CUSTOMER AWARENESS FOR GELATIN-BASED MARSHMALLOW SNACK: A PRELIMINARY READING

Siti Rubaini Mat[i] & Siti Alyani Mat[ii]

[i](*Siti Rubaini Mat*). Penyelaras, Pusat Tamhidi, USIM. sitirubaini@usim.edu.my
[ii]Institute of Bioproduct Development, Universiti Teknologi Malaysia (UTM). sitialyani@utm.my

Abstract

Gelatin provides marshmallows with their characteristic soft and fluffy texture. Many people are aware that gelatin can be derived from sources like porcine (pork). Since pork is considered haram (forbidden) in Islam, Muslims are prohibited from consuming products containing gelatin-sourced. To address these concerns, some manufacturers offer alternative options, such as marshmallows made with gelatin from bovine sources or plant-based ingredients like agar-agar or carrageenan. Additionally, some companies produce vegan marshmallows that do not contain any animal-derived ingredients. Clear labeling and ingredient transparency are important for consumers to make informed choices about the products they purchase, especially when considering religious requirements. In some cases, individuals seek authentication or verification labels to ensure that the gelatin used in products aligns with their dietary, religious, or cultural preferences, in our case Jabatan Kemajuan Islam Malaysia (JAKIM) halal certification.

Keywords: *marshmallow, gelatin, porcine, bovine, JAKIM*

INTRODUCTION

A marshmallow is a sweet, soft confection that is typically made from sugar, water, and a gelling agent, traditionally gelatin. It has a light and fluffy texture, often described as spongy and airy (Boerner, 2021). Marshmallows are commonly enjoyed on their own as a treat or used as an ingredient in various recipes. Marshmallows have a long history and were originally made from the root sap of the marshmallow plant (*Althaea officinalis*), which gave them their name. However, modern marshmallows are no longer made from this plant but instead use a combination of sugar, water, gelatin (or gelatin alternatives), and other ingredients.

Marshmallows have a wide range of culinary uses, including for snacking: marshmallows are often enjoyed as a sweet treat on their own; enjoyed with hot chocolate: they can be used as a topping for hot chocolate, where they melt and add sweetness and creaminess to the drink; as s'mores: marshmallows are a key ingredient in the popular campfire treat known as s'mores, which also includes chocolate and graham crackers; in baking and desserts: marshmallows can be added to baked goods, such as cookies, brownies, and cakes: for added flavor and texture; as candy and confections: marshmallows can be coated in chocolate or other coatings

to create various types of candies; as dessert toppings: marshmallows are sometimes used as a topping for desserts like ice cream or fruit salads; as ingredients in recipes: marshmallows can be used in recipes for Rice Krispie treats, fudge, and other confections (Nadeem, 2016).

Traditionally, marshmallows are made with gelatin as one of their main ingredients. Gelatin provides the marshmallows with their soft characteristic and fluffy texture (Harris, 2013). However, due to dietary restrictions, religious beliefs, and lifestyle choices, there are also vegetarian and vegan marshmallow alternatives available that do not use gelatin. In gelatin-based marshmallows, gelatin is used to create the structure and texture of the marshmallow by forming a gel-like network that traps air and moisture. When the marshmallow mixture is whipped, heated, and then allowed to cool and set, it results in a familiar light and spongy consistency. Keep in mind that while traditional marshmallows are made with gelatin, there are also gelatin-free and vegetarian/vegan marshmallow options available that use alternative gelling agents and ingredients.

Many people are aware that gelatin can be derived from porcine (pork) sources. However, the level of awareness can vary among individuals based on factors such as cultural background, dietary preferences, religious beliefs, and personal research. For individuals who follow specific dietary restrictions, such as Muslims who adhere to Halal dietary laws or Jews who follow Kosher dietary laws, the source of gelatin is of particular concern. Gelatin derived from porcine sources is not considered permissible under these dietary laws. As a result, people who adhere to these dietary restrictions often seek products that use alternative gelling agents or gelatin derived from non-porcine sources.

GELATIN

Gelatin is a protein derived from collagen, which is a natural protein found in animal connective tissues, such as bones, skin, and cartilage. It is commonly used in cooking and food preparation for its gelling, thickening, and stabilizing properties. Gelatin has been used for centuries in various culinary and medicinal applications. Gelatin is usually derived from animal sources, primarily cattle (beef) or pigs (porcine). The collagen-rich tissues are processed through various methods to extract the gelatin (Amy Richter, 2020).

Gelatin has a strong gelling properties. When gelatin is mixed with liquid and allowed to set, it forms a gel-like substance. This happens because the proteins in gelatin form a network of bonds that trap water molecules, resulting in a solid or semi-solid structure. Gelatin or collagen chains adjourned in a solution that can be covalently cross-linked to form matrices that are capable of swelling in aqueous solutions and formed gelatin hydrogels. For culinary uses, gelatin is used in a variety of food products to create textures, thicken liquids, and stabilize mixtures. Apart from the characteristic of gelling, it can also be a good foaming agent in culinary preparations. Gels made with gelatin are very much admired by chefs and consumers due to their unique texture properties; very soft and melt easily in the

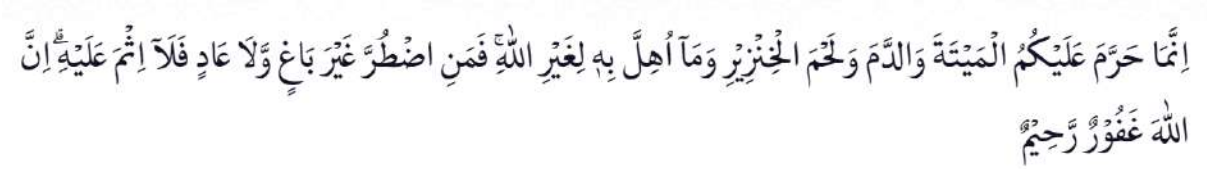
mouth before swallowing. It is commonly used in making desserts like gelatin-based desserts (e.g., Jello), mousses, and marshmallows. It is also used to thicken sauces, gravies, and soups. Gelatin can also be used in baking to stabilize whipped cream, improve the texture of ice creams, and create certain confections.

In pharmaceuticals, gelatin is used in the production of capsules for medications, vitamins, and supplements. It provides a convenient and effective way to encapsulate substances. Gelatin contains a range of amino acids, the building blocks of proteins, although it does not provide a complete profile of essential amino acids. Some people believe that gelatin may have potential health benefits for joint health, skin health, and digestion due to its collagen content, but the scientific evidence for these claims is limited.

It's important to note that gelatin derived from porcine (pork) sources might not be suitable for individuals with dietary restrictions based on religious beliefs or ethical considerations. In such cases, gelatin alternatives should be sought out. For those who avoid animal products, alternative gelling agents like agar-agar (derived from seaweed), carrageenan, and pectin are used as substitutes for gelatin in cooking and food preparation.

PORCINE GELATIN

Many Muslims are aware that gelatin can come from porcine (pork). Since pork is considered haram (forbidden) in Islam, Muslims who adhere to dietary restrictions by their faith generally avoid consuming products containing gelatin sourced from pigs. The prohibition of consuming pork is mentioned in the Quran in Surah Al-Baqarah, which is the second chapter of the Quran. The relevant verse is:



"*He has only forbidden to you dead animals, blood, the flesh of swine, and that which has been dedicated to other than Allah. But whoever is forced [by necessity], neither desiring [it] nor transgressing [its limit], there is no sin upon him. Indeed, Allah is Forgiving and Merciful*." (Al-Quran, 2:173)

This verse explicitly mentions that the flesh of swine (pork) is forbidden for consumption in Islam. The prohibition is also reiterated in other verses of the Quran, emphasizing the importance of avoiding pork and its derivatives and adhering to dietary restrictions as part of Islamic dietary law.

An alternative for porcine gelatin (Type A), is by using bovine gelatin (Type B). Bovine gelatin, like other types of gelatin, can be a subject of concern for individuals following specific dietary restrictions, such as Muslims and Jews. While bovine gelatin itself might be considered halal (permissible) for Muslims to consume, there could be concerns related to the sourcing, processing, and potential cross-contamination. Some Islamic scholars and halal certification bodies and

authorities guide the permissibility of bovine gelatin, and this can vary by interpretation and cultural practices.

It's important to note that gelatin derived from different sources, whether bovine, porcine (pork), fish or other alternatives, can have varying properties and uses. The choice of gelatin type depends on factors such as dietary restrictions, functional requirements, cultural practices, and individual preferences. For those who avoid gelatin derived from bovine sources due to dietary or religious reasons, there are alternatives available. Some manufacturers offer gelatin made from fish, agar-agar (derived from seaweed), carrageenan, pectin, and other plant-based gelling agents (Riddle, 2023).

CONSUMER CONCERNS

Consumer concerns regarding gelatin from porcine in marshmallows primarily stem from dietary, religious, and cultural reasons. Here are some of the main concerns:

1. Religious Dietary Restrictions: Muslims and Jews, as well as followers of certain other religious traditions, avoid consuming porcine and its by-products due to religious dietary laws. Therefore, individuals adhering to these dietary restrictions may choose to avoid marshmallows made with porcine-derived gelatin.

2. Cultural Practices: Some cultures have dietary practices that exclude porcine or emphasize vegetarian or plant-based diets. People from these cultures may be concerned about consuming products containing porcine-derived gelatin, including marshmallows.

3. Ethical and Lifestyle Choices: Some individuals choose not to consume animal products for ethical reasons or due to personal lifestyle choices, such as vegetarianism or veganism. They may prefer marshmallows made with plant-based or alternative gelatin sources.

4. Allergies and Health Concerns: Certain individuals may have allergies to porcine or may be concerned about potential health issues related to consuming animal-derived products.

5. Lack of Transparency: Consumers may be concerned about the lack of transparency regarding the gelatin source used in marshmallows. Without clear labeling, individuals may not be aware of the type of gelatin present in the product.

To address these concerns, some manufacturers offer substitute ingredients and options such as marshmallows made with gelatin from bovine sources or plant-based alternatives like agar-agar or carrageenan. Additionally, some companies produce vegan marshmallows that do not contain any animal-derived ingredients.

Consumers who have specific dietary, religious, or ethical preferences should carefully read product labels and ingredients list or seek out products that align with their values. As consumer awareness and preferences continue to evolve, some manufacturers may also choose to provide clearer labeling and information about gelatin sources in their products to penetrate a wide range of potential markets.

GELATIN AUTHENTICATION

The gelatin authentication process might involve labeling and certification where manufacturers may provide clear labeling on their products to indicate the source of gelatin used. They might also seek certification from relevant organizations or authorities that verify the authenticity of their gelatin sources. We can also use third-party verification: independent organizations or certifying bodies might conduct audits or assessments to ensure that the gelatin used in a product aligns with specific dietary or religious requirements. In manufacturing, producers must show transparency in listing of ingredients used. Manufacturers can provide detailed information about their source of gelatin and production methods, allowing consumers to make prudent choices based on their preferences.

Traceability and supply chain monitoring can also ensure gelatin authenticity, companies might implement systems to trace the origin of the gelatin back to its source and monitor the supply chain for compliance (Sani, 2021). We can also educate consumers by providing consumers with information about gelatin sources and processing methods that can empower them to make cautious decisions about the products they purchase and consume. Table 1 shows gelatin authentication methods and their tested samples.

Table 1: Gelatin Authentication Methods in Laboratories

Method of detection	Samples	References
Spectroscopic	Gelatin and gelatin hydrolyzates from bovine and porcine	Hashim et al. (2010); Hermanto & Fatimah (2013)
Immunochemical	Bovine and porcine skin and bone gelatin that has undergone acid or alkaline	Venien & Levieux (2005)
	Porcine gelatin in edible bird's nests	Tukiran et al. (2015, 2016a)
	Gelatin sources in confectionery products	Tukiran et al. (2016b)
Nucleic acid-based	The gelatin in the capsule	Cai et al. (2012); Malik et al. (2016); Mutalib et al. (2015); Sudjadi et al. (2015)

	Gelatin blends: marshmallow/cake, gum-drops, desserts, jelly and Turkish delight	Demirhan et al. (2012); Shabani et al. 2015)
Mass Spectrometric	Bovine and porcine gelatin hydrolyzates	G.-F. Zhang et al. (2008); G. Zhang et al. (2009)
Electrophoretic analysis	Porcine type a and bovine type B gelatins	Azira et al. (2014); Hermanto & Fatimah (2013)
Chemosorption	Bovine bone and porcine skin gelatin	Hidaka & Liu (2003)
Chromatographic-chemometric	Bovine	Widyaninggar et al. (2012)
	Porcine and fish gelatins	Azilawati et al. (2015)
	Gelatin in capsule	Nemati et al. (2004)
	The gelatin in soft candy	Raraswati et al. (2013

CONCLUSION

When consuming marshmallows, gummy bears and such, consumers must know the source of gelatin used in the products. Apart from porcine gelatin, bovine sources can give a good texture too. Bovine gelatin is derived from cows and is used in a wide range of food and non-food products, including food products like desserts, dairy products, and pharmaceutical applications. To address concerns, some manufacturers offer alternatives like bovine gelatin, plant-based alternatives, or vegan options.

Clear labeling and ingredient transparency are important for consumers to make careful choices about the products they purchase, especially when considering dietary and religious requirements. In some cases, individuals seek authentication or verification labels to ensure that the gelatin used in products aligns with their dietary, religious, or cultural preferences, in our case JAKIM's halal logo on the product labeling. It's important to respect and consider the diverse perspectives, beliefs, and preferences of individuals when discussing gelatin and its sources, and to make judicious choices based on accurate information and understanding.

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