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Vegan alternatives as the source of halal cosmetic products: a comparative analysis in efficiency, cost, and ethical implications

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Abstract

The growing demand for vegan cosmetics, projected to reach US \$20 billion by 2028, presents a significant opportunity for the cosmetics industry. However, aligning vegan products with halal certification remains a challenge, especially given the prevalence of animal-derived ingredients in traditional formulations. This study explores the comparative efficacy, cost implications, and ethical considerations of vegan versus animal-based ingredients in cosmetics. Through a comprehensive analysis of existing literature and market trends, we examine the benefits of vegan cosmetics, such as their cruelty-free production and reduced environmental impact, alongside the barriers to halal certification. The research identifies key vegan alternatives—such as agar, carrageenan, soy, and plant-based colourants—that offer similar functional benefits to animal-derived ingredients like collagen, gelatin, and keratin but often require additional processing or formulation adjustments to achieve comparable results. Despite these challenges, vegan alternatives offer cost-effective solutions and align more easily with ethical standards, including halal compliance. The study concludes that heightened consumer awareness, alongside innovative product formulations, can facilitate the acceptance of vegan and halal-certified cosmetics for ethical consumption practices in the industry.

Keywords:

Halal cosmetics;
Halal science;
Vegan
alternatives;
Vegan cosmetics

1. Introduction

The cosmetics industry has seen a significant rise in demand for halal products, driven by increasing consumer awareness of the ingredients used in personal care products and a growing desire for products that align with ethical and religious principles (Elgharbawey, 2019). Halal cosmetics comply with Islamic *Shari'ah* law and are marketed as solutions to these consumer concerns by ensuring that ingredients and manufacturing processes avoid prohibited substances. However, halal cosmetics face particular challenges that distinguish them from vegan products, especially regarding ingredient sourcing and certification. While halal guidelines prohibit certain animal-derived ingredients—such as those from pigs, blood, and predatory animals—other animal-based ingredients like gelatin, carmine, and lanolin remain permissible under halal standards. This creates confusion among consumers who may perceive these products as non-compliant with ethical principles, even though they meet halal criteria. Consequently, the market for halal cosmetics lacks clarity and transparency, leading to potential consumer mistrust and highlighting the need for more precise guidelines and certification processes (Coherent Market Insights, 2023; Ahmed, 2024).

In contrast, vegan cosmetics offer a more definitive ethical stance by excluding all animal-derived ingredients, positioning them as a response to the growing consumer demand for cruelty-free and environmentally sustainable products.

However, for halal cosmetics, the challenge extends beyond avoiding animal-derived ingredients prohibited by *Shari'ah* law (Ngah *et al.*, 2021; Hussaini *et al.*, 2024). It also involves adapting to the rising demand for plant-based, cruelty-free ingredients without compromising the product's performance or stability. Including vegan ingredients such as agar, carrageenan, soy-based alternatives, and plant-derived colourants could address halal and ethical consumer preferences. Nonetheless, integrating these ingredients into halal-certified cosmetics presents challenges, including additional processing to match the performance of traditional animal-derived ingredients.

2. Literature review

2.1 Halal cosmetic: an emerging market

Halal cosmetics are products that conform to Islamic principles and values, ensuring the purity and wholesomeness of their ingredients while simultaneously avoiding substances considered impure or *haram* (forbidden) in Islam (Elgharbawey, 2022; Hussaini *et al.*, 2024). It includes a range of personal care and beauty products such as skincare, haircare, and makeup items, and they have become integral in the daily routines of Muslims worldwide. Halal cosmetics have evolved from a niche market into a growing industry driven by religious and ethical considerations (IMARC, 2024; Hussaini *et al.*, 2024). While Muslim consumers predominantly influence the halal cosmetics market, an increasing number of non-Muslim consumers are also attracted to these products due to

their perceived purity, transparency, and ethical production standards (Ibrahim, 2023; Isa *et al.*, 2023; Research & Market, 2024).

2.1.1 Consumer preferences across regions

The demand for halal cosmetics is driven by regional variations in consumer preferences, with distinct patterns emerging worldwide. Southeast Asia is one of the primary regions that are leading the charge due to the high percentage of Muslim populations. Countries like Indonesia, Malaysia, and Singapore are at the forefront of halal cosmetic consumption. Indonesia is the largest Muslim-majority country globally, seeing a sharp rise in demand for halal-certified beauty products (Ibrahim, 2023; Fortune Business Insights, 2025). This is partly due to religious observance and a growing trend toward cleaner, more ethically sourced products.

Indonesia is expected to remain a leader in halal cosmetics consumption. On the other hand, Malaysia has emerged as a regional hub for halal-certified products, owing to its robust halal certification process, which is one of the most respected worldwide. Malaysian brands, such as Wardah Cosmetics and Inai Beauty, are prominent in local and international markets, setting trends in halal beauty formulations. Furthermore, Saudi Arabia and the United Arab Emirates (UAE) are key markets in the Middle East, where halal cosmetics are increasingly popular due to the intersection of wealth, religious practices, and heightened awareness of ethical beauty (Sugibayashi *et al.*, 2019; Ibrahim, 2023; Salaam Getaway, 2024).

In non-Muslim-majority countries, particularly in Europe and North America, halal cosmetics are gaining popularity not only among Muslim consumers but also among those who prioritise ethical consumption. Non-Muslim consumers in the United States, United Kingdom, and France are increasingly attracted to halal products because of their cruelty-free status, clean ingredient profiles, and ethical production methods. This trend leads to the rising popularity of clean beauty and vegan products, emphasising safety, sustainability, and transparency (Isa *et al.*, 2023; Salaam Getaway, 2024).

2.1.2 Leading countries and market trends in halal cosmetics

Among the countries at the forefront of halal cosmetics, Malaysia, Indonesia, and the UAE stand out due to their market size, religious influence, and regulatory frameworks that make it easier for halal-certified products to gain market acceptance (IMARC, 2024; Fortune Business Insights, 2025). According to Markets and Data (2023), Malaysia's halal certification process is one of the most comprehensive in the world, establishing the country as a global leader in halal cosmetic manufacturing and export. With its burgeoning middle class and a growing demand for halal-certified products, Indonesia is also poised to become a dominant player in the market (Inkwood Research, 2023). With their high disposable incomes and Muslim populations, Saudi Arabia and the UAE present an attractive market for luxury and mass-market halal cosmetics (Salaam Getaway, 2024). On a global scale, Europe and North America are expected to become more important markets for halal cosmetics in the coming years. Increasing consumer awareness about animal welfare, transparency, and product ingredients drives interest in halal

certified beauty products beyond traditional Muslim communities (Research & Market, 2024).

2.1.3 Future growth projections of halal cosmetics

The global halal cosmetics market is expected to grow at a compounded annual growth rate (CAGR) of 12.1% from 2022 to 2030 (Markets and Data, 2023). This growth is fueled by an expanding Muslim population, rising consumer awareness regarding ethical and clean beauty products, and an increasing focus on cruelty-free and sustainable manufacturing processes. Key market players are poised to capture a share of this growth. Major multinational corporations such as L'Oréal, Unilever, and Estée Lauder increasingly seek halal certification for their products, recognising the market's potential (Research & Market, 2024). These companies are introducing halal-certified products and focusing on aligning their existing product lines with halal standards to cater to a broader consumer base.

In addition, local stakeholders such as Wardah Cosmetics (Indonesia) and Inai Beauty (Malaysia) continue to innovate by offering products that meet both halal standards and the growing consumer demand for ethical and natural beauty solutions. E-commerce platforms also play a pivotal role in the global distribution of halal cosmetics, particularly in regions where physical retail access may be limited (Research & Market, 2024; Salaam Getaway, 2024). Digitalising halal beauty products allows brands to reach international consumers, including non-Muslim-majority countries, thus expanding the market reach (Santos *et al.*, 2023).

2.2 Vegan alternatives as a source of halal cosmetics products

Vegan cosmetics are products formulated without any animal-derived ingredients or by-products, including standard components like beeswax, lanolin, and certain colourants. These products are typically also cruelty-free, meaning they are not tested on animals (Lee, 2022). The global cosmetics market, valued at approximately \$429.2 billion in 2022, is projected to reach around \$864.6 billion by 2032, growing at a compound annual growth rate (CAGR) of 7.1% from 2023 to 2032. Within this broader market, the demand for vegan and cruelty-free cosmetics is rising significantly, driven by increasing consumer awareness regarding ethical and sustainable practices in product formulation (Fortune Business Insights, 2025).

The use of vegan alternatives as the source of halal cosmetic products has been gaining attention in recent years as they do not contain animal-based ingredients that may not be halal and may irritate the skin (Rawat, 2022). However, there are more factors to consider while examining vegan cosmetics and their potential halal accreditation. According to Yacoubou (2020), the assessment of animal ingredients is one of the factors to consider when looking at vegan cosmetics and their potential halal status. There may be cosmetics that are not vegan but would be halal based on the assessment of animal ingredients.

Moreover, testing cosmetics on animals is unnecessary and wasteful when businesses can make inventive solutions using hundreds of components with a history of safe usage that does not require more testing. For instance, natural ingredients are used in cosmetics. Consumers know the advantages of using

chemical-free, environmentally friendly vegan cosmetics (Rawat, 2022). As a result, it encourages the creation and use of alternatives that do not involve using animals for the benefit of both humans and animals as well as the environment.

2.2.1 The rise of vegan cosmetics: demand, health awareness, and demographic shifts

Several factors motivate consumers to opt for vegan cosmetics. Ethical concerns are at the forefront, and many individuals are increasingly aware of animal welfare issues and prefer products that do not involve animal exploitation (Huyen & Viet, 2024). Additionally, health consciousness plays a significant role in consumer choices. Many people are concerned about the potentially harmful effects of synthetic chemicals and animal-derived ingredients in cosmetics, leading them to favour natural and organic formulations that align with vegan principles (Lee, 2022; Huyen & Viet, 2024). Environmental awareness also drives this trend as consumers scrutinise the environmental impact of the cosmetics industry. Vegan products often come with eco-friendly packaging and sustainable sourcing practices, appealing to environmentally conscious shoppers. Moreover, the influence of social media cannot be underestimated; platforms like Instagram and TikTok have amplified the visibility of vegan beauty brands, shaping consumer preferences through trends and endorsements from influencers (Nguy *et al.*, 2023; Santos *et al.*, 2023).

Another notable factor for the rise of vegan cosmetics is the increasing health and wellness awareness among consumers (Huyen & Viet, 2024). Vegan cosmetics often promise to be free from harmful chemicals, making them more appealing to consumers seeking natural and non-toxic beauty products. For instance, the health benefits of using vegan cosmetics—such as their potential to lower the risk of skin conditions like acne or hyperpigmentation—are now widely recognised. Some animal-based products, such as lanolin or collagen, may cause skin irritation or allergic reactions. Consequently, many consumers opt for vegan alternatives that utilise plant-based oils, extracts, and other botanicals perceived as gentler on the skin (Wright, 2018; Srivastava, 2024).

Demographic shifts are also influencing the rise of vegan cosmetics. Younger generations, particularly Millennials and Gen Z, are at the forefront of this movement. These groups are concerned with the ethics of product ingredients and are highly aware of their personal health and environmental sustainability (Shim *et al.*, 2024). As consumers born into a world with heightened environmental and ethical awareness, these generations prioritise cruelty-free, vegan, and eco-friendly products in their beauty routines. Studies indicate that Millennials are leading the shift toward vegan lifestyles in their cosmetic choices; they are motivated by sustainability and animal rights and are willing to spend more on products that reflect these beliefs (Hammet, 2019; Shim *et al.*, 2024). Gen Z is particularly notable for favouring vegan products for ethical reasons and their growing awareness of social justice aspects of production and consumption (Shim *et al.*, 2024).

Moreover, the increased access to vegan alternatives has further fueled demand. The growing availability of affordable, high-quality vegan cosmetic products has made them more accessible to a broader consumer base. (Coherent Market Analysis, 2024). Brands like PHB Ethical Beauty and Drapee have emerged as key players in this market, offering a range of organic and vegan products that cater to health-conscious

consumers. These brands are increasingly available through major retail outlets, online platforms, and drugstores, making it easier for consumers to purchase them without the premium price tag often associated with organic and cruelty-free cosmetics. As vegan cosmetics become more mainstream, their popularity extends beyond traditional vegan consumers to the general population seeking safer and more ethical alternatives in their beauty routines (Santos *et al.*, 2023).

2.2.2 Potential benefits of vegan ingredients in cosmetic formulations

Incorporating vegan ingredients in cosmetic formulations offers several significant advantages that appeal to consumers and manufacturers. One of the primary benefits is the reduction of allergens. Vegan products often contain fewer allergens than traditional cosmetics, which may include animal-derived components, making them suitable for sensitive skin types. Many consumers with allergies or sensitivities find that plant-based ingredients are gentler and less irritating than synthetic or animal-derived substances, which can lead to adverse reactions (Lee, 2022; Formula Botanica, 2023). This gentleness on the skin is crucial for individuals seeking effective yet non-irritating cosmetic options.

Another important benefit is sustainability. Vegan ingredients typically require less resource-intensive farming practices compared to animal farming, which is known for its high environmental impact. The production of plant-based ingredients generally leads to lower carbon footprints and promotes biodiversity (Visser, 2023; Sasounian *et al.*, 2024). By choosing vegan cosmetics, consumers make a personal choice and contribute to broader environmental welfare, as these products often avoid the ecological degradation associated with animal agriculture.

2.2.3 Challenges in sourcing vegan ingredients for halal cosmetics

Vegan alternatives, while offering clear advantages for halal cosmetics, sourcing these ingredients presents several technical challenges, particularly regarding processing methods and certification requirements. One critical challenge is the use of alcohol in extraction processes. While vegan cosmetics avoid animal-derived components, the use of alcohol (often ethanol) in extracting plant-based ingredients can pose compliance issues with halal standards. Islamic law prohibits intoxicants, including ethanol, regardless of their plant origin. Even trace amounts of alcohol residues in the final product may not be acceptable for strict halal certification. (Cerioli, 2023). To address this, manufacturers must explore non-alcoholic extraction methods like cold-pressing or steam distillation to ensure compliance.

Another significant issue is cross-contamination during production. Many cosmetic manufacturing facilities handle vegan and animal-derived ingredients, risking contamination from *haram* substances such as gelatin or beeswax. This necessitates strict cleaning protocols and separation between production lines to maintain halal and vegan integrity (Sugibayashi *et al.*, 2019; Hussaini *et al.*, 2024). Additionally, some vegan ingredients may be processed using animal byproducts. For instance, glycerin can be derived from both plant and animal sources. If sourced from animals, it would be considered *haram* under halal principles. Manufacturers must ensure comprehensive traceability to prevent the indirect use

Table 1. Comparative analysis of traditional ingredients and vegan alternatives in cosmetic products.

Traditional Ingredients (May be derived from pig)	Vegan Alternatives	Efficacy Comparison	Cost Implications	Ethical Remarks
Animal-based collagen is Derived from animal collagen, skin, and bones (e.g., pig, fish, cows) and used for stabilising face creams, lotions, and shampoos (Cristiano & Guagni, 2022; Hussaini <i>et al.</i> , 2024).	Agar, Carrageenan, Gelatin	Agar and Carrageenan provide similar thickening effects but may not offer the same long-lasting moisturising effects as animal collagen. Gelatin is a good alternative for texture but may not provide the same stability (Hoang <i>et al.</i> , 2021; Lestari <i>et al.</i> , 2019).	It can be less expensive but may need additional processing for stability and texture (Hoang <i>et al.</i> , 2021; Lestari <i>et al.</i> , 2019).	Animal-derived ingredients raise ethical concerns about animal welfare. Vegan alternatives are more easily halal-certified and cruelty-free, aligning with ethical and sustainability values.
Animal-based gelatin is Derived from animal bone, skin, tendon, and cartilage and is used for moisturising (Hussaini <i>et al.</i> , 2022).	Soy products, Black beans, Seeds	Soy and beans provide moisturising benefits but may not match animal collagen's skin elasticity and anti-ageing properties (Kim <i>et al.</i> , 2021).	It may be cheaper, but formulations could require additional ingredients to boost effectiveness, thus increasing total product cost (Kim <i>et al.</i> , 2021).	Animal gelatin involves additional exploitation concerns; plant-based alternatives are more ethical and easily halal-compliant.
Animal-Based Keratin (Hair Care) Derived from human or animal sources (goose, duck, swine bristles). Used as a conditioning agent, fragrance, and anti-agent (Cristiano & Guagni, 2022).	Seeds, Legumes, Oatmeal	Plant proteins may offer conditioning but are less effective than animal keratin for repairing deep hair damage (Qin <i>et al.</i> , 2022).	It is often less expensive but may require more complex formulations to achieve the same results (Qin <i>et al.</i> , 2022).	Animal keratin raises ethical issues regarding animal sourcing, while plant proteins are cruelty-free and more sustainable.
Carmine (Colorant) Made from crushed beetles, it is used in red colouring for products (e.g., lipstick) (Cristiano & Guagni, 2022).	Beetroot powder, Hibiscus extracts, Mica Powder	Vegan colourants like beetroot powder and hibiscus may not provide the same vibrancy or long-lasting intensity as carmine (Abrar <i>et al.</i> , 2024).	Plant-based colourants are usually more affordable than carmine but may require more complex adjustments to match the colour intensity and longevity (Abrar <i>et al.</i> , 2024).	Carmine's insect origin may not meet halal standards (Mahyeddin, 2020), whereas plant-based alternatives offer cruelty-free, halal-friendly options.

of animal derivatives during processing (Hussaini *et al.*, 2024; Halal Food Council USA, 2024).

Manufacturers require transparency in their supply chains to guarantee that vegan ingredients are also halal-compliant. Some ingredients may seem vegan but could involve non-halal substances or methods during manufacturing (Cerioli, 2023). As consumer demand for both certifications rises, collaboration with suppliers is crucial to ensure ethical sourcing practices (Sugibayashi *et al.*, 2019; Halal Food Council USA, 2024). Finally, obtaining dual certifications for both halal and vegan products adds complexity. The certification processes involve detailed evaluations of sourcing, processing methods, and adherence to ethical standards (Halal Food Council USA, 2024). Hence, addressing these technical challenges is essential for successful halal vegan cosmetics development in this growing market.

3. Materials and methods

This study compares traditional animal-derived ingredients such as (1) collagen, (2) gelatin, (3) keratin, and (4) carmine with their vegan alternatives like agar, carrageenan, soy, seeds, beetroot powder, and hibiscus extracts in cosmetic formulations. The analysis focuses on three key factors:

efficacy, cost, and ethical considerations. Efficacy was assessed by comparing the functional performance of the ingredients, including their effects on moisturising, texture, and stability. Cost implications were evaluated by considering the price of ingredients and the potential need for additional formulation adjustments. Ethical considerations were also discussed, particularly regarding halal certification and cruelty-free standards. The findings highlight the trade-offs between traditional and vegan ingredients, with vegan alternatives offering ethical and regulatory benefits while sometimes requiring more complex formulations for similar performance. The articles and studies selected for the review were analysed and synthesised to provide an overview of the potential benefits of using vegan alternatives as the source of halal cosmetic products.

4. Results and discussion

Table 1 examines traditional cosmetic ingredients, many of which are derived from animal sources (including pigs), and their vegan alternatives. The focus is on understanding the benefits of incorporating natural, plant-based ingredients in cosmetic formulations. The findings are presented in a systematic and explicit tabular format.

4.1 Efficacy of animal-derived ingredients VS. vegan alternatives

The results suggest that animal-based ingredients, such as collagen, gelatin, keratin, and carmine, effectively achieve desirable cosmetic outcomes due to their unique molecular structures resembling those found in human skin or hair. Animal-derived collagen, in particular, is known for its superior ability to stabilise and moisturise cosmetic products, essential in anti-ageing formulations (Hussaini *et al.*, 2024). It is also crucial for promoting skin elasticity and moisture retention, which are difficult to replicate with vegan alternatives (Cristiano & Guagni, 2022). However, animal-derived collagen and gelatin use raises concerns among consumers who adhere to halal principles, as these products must be sourced from halal-certified animals and processed according to halal guidelines to be considered permissible (Hussaini *et al.*, 2024). The inability to guarantee the halal status of animal-derived collagen in many products limits its appeal to Muslim consumers, who are increasingly seeking vegan or plant-based alternatives that are more easily certified as halal.

In contrast, plant-based ingredients such as agar, carrageenan, and gelatin alternatives are inherently suitable for halal products as they do not involve animal-derived sources. While these vegan alternatives provide similar thickening effects, they may not offer the same long-lasting moisturising benefits or skin elasticity as animal-derived collagen and gelatin (Hoang *et al.*, 2021; Kim *et al.*, 2021). The challenge of replicating the anti-ageing properties of animal-based collagen with plant-based ingredients remains a significant hurdle, particularly for premium skincare lines targeting halal-conscious consumers.

Similarly, in hair care, animal-derived keratin has been shown to repair severe hair damage due to its protein structure, which is closely aligned with human hair. Research suggests that animal keratin helps restore damaged hair by penetrating the hair shaft, strengthening the hair fibres, and improving elasticity (Qin *et al.*, 2022; Basnaz & Ferraro, 2024). For Muslim consumers, the halal status of keratin is crucial, as it must be derived from halal animals and processed by Islamic law. The need for halal certification makes animal keratin less accessible to a significant portion of the market, prompting the search for plant-based alternatives. Plant-based proteins from seeds, legumes, and oatmeal offer conditioning benefits but do not match animal keratin's deep hair repair capabilities (Qin *et al.*, 2022). While vegan keratin alternatives may be acceptable within the halal market, they are not yet as effective in hair restoration, which may limit their appeal to consumers seeking high-performance products.

Furthermore, carmine, a red colourant derived from crushed beetles, provides high colour intensity and durability in cosmetic products such as lipstick (Mahyeddin, 2020; Cristiano & Guagni, 2022). From a halal perspective, the use of carmine is problematic as it is derived from insects, which may not be acceptable in halal-certified cosmetics, mainly if they are not processed according to Islamic standards (Hussaini *et al.*, 2021). Vegan alternatives like beetroot powder, hibiscus extracts, and mica powder, which are more easily halal-certified, offer cruelty-free and environmentally friendly alternatives. However, these vegan colourants often fail to provide the same vibrancy or long-lasting intensity as carmine, challenging manufacturers to meet halal standards and

consumer expectations for high-pigment formulations (Abrar *et al.*, 2024).

4.2 Cost implications of animal-based vs. vegan ingredients

Cost analysis reveals that animal-based ingredients are more expensive, primarily due to the extraction and processing techniques involved. For instance, animal collagen and keratin production often require more complex and resource-intensive methods, resulting in higher costs for manufacturers and consumers (Hussaini *et al.*, 2022). However, the additional cost of sourcing halal-certified animal-derived ingredients can increase the overall expense. Halal certification often requires additional inspections, audits, and compliance with specific slaughter and processing methods, which adds a layer of cost to the production process (Shabbir *et al.*, 2022). Consequently, many consumers turn to plant-based alternatives as a more cost-effective option.

Vegan alternatives, by contrast, are typically less expensive to produce due to the abundance and lower processing costs of plant-based sources. Ingredients like agar and carrageenan, derived from seaweed, are relatively inexpensive and more accessible for halal certification as they do not involve any animal-based sources (Hoang *et al.*, 2021). However, achieving comparable stability or texture with plant-based ingredients may require adding other materials, which could lead to higher overall production costs despite the lower base cost of plant ingredients (Lestari *et al.*, 2019).

For example, although plant-based gelatin substitutes such as agar may be more affordable, their ability to effectively mimic the moisturising properties of animal gelatin may necessitate additional ingredients or more complex formulations, which could increase the cost of the final product (Kim *et al.*, 2021). This cost trade-off becomes particularly relevant for high-end products targeting halal-conscious consumers, who may seek vegan formulations that are both affordable and compliant with halal guidelines.

4.3 Ethical and sustainability considerations

One of the most significant drivers for adopting vegan alternatives in cosmetic formulations is the growing emphasis on sustainability, ethical sourcing, and halal certification. Animal-derived ingredients, such as collagen and carmine, raise ethical concerns about animal welfare, as their production often involves intensive farming practices (Visser, 2023). Moreover, the environmental impact of sourcing animal-derived ingredients and the increased consumer demand for cruelty-free products has prompted many companies to seek plant-based alternatives (Ajayi *et al.*, 2024; Sasounian *et al.*, 2024). For Muslim consumers who adhere to halal principles, ethical concerns extend beyond animal welfare to the necessity for ingredients to be sourced and processed consistent with Islamic law (Sugibayashi *et al.*, 2019; Abrar *et al.*, 2024).

Vegan ingredients, by contrast, are generally more sustainable and ethically sourced, as they do not involve animal exploitation and often have a lower environmental footprint (Shenk, 2022; Sasounian *et al.*, 2024). These ingredients are inherently compatible with halal standards and can be marketed as cruelty-free and eco-friendly alternatives. For example, plant-based colourants such as beetroot powder and hibiscus extracts offer a cruelty-free alternative to carmine and provide similar colouration benefits without the ethical

concerns associated with animal-based products (Mahyeddin, 2020; Abrar *et al.*, 2024). Halal-certified, plant-based ingredients align with Muslim and non-Muslim consumers' ethical and sustainability values, making them an attractive option in the market.

5. Conclusion

In conclusion, vegan ingredients have significant potential to align with the core principles of halal cosmetics, emphasising purity, ethical sourcing, and environmental sustainability. While traditional animal-based ingredients like collagen, gelatin, keratin, and carmine remain effective, vegan alternatives emerge as ethical, cruelty-free, and viable substitutes. These plant-based options not only address concerns of animal exploitation but also cater to the growing demand for health-conscious and environmentally responsible products.

Although vegan alternatives may not always replicate the performance of animal-derived ingredients, advancements in formulation and biotechnology are narrowing this gap. Manufacturers can focus on improving the efficacy of vegan ingredients through innovation. At the same time, halal certification bodies should collaborate with them to establish clear, inclusive standards that cater to both vegan principles and religious requirements. Manufacturers and certifiers must work together to address challenges such as ingredient sourcing and production methods to ensure compliance with halal standards. Moreover, the global appeal of vegan halal products extends far beyond Muslim consumers. With increasing consumer awareness about sustainability, cruelty-free sourcing, and clean beauty, non-Muslim markets are also drawn to these products. As the demand for ethical and sustainable cosmetics grows, manufacturers should view vegan halal products as a strategic opportunity to tap into both Muslim and non-Muslim demographics.

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