim, 1991). Meanwhile, the jurists of the *Shāfi'ī* and *Ḥanbalī* schools view that it is not permissible and haram for Muslims to consume even though they have naturally changed their original nature and feature into a new product (Al-Khatīb, 2013). In this case, the ashes resulted from combustion of feces, if it falls into a well, in large quantities then the water will be considered unclean. Besides, the same decision is also applied to the salt if dead animals immerse in the salty water, and become an inseparable part of it, so it is unlawful to use the salt. Their arguments are based on the *ḥadīth* of the Prophet Muhammad which forbade his companions to take wine as an ingredient in food even after it has been converted into vinegar. The evidence for that is the *ḥadīth* of Anas ibn Mālik (may Allah be pleased with him) who said:

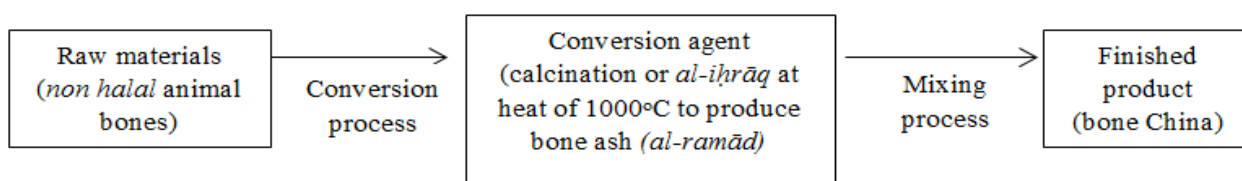
*“The Messenger of Allah (peace and blessings of Allah be upon him) was asked whether wine could be changed to be used as vinegar. He said, ‘No’ (Reported by Muslim)”.*

In this case, the process of the fermentation has been interrupted by human intervention. Thus, the ban on alcoholic drinks or wine remains intact whether in its original nature or transformed feature. The same stand is held on any impure substances such as pork, carrion, flowing blood and the like.

As conclusion, it can be seen that the *Shāfi'ī* and *Ḥanbalī* schools have emphasized that the legal ruling of each product should be determined at the early stage of the process, specifically on its raw material. If it originates from a lawful material then the product is lawful. However, if it comes from an impure or forbidden material then the end product is unlawful even if the nature of the impure subject has totally changed to apparent purity. On the other hand, the *Hanaḥī* and *Mālikī* schools determined the ruling by looking at the end product whereby, if the original characteristic of the impure including its taste, smell and color, has disappeared and transformed into a new product, it will no longer be considered unclean.

#### 4. THE APPLICATION OF *ISTIḤĀLAH* ON CERAMIC PRODUCTS

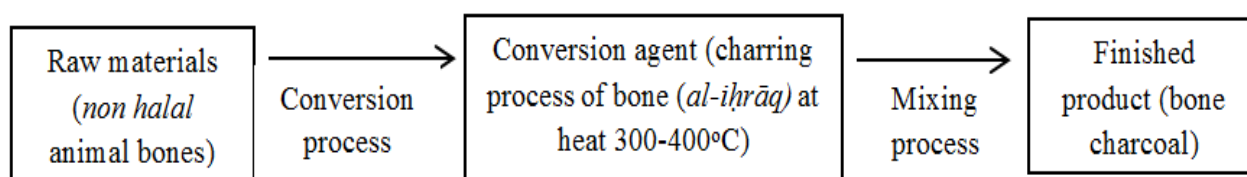
In the production of ceramic, *istiḥālah* can be applied by scrutinizing at three basic components which consist of the raw material, conversion process and finished product. The bones used as raw material can be classified as permissible (*ḥalāl*); if it is derived from halal animal which has been slaughtered in accordance with *Sharī'ah*. Meanwhile, if it is originated from forbidden sources such as carrion and pork, it is considered as non-permissible (*ḥarām*). The conversion agent is through the combustion process (*al-ihrāq*) at high degrees of heat until it changes into a new ceramic product. This process can be seen in Figure 1.

Figure-1. *Istihālah* process in bone China production

Source: Jamaludin (2009)

Regarding the application of *istihālah* in bone China, firstly, raw materials (*non ḥalāl* animal bones) are boiled at 100 °C to remove the organic materials such as gelatine and collagen. The bones are later calcined in a limited oxygen supply at the heat degree of 1000°C to produce bone ashes. During calcination process, the physical appearance of animal bones is transformed into ashes (*al-ramād*). The bone ash is later mixed with other substances such as clay and flux stones in specific amounts, to complete its transformation. According to the jurist opinion of *Shāfi'ī* and *Hanbalī* schools, the transformation process in bone China is considered as incomplete (*istihālah ghayr kāmīlah*) because the raw materials are from haram materials, consequently it is haram to be used, even though the original nature of the bones has disappeared. However, the jurists of *Hanaḥī* and *Mālikī* view that it has undergone a complete change (*istihālah kāmīlah*) due to the characteristics of the bone are no longer available, thus it is considered *halal*.

The same application goes to the production of bone char used in water filters (Figure 2). The transformation process occurs during the charring stage of bones at temperatures between 350-400 °C, where the bones are crushed and sieved into grain sizes. It is suggested that the physical appearance of the bones still remain intact because the bones are only charred and not fully transformed into ashes. Hence, the transformation process of bones in water filter is considered as incomplete (*istihālah ghayr kāmīlah*), in the opinion of most of the Islamic jurists from four schools.

Figure-2. *Istihālah* process of bone charcoal in water filter

Source: Jamaludin (2009)

In Malaysia, the determination of *ḥalāl* and *ḥarām* status of ceramic products depends on the source of the animal bones, as well as the rule of necessity (*ḍarūrah*) and prohibition of evasive legal devices (*sadd al-ḍharā'ī*). According to the Fatwa Committee of the National Fatwa Council for Islamic Religious Affairs Malaysia, upon determination the ruling of the use of animal bone ashes (bone China) in the production of household goods and ornaments, it is decided that according to *Shāfi'ī* school of thought, the original substance of filth (*najs*) in pigs still remains in bone China products and this substance will never disappear, thus the process of *istihālah* never occurred (JAKIM, 2013).

The use of bone China products containing non-halal animal bone ashes other than pigs' is also prohibited, even though the *Hanaḥī* scholars consider it as permissible. This is to prevent the use of non-halal ingredients in producing other consumer products. Furthermore, it is not a necessity (*ḍarūrah*) for the society to use and own household goods and ornaments made from bone China. Therefore, it is decided that, the use of household goods and ornaments made from non-halal animal bone ashes, including those made from halal and edible animals which have not been slaughtered according to *Sharīāh* principles, are not permissible. However, if the source of animal bone ashes in China is derived from halal animals which have been slaughtered according to *Sharīāh* principles, its use is permissible (JAKIM, 2013).

## 5. CONCLUSION

*Istihālah* process consists of three main elements; raw material, conversion agent and finished product. Based on preponderant opinion, the method of *istihālah* in ceramic products is not applicable, due to the haram materials used as raw materials, even though the original characteristics of bones have changed. Consequently, it is obligated for Muslims to avoid from using ceramic based products of animal bones which are not halal certified. Finally, it is suggested that the principle of *istihālah* to be one of the alternative methods that can be applied in current issues in finding solution and dealing with halal and haram ceramic products for Muslim consumers.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

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