Handbook of Halal Food Production

Mian N. Riaz, Muhammad M. Chaudry

Alcohol in Halal Food Production

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Roger Ottman, Mian N. Riaz, Munir M. Chaudry
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Roger Ottman, Mian N. Riaz, and Munir M. Chaudry

CONTENTS
Alcohol as a Beverage ................................................................. 202
Alcohol as a Flavorant in Cooking .................................................. 202
Alcohol as an Industrial Chemical .................................................. 203
Other Uses of Alcohol ............................................................... 203
Implications for Halal ................................................................. 204
Halal Certification of Items Containing Alcohol ............................ 205
References ................................................................................. 206

The word alcohol derives from the Arabic word alkuhl, which refers to the fine powder usually made from antimony and used as an eye shadow. In chemistry, alcohol is the name of a family of chemicals containing the hydroxyl group attached to a carbon atom (C-OH). This includes ethanol (used in the liquor industry), isopropyl alcohol (used in the healthcare industry), cetyl alcohol (used in the cosmetics industry), sugar alcohols like mannitol, xylitol, and sorbitol (used in the confectionary industry and in foods and pet food to provide sweetness), as well as other alcohols (Othman and Riaz, 2000). In language, Merriam-Webster defines alcohol as a clear liquid that has a strong smell, which is used in some medicines and other products, and is the substance in liquors (such as beer, wine, or whiskey) that can make a person drunk (Jolly, 2001). The word khamr used in the Quran is often considered to mean alcohol, although it has the broader meaning of any intoxicant. Intoxicants are substances that affect the brain and thought. Ethanol is one of the main intoxicants and the one most commonly found in foods and beverages (Halal Consumer Group, 2012). The use of the term alcohol in this chapter will mean ethanol (or ethyl alcohol).

Alcohol is a chemical that is common in nature. It can be found in overripe fruits, juices, and milk. Alcohol has many uses and applications. In ancient times, it was mainly consumed as a beverage. Historically, alcohol was made by fermentation from fruits such as grapes and dates. In modern times, alcohol is also made from grains such as rye, wheat, barley, and corn and by synthesis from hydrocarbons such as oil and gas (Al-Mazeedi et al., 2013).

In the U.S., products containing more than 7% alcohol by volume come under the jurisdiction of the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). Products containing less than 7% alcohol come under the jurisdiction of the
Food and Drug Administration (FDA). According to the FDA (2000), if alcohol is part of the food composition or formula, then it must be included on the label as an ingredient. However, if alcohol is part of one of the ingredients in the formula, such as a flavor, it does not have to be listed separately on the ingredient label.

Alcohol is used in a number of applications, including:

1. As a beverage
2. As a flavorant in cooking
3. As an industrial chemical
4. Other

**ALCOHOL AS A BEVERAGE**

Alcoholic beverages are produced from a variety of fruits and grains, including grapes, dates, rye, wheat, and barley. Legally, they can contain between 0.5% and 80% ethanol by volume while pure industrial alcohol can contain 95% ethanol. There are three major classes of alcoholic beverages:

- Fermented beverages are made from agricultural products, including grains and fruits, and contain between 3% and 16% alcohol.
- Distilled or spirit beverages are made by distillation of fermented beverages. Distillation increases the alcohol content of these products up to 80%.
- Compound or fortified beverages are made by combining fermented or spirit beverages with flavoring substances. The alcohol content of these products can also be as high as 80%.

Alcoholic beverages may be consumed directly or added to foods, either as an ingredient during formulation or during cooking. When an alcoholic beverage is an added ingredient in a product, the ingredient label of the product must list the specific alcoholic beverage that has been added and the final amount of alcohol if it is greater than 0.5%. Examples of this would be liqueur-flavored chocolates, rum cakes, and meals containing wines, such as beef stroganoff in wine sauce.

**ALCOHOL AS A FLAVORANT IN COOKING**

Alcoholic beverages are sometimes added to food items during cooking to impart a distinctive flavor to the food item. Wine is the most common form of alcoholic beverage used in cooking, though beer and hard liquors are also used. Although it may seem that all of the added alcohol evaporates or burns off during cooking, it does not. The United States Department of Agriculture (USDA) prepared a table listing the amount of retained alcohol in foods cooked with alcohol. The retained alcohol varies depending on the cooking method (Al-Mazeedi et al., 2013; Halal Consumer Group, 2012). The following are some of the retained alcohol contents of foods prepared by different cooking methods (USDA Table of Nutrient Retention Factors, Release 6, 2000) (Table 16.1).
ALCOHOL AS AN INDUSTRIAL CHEMICAL

Pure industrial alcohol can be up to 95% ethanol. As a raw material, the main use of alcohol is to convert it to acetic acid to make vinegar. Vinegar is used in salad dressings, mayonnaise, and other applications. Whereas the use of alcohol in alcoholic drinks is prohibited, converting it to acetic acid (vinegar) makes it halal as it is no longer an intoxicant. In fact, vinegar is one of the recommended condiments in Islam. As a solvent, alcohol is used to extract flavors from plant materials such as vanilla beans or oranges. Dilute ethanol is almost universally used for the extraction of vanilla beans. After the extraction, vanilla flavor, called natural vanilla flavoring, is standardized with alcohol. The FDA’s standard of identity for vanilla flavoring requires it to contain a minimum of 35% alcohol by volume, otherwise it cannot be called natural vanilla flavoring.

Alcohol is also used to standardize other flavors. A standing container of flavor may not remain homogenous if not mixed with alcohol or a similar compound. The alcohol maintains the homogeneity as well as allowing the flavor to be standardized so it can have the same potency when used in a product. For example, to make an orange-flavored carbonated beverage, orange flavor is added to the water. Orange flavor is an oil obtained from orange skins. As an oil, it does not dissolve in water, but it does dissolve in alcohol. When standardized in alcohol, the orange flavor will dissolve and disperse evenly in the water, creating the orange-flavored carbonated drink. The drink will maintain the consistent orange flavor over the expected shelf life of the product.

OTHER USES OF ALCOHOL

Alcohol is also used in pharmaceuticals, cosmetics, and topical products. It is frequently present in cough syrups and mouthwash, although alcohol-free products are now available. In perfumes, the use of SD alcohol is common. SD alcohol is ethanol that has been denatured, meaning substances have been added to it to make it...
undesirable or even toxic for consumption. The denaturing substances are very difficult to remove from the mixture, so denatured alcohol cannot be used in food items or drinks.

**IMPLICATIONS FOR HALAL**

Prior to the revelation of the Quran, alcoholic beverages were consumed by the Arabs in Arabia. When the Quran was revealed, and people began embracing Islam, they continued to consume alcoholic beverages, just as they had previously. Alcoholic beverages had not been specifically prohibited yet (Riaz, 1997). The prohibition occurred in three stages. The first revelation was a response to questions regarding the consumption of alcohol:

“They ask you about wine and gambling. Say, “In them is great sin and [yet, some] benefit for people. But their sin is greater than their benefit.” And they ask you what they should spend. Say, “The excess [beyond needs].” Thus Allah makes clear to you the verses [of revelation] that you might give thought.”

*Chapter II, Verse 219*

In this revelation, we are told that there are benefits to be gained from alcohol but that indulging in drinking it is a sin. While this was enough for some to refrain from drinking alcohol, it was not a clear prohibition. The next revelation placed some limits on drinking:

“O you who have believed, do not approach prayer while you are intoxicated until you know what you are saying or in a state of janabah, except those passing through [a place of prayer], until you have washed [your whole body]. And if you are ill or on a journey or one of you comes from the place of relieving himself or you have contacted women and find no water, then seek clean earth and wipe over your faces and your hands [with it]. Indeed, Allah is ever Pardoning and Forgiving.”

*Chapter IV, Verse 43*

In this revelation we are told not to offer prayers while intoxicated. One must be able to focus when in prayer and being under the influence of alcohol does not allow one to focus, so it was prohibited to pray while intoxicated. Again, this did not clearly prohibit drinking. So the next verses were revealed:

“O you who have believed, indeed, intoxicants, gambling, [sacrificing on] stone alters [to other than Allah], and divining arrows are but defilement from the work of Satan, so avoid it that you may be successful. Satan only wants to cause between you animosity and hatred through intoxicants and gambling and to avert you from the remembrance of Allah and from prayer. So will you not desist?”

*Chapter V, Verses 90-91*

These final two verses made it absolutely clear that alcoholic beverages should be avoided completely. To further clarify, there are a number of Hadiths that clearly
state that every intoxicant is prohibited and that anything that intoxicates in large quantities are also prohibited in small quantities.

It is important to note that there are two major opinions on the prohibition of alcohol: (a) that the prohibition applies to all alcohol that is not naturally occurring regardless of the quantity or reason for its presence or (b) that it applies only to intoxicating beverages. The first opinion considers there is zero tolerance for alcohol regardless of whether it is ingested or applied topically. This means that non-intoxicating items containing alcohol like cakes, ice cream, and carbonated drinks; mouthwash; as well as all alcoholic beverages, including non-alcoholic drinks with any trace of alcohol would be prohibited. It does not include naturally occurring items with non-intoxicating levels of alcohol such as ripe fruits and milk. The second opinion considers only alcoholic beverages and other items that can cause intoxication if a reasonable quantity is consumed to be prohibited. It does not consider the use of alcohol for non-intoxicating purposes such as flavor extraction and standardization to be prohibited if the amount of residual alcohol in a product is below a low threshold. It does consider even traces of an alcoholic beverage or alcohol derived from such a beverage to be prohibited, even if the item it has been added to is not intoxicating. Under this opinion, a cake with a drop of rum would be prohibited but a cake with some residual alcohol introduced by an added flavoring compound would be acceptable if the alcohol level in the cake was below the threshold limit and the alcohol in the flavoring was pure industrial alcohol and not from an alcoholic beverage.

Different certifying bodies and government regulators have placed limits on the amount of residual alcohol that is acceptable in a product. These opinions would support any efforts to eliminate the residual alcohol but understand the challenges that would present to the food industry at the present time.

HALAL CERTIFICATION OF ITEMS CONTAINING ALCOHOL

1. Alcoholic beverages and any ingestible or topical product containing even a trace of alcoholic beverage cannot be certified halal. This includes all the alcoholic beverages, any food product containing an alcoholic beverage, any item cooked with an alcoholic beverage, and any topical product with an added alcoholic beverage. Examples are beer, wine, whiskey, rum, tequila, beer battered fish, shampoo containing beer, rum cake, liqueur containing candy, and so on.

2. Non-alcoholic beer and similar products are made from their alcoholic counterparts by removing the alcohol. In the U.S., if the final product contains less than 0.5% alcohol, it can be labeled as non-alcoholic. As these likely contain some alcohol, they would not be certifiable under the zero tolerance opinion but might be certifiable under the second opinion. However, many would not certify any product made to resemble an alcoholic beverage. That includes non-alcoholic beer packaged to look similar to its alcoholic counterpart. Fresh products that have been processed only to remove contaminants and to package them like fruits, vegetables, and milk that may contain some naturally occurring alcohol are halal under both opinions. They may need halal certification to assure consumers nothing
unacceptable has occurred during processing. Fruit juices that are filtered or clarified will require halal certification to ensure the filtering and clarifying media are acceptable.

Based on organoleptic tests to detect alcohol by sight, smell, and taste, the Islamic Food and Nutrition Council of America has adopted the following guideline for certifying ingredients and products containing residual alcohol:

1. The alcohol used must be industrial alcohol, not from an alcoholic beverage.
2. The alcohol must be used for a processing requirement, not for a flavor or other reason.
3. For ingredients, such as flavors, the residual amount of alcohol should not be more than 0.5%. This means vanilla flavoring, which must legally contain 35% alcohol will not be halal certified. If such vanilla flavor is dried and is below 0.5%, it can be considered for certification.
4. For food products, the residual amount of alcohol should not be more than 0.1%. This is the total amount of residual alcohol and includes any naturally occurring alcohol plus any added by way of an ingredient containing residual alcohol, like a flavor. Vanilla flavoring may be used, even though it is not halal certified, as long as the final edible product does not contain more than 0.1% residual alcohol.

Some certification bodies may have more lenient or stricter guidelines than these. The food industry should consult its customer companies or halal-approval agencies for their exact standard.

Addition of any amount of fermented alcoholic drinks such as beer, wine, or liquor to any food product or drink renders the product haram. However, if the essence is extracted from these products and alcohol is reduced to a negligible amount, most halal-certifying agencies and importing countries accept the use of such essences in food products. Consultation with proper authorities or end users can clarify this issue.

REFERENCES


