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Cosmetic Agents and Skin Health of Young Females in Taichung, Taiwan

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Abstract

The use of cosmetic products has become increasingly popular among women, encompassing a wide range of items such as moisturizers, makeup, cleansers, and other beauty-enhancing substances. Cosmetic agents are substances found in cosmetic products that are used to improve the appearance and health of the skin, hair, and nails. They may be natural or synthetic, and their functions may include moisturizing, exfoliating, cleaning, and UV protection. Cosmetic agents play crucial role in the formulation of cosmetic products. Different skin types respond differently to cosmetic agents, so it is important to patch test new products before incorporating them into a daily routine. It is essential to consult a dermatologist before using any cosmetic products. The study utilized the descriptive research design. The target population was 250 Females in Taichung, Taiwan. The study did sampling of 210 participants chosen from the target population of 250 Females in Taichung, Taiwan. Questionnaires were used to collect the data. The research concluded that cosmetic agents have become an essential part of daily skincare routines for many females worldwide. The effects of cosmetic agents on skin health among females are significant. Properly formulated cosmetic agents can provide a range of benefits to the skin, improving its appearance and health. Properly formulated cosmetic agents can offer a range of benefits to the skin, like moisturization, sun protection, anti-aging effects, acne management, hyperpigmentation reduction, and exfoliation. It was recommended that different cosmetic agents work best for different skin types and concerns. Oily skin may benefit from a lightweight, oil-free moisturizer, while dry skin may require a heavier, more emollient-based moisturizer. Females should look for products that comprise beneficial components like antioxidants, peptides, and humectants. Avoid products that contain harmful components like fragrances, alcohol, and sulfates, as these may irritate the skin and cause damage over time.

Keywords: *Cosmetic Agents, Skin Health, Females, Taiwan*

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1.0 Background of the Study

Cosmetic agents are substances found in cosmetic products that are used to improve the appearance and health of the skin, hair, and nails (Khan & Alam, 2019). These components may be natural or synthetic, and their functions may include moisturizing, exfoliating, cleaning, and UV protection. Emollients are substances that aid in the maintenance of smooth, supple skin. They function by producing a protective barrier on the skin's surface that inhibits water loss. Petrolatum, mineral oil, lanolin, and dimethicone are examples of emollients. Humectants are substances that help the skin attract and retain moisture (Dev, Gupta & Misra, 2022). They function by pulling water to the surface from the air and deeper layers of the skin. Glycerin, hyaluronic acid, urea, and sorbitol are examples of humectants. Surfactants are substances that help in the removal of debris and oil from the skin (Jiang & Lillehoj, 2020). They function by lowering the surface tension of the water, making it easier for it to permeate the skin. Surfactants such as sodium lauryl sulfate, sodium laureth sulfate, and cocamidopropyl betaine are examples of surfactants. Preservatives are substances in cosmetic products that serve to inhibit the growth of germs, yeast, and mold (Nowak, Jabłońska & Ratajczak-Wrona, 2021). They are required to guarantee that the product is safe and effective over time. Parabens, phenoxyethanol, and benzyl alcohol are examples of preservatives.

Antioxidants are substances that assist to protect the skin from free radical damage (Suleman, Khan, Baqi, Kakar & Ayub, 2019). Free radicals are chemicals that can cause cell damage and accelerate the aging process. Vitamin C, vitamin E, and green tea extract are examples of antioxidants. UV filters are substances that serve to protect the skin from the harmful effects of UV radiation from the sun. They work by absorbing or reflecting the UV radiation before it can penetrate the skin. Some examples of UV filters include avobenzone, octinoxate, and zinc oxide. Exfoliants are chemicals that help in the removal of dead skin cells from the skin's surface. They remove dead skin cells by either physically washing the skin or chemically dissolving them. Alpha-hydroxy acids (AHAs), beta-hydroxy acids (BHAs), and microbeads are examples of exfoliants (Dunlop, Abramowicz & Fisher, 2022). Emulsifiers are ingredients that help to combine oil and water-based ingredients in a cosmetic product. They work by reducing the surface tension between the two substances and creating a stable, uniform mixture. Some examples of emulsifiers include lecithin, glyceryl stearate, and polysorbate 20. Cosmetic agents play crucial role in the formulation of cosmetic products. By understanding the functions of these ingredients, consumers can make informed decisions when choosing products that best suit their needs. It is also important to note that different skin types may respond differently to cosmetic agents, so it is important to patch test new products before incorporating them into a daily routine (Fernandes, Medronho, Alves & Rasteiro, 2023).

Skin health is essential for our overall well-being. Skin is the human body's biggest organ, and it serves as a protective barrier against external environSkin variables such as UV radiation, pollution, and viruses (Moskovicz, Gross & Mizrahi, 2020). However, the skin might also be affected by intrinsic factors such as genetics, aging, and hormonal changes. Cosmetic agents can play an important role in maintaining and improving skin health. Proper hydration is essential for

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maintaining healthy skin. Cosmetic agents such as emollients and humectants can aid in preventing water loss from the skin, keeping it soft and supple (Baptista & Freitas, 2021). Moisturizing agents can also improve the skin barrier function, reducing the risk of inflammation and irritation. UV rays cause skin damage like sunburn, premature aging, and even skin cancer. UV filters such as avobenzone, octinoxate, and zinc oxide can help in protecting the skin from the sun's damaging rays. Regular use of a broad-spectrum SPF sunscreen can help prevent photoaging and minimize the risk of skin cancer. Aging is a natural process that causes wrinkles, fine lines, and loss of suppleness in the skin. Cosmetic agents such as retinoids, peptides, and antioxidants may assist in improving the appearance of aging skin by stimulating collagen production, lowering oxidative stress, and promoting cell turnover (Altay Benetti, Tarbox & Benetti, 2023).

Acne is a common skin condition which can affect people of all ages. Cosmetic agents such as salicylic acid, benzoyl peroxide, and retinoids can help to manage acne by reducing inflammation, unclogging pores, and regulating sebum production (Lalrengpuii, Raza, Mishra & Shukla, 2022). However, it is essential to consult a dermatologist before using any acne treatment. Hyperpigmentation is a condition characterized by the darkening of the skin due to an increase in melanin production. Cosmetic agents such as hydroquinone, kojic acid, and vitamin C helps to reduce the appearance of hyperpigmentation by inhibiting melanin production and promoting cell turnover. Cosmetic agents like alpha-hydroxy acids (AHAs) and beta-hydroxy acids (BHAs) can help in exfoliating the skin by dissolving the bonds between dead skin cells (Ahn, Lee, Kim, Goh, Park, Lee & Kang, 2019). Exfoliation can enhance the texture and tone of the skin and lower the risk of clogged pores. Cosmetic agents plays significant role in skin health maintenance and improvement. However, it is critical to choose products that are suitable for your skin type and problems. A dermatologist or skincare professional can advise an individual on which cosmetic chemicals are most suited to their skin (Thakur, Shah, Rai, Parra, Pathikonda, Kurilova & Cili, 2023). Additionally, appropriate skincare practices such as daily cleansing, moisturizing, and sun protection are essential for achieving and maintaining healthy skin.

1.1 Statement of the Problem

The extensive use of cosmetic agents among females in Taichung, Taiwan, raises concerns about their potential effects on skin health. Cosmetic agents encompass a wide range of products, including skincare items and makeup, which are applied directly to the skin. Taichung, being a bustling city with a significant population of females, necessitates an investigation into the effects of these cosmetic agents on skin health. Taichung city has a significant population of females who regularly use cosmetic agents to enhance their appearance and maintain healthy-looking skin. Understanding the potential risks associated with their usage is crucial to promoting informed decision-making and ensuring the well-being of individuals who utilize these products regularly. While these products claim to improve appearance and boost self-confidence, concerns have arisen regarding their potential impact on skin health. Despite numerous studies on cosmetic agents, there is still limited comprehensive research examining the long-term effects of these substances on the skin, particularly among females.

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The problem at hand involves assessing the impact of cosmetic agents on skin health among females in Taichung. To address this problem, the research aims to identify the commonly used cosmetic agents, evaluate the current state of skin health, analyze ingredients and formulations, examine perception and awareness levels, and provide evidence-based recommendations for safe usage. By thoroughly investigating these aspects, the study seeks to shed light on potential associations between cosmetic agent usage and skin health outcomes, while also raising awareness about the importance of selecting and using these products in a safe and informed manner. The significance of this research lies in its potential to contribute to the existing body of knowledge on skincare practices and promote safer usage practices among females in Taichung. The outcomes of this study are expected to increase knowledge regarding cosmetic agents' impact on skin health, improve consumer awareness about potential risks, empower individuals to make informed choices, and potentially reduce adverse skin reactions. Additionally, the findings and recommendations may have policy implications, leading to regulatory measures that ensure the safety and efficacy of cosmetic products in Taichung, Taiwan. Ultimately, this research aims to enhance the overall well-being and skin health of females in the region.

2.0 Literature Review

Hussein and Perrett (2021) noted that the high water content and little sebum secretion of fair skin set it apart. To examine the optimum individual care regimen for face skin, the Corneometer, Tewameter, and Sebumeter were used to assess skin water content, transepidermal water loss, and skin sebum secretion on facial skin before and after cosmetic application. When compared to others preceding it, the cosmetics application retained a higher water content and lowered transepidermal water loss, as well as a lower sebum secretion 5 and 10 hours later. The scenario was sustained after three weeks of constant usage of the cosmetics. It is reasonable to conclude that cosmetic application on human face skin has a moisturizing and anti-sebum effect, which aids in keeping of good skin physiological function after using skin care products. The findings lead to a scientific individual care regimen for human face skin that promotes the skin's hydrolipid layer's balance.

According to Zhang, Wang, An, Quan, Li and Zhao (2022), international gene expression profiling, also called transcriptomics or genomics, identifies critical pathways impacted in aging skin that can be addressed with suitable cosmetic chemicals. Matrix creation, barrier, lipid synthesis, antioxidant capacity, and hyperpigmentation are all aspects of skin aging that were addressed. Compounds used in cosmetics, such as niacinamide, PalKTTKS, hexamidine, retinyl propionate, and sodium dehydroacetate, were identified, and their biological effects were elucidated, with the help of gene expression profiling and in vitro human skin cell cultures for compound screening and verification. Furthermore, the identification of new anti-ageing components has resulted from the discovery of novel anti-ageing substances, olivederived fatty acid ethoxylates, which have been shown to restore antioxidant enzymes in skin keratinocytes and fibroblasts. The gene expression analysis of age spots has also offered insight into the involvement of undecylenoyl phenylalanine in lowering melanin synthesis in melanocytes via an adrenergic

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receptor pathway. The usage of these compounds in skin care cosmetic formulas can help enhance the appearance of aged skin, like fine lines, wrinkles, and age spots.

Motosko, Ault, Kimberly, Zakhem, Gothard, Ho and Hazen (2019) reported that acetyl hexapeptide-3 has been utilized in anti-aging topical preparations to improve the look of the skin. However, few fundaSkin research have been conducted to investigate its impacts on the epidermis and dermis when vehiculated in topical formulations. The goal of the investigation was to use biophysical approaches to establish the therapeutic effectiveness of acetyl hexapeptide-3. Formulations containing and without containing acetyl hexapeptide-3 were administered to the ventral forearm and facial region of fifty women volunteers for this purpose. Skin conditions were assessed after two and four weeks of daily application by measuring stratum corneum water content and skin mechanical characteristics with three instruments: Corneometer, Tewameter, and Sebumeter. The stratum corneum water composition in the face area was enhanced by all formulations tested and stayed steady until the completion of the trial. Only formulations containing acetyl hexapeptide-3, on the other hand, have a considerable influence on mechanical qualities by lowering the anisotropy of the face skin. In terms of viscoelasticity characteristics, no significant changes were identified. Finally, the impacts of acetyl hexapeptide-3 on the anisotropy of face skin distinguish the molecule as a beneficial agent for enhancing cutaneous tissue conditions when utilized in anti-aging cosmetic compositions.

Andrade, Rangu, Provini, Putterman, Gauthier and Castelo-Soccio (2020) noted that adults have been shown to benefit from cosmetic concealment. Because there is little evidence on cosmetic camouflage in youngsters, it is not commonly used as a technique of therapy. The study sought to determine if cosmetic concealment enhances the quality of life of children with visible dermatoses and their parent or primary caregiver. Before and after cosmetic camouflage consultation, people aged 10 to 20 years with apparent skin disease and their parents were evaluated using the Children's Dermatology Life Quality Index (CDLQI) and the Family Dermatology Life Quality Index (FDLQI). The research included 33 children with skin problems as participants. The mean CDLQI fell from 7.93 (SD = 2.12) to 4.76 (SD = 1.54; P =.043), while the FDLQI fell from 9.57 (SD = 2.11) to 5.76 (SD = 1.45; P =.013). The study found that individuals with skin diseases who were treated with cosmetic concealment had a higher quality of life.

Mahesh, Fathima and Veena (2019) found out that because of their beneficial results in retaining youthful and healthy skin as well as healing aging skin, hydroxy acids are widely utilized in cosmetic and dermatologic formulations. The current study attempted to see if treating hairless mice with glycolic acid, lactic acid, a fruit acid combination, malic acid ester, or salicylic esters of lipophilic acid results in various aesthetic effects and epidermal modifications. To evaluate the potential modifications produced by formulations containing hydroxy acids or derivatives, histopathologic, morphometric, and stereologic tests were conducted. Glycolic acid, lactic acid, a fruit acid combination, and malic acid ester all operated on the epidermis to increase the thickness of the basal and spinous layers while the experiments were being conducted. The cells had the highest volume, and the nuclei also had the most volume. The findings reveal that hydroxy acid's

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cosmetic impacts are generated by changes to the skin's surface, the epidermis. In a mouse model, the hydroxy acids outperformed the control and its variations.

Kirby, Buchalter, Anil and Leucht (2020) argued that DHEA is a steroid hormone that has a role in physiological aging. It has been demonstrated to improve skin condition in elderly adults when supplied orally. The goal of this pilot research was to look at the in vivo effects of topical DHEA (2%). In two groups of 40 postmenopausal women, the DHEA formulation (2%) or the vehicle was topically applied to face and hand skin for four months. The treatment's effectiveness was assessed using clinical and biophysical markers associated with skin aging. The researcher demonstrated that DHEA therapy improved the rate of sebum production, which was regarded favorably by a menopausal group that is typically afflicted by diminishing sebum levels. Topical DHEA improves skin brightness and helps to combat the papery look of skin and epidermal shrinkage, both of which are signs of hormone-related skin aging. Topical DHEA may also have an effect on skin processes connected to wrinkles, but this is yet to be verified. This pilot investigation revealed favorable impacts on skin features that topical therapies seldom give. It revealed some intriguing insights on the therapy of skin aging.

According to Huang, Wang, Yang, Chou and Fang (2018), fish oil has been related to reduce severity of photoaging, skin cancer, allergies, dermatitis, cutaneous wounds, and melanogenesis. There is growing evidence that omega-3 PUFAs found in fish oil, namely docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), have a role in skin protection and homeostasis. In addition to linoleic acid and alpha-linolenic acid (ALA), the skin also needs the other polyunsaturated fatty acids (PUFAs). The primary mechanisms by which PUFAs reduce cutaneous inflammation are competition with inflammatory arachidonic acid and reduced synthesis of proinflammatory eicosanoids. PUFAs in fish oil, on the other hand, may function as cytokine production and activity regulators which leads to healing of wounds. A thorough investigation was performed to explore the relationship between fish oil consumption and skin advantages. The section that follows addresses the numerous aesthetic and medical applications of fatty acids produced from fish oil, such as ALA, LA, DHA, and EPA. The research focuses on the effects of fish oil and other fatty acids on the skin in cell-based, animal-based, and clinical models. The outcomes of the study on fish oil therapy of skin disorders indicate to a promising future in terms of cosmetic and dermatological advancements.

3.0 Research Methodology

The study utilized the descriptive research design. The target population was 250 young females in Taichung, Taiwan. The study did sampling of 210 respondents that were selected from the target population of 250 young females in Taichung, Taiwan. Questionnaires were used to collect the data.

4.0 Research Findings and Discussion

4.1 Correlation Analysis

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Table 1: Correlation Analysis

		Skin Health	Cosmetic Agents
Skin Health	Pearson Correlation	1.000	
	Sig. (2-tailed)		
Cosmetic Agents	Pearson Correlation	. 213**	
	Sig. (2-tailed)	0.000	0.000

The correlation results from Table 1 show that the cosmetic agents was positively and significantly associated with skin health (r=.213, p=.000). This concurs with Kirby, Buchalter, Anil and Leucht (2020) who found that DHEA is a steroid hormone that has a role in physiological aging and demonstrated to improve skin condition in elderly adults when supplied orally. DHEA improves skin brightness and helps to combat the papery look of skin and epidermal shrinkage, both of which are signs of hormone-related skin aging. Cosmetic agents can play a critical role in maintaining and improving skin health. Proper hydration is essential for maintaining healthy skin. Cosmetic agents such as emollients and humectants can aid in preventing water loss from the skin, keeping it soft and supple

4.2 Regression Analysis

The section consists of model fitness, analysis of variance and regression of coefficient. The findings on Table 2 show the model fitness

Table 2: Model Fitness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.213a	0.242	0.211	0.011425

The results from Table 2 indicate that cosmetic agents was discovered to be satisfactory in explaining the skin health among the young females in Taichung, Taiwan. It was supported by the coefficient of determination, R^2 of 0.242. It shows that cosmetic agents explain 24.2% of the variations in the skin health among the young females in Taichung, Taiwan.

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Table 3: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.07	1	6.07	183.94	.000b
	Residual	8.24	250	0.033		
	Total	14.31	249			

The result in Table 3 shows that the overall model was statistically significant. The results show that skin health is a good predictor in explaining the cosmetic agents among the young females in Taichung, Taiwan. This was supported by an F statistic of 147.98 and the reported p-value of 0.000 which was less than the conventional probability significance level of 0.05.

Table 4: Regression of Coefficient

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.643	0.098		6.561	0.069
Cosmetic Agents	0.831	0.293	0.646	2.836	0.028

According to the results in Table 4, it was noted that cosmetic agents was positively and significantly related to skin health (β=0.831, p=0.028). This was supported by a calculated t-statistic of 2.836 that is larger than the critical t-statistic of 1.96. The results imply that when the usage of cosmetic agents by improves by one unit, the skin health among the young females in Taichung, Taiwan will increase by 0.831 units while other factors that influence the skin health remain constant. Motosko, Ault, Kimberly, Zakhem, Gothard, Ho and Hazen (2019) articulated that the impacts of acetyl hexapeptide-3 on the anisotropy of face skin distinguish the molecule as a beneficial agent for enhancing cutaneous tissue conditions when utilized in anti-aging cosmetic compositions. The usage of various compounds in skin care cosmetic formulas can help enhance the appearance of aged skin, like fine lines, wrinkles, and age spots. Cosmetic agents play crucial role in the formulation of cosmetic products.

5.0 Conclusion

Cosmetic agents have become an essential part of daily skincare routines for many females worldwide. These products can have a significant effect on the health and appearance of the skin. It is key to bear in mind that not all cosmetic agents are manufactured equal, and some may have adverse effects on the skin. Properly formulated cosmetic agents can offer a range of benefits to

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the skin, like moisturization, sun protection, anti-aging effects, acne management, hyperpigmentation reduction, and exfoliation. Moisturizers containing emollients and humectants can help in preventing water loss from the skin and maintain its barrier function. Sunscreens with UV filters can prevent photodamage, which causes premature aging and increase the risk of skin cancer. Anti-aging agents such as retinoids, peptides, and antioxidants can stimulate collagen production, reduce oxidative stress, and promote cell turnover, improving the appearance of aging skin.

Cosmetic agents can also be helpful in managing acne and reducing the appearance of hyperpigmentation. Acne management agents such as salicylic acid and benzoyl peroxide can reduce inflammation and unclog pores, while hyperpigmentation reducing agents such as hydroquinone and vitamin C can inhibit melanin production and promote cell turnover. However, it is key to select cosmetic agents that are correct for one's skin type and concerns. Consultation with a dermatologist can help to know which cosmetic agents are most suitable for a particular individual. Additionally, it is essential to incorporate proper skincare practices such as daily cleansing, moisturizing, and sun protection into one's routine to achieve and maintain healthy skin. The effects of cosmetic agents on skin health among females are significant. Properly formulated cosmetic agents can provide a range of benefits to the skin, improving its appearance and health. However, it is essential to choose products carefully and follow proper skincare practices to achieve optimal results.

6.0 Recommendations

Different cosmetic agents work best for different skin types and concerns. For example, oily skin may benefit from a lightweight, oil-free moisturizer, while dry skin may require a heavier, more emollient-based moisturizer. Identifying your skin type and concerns can help an individual get the best cosmetic agents. Look for products that comprise beneficial components like antioxidants, peptides, and humectants. Avoid products that contain harmful components like fragrances, alcohol, and sulfates, as these may irritate the skin and cause damage over time. Product labels can provide valuable information about the ingredients, formulation, and intended use of cosmetic agents. Consumers should read labels carefully and follow instructions for use. Sunscreen is one of the most critical cosmetic agents for keeping healthy skin. Exfoliation can help to get rid of dead skin cells, enhance skin texture and tone, and reduce the risk of clogged pores. Use an exfoliating agent such as an AHA or BHA twice or thrice a week, depending on your skin type and concerns. If you are unsure about which cosmetic agents to use, or if you have persistent skin concerns such as acne or hyperpigmentation, consult a dermatologist or skincare professional for advice. A consistent skincare routine is essential for achieving and maintaining healthy skin. Cleanse, moisturize, and protect your skin every day, and incorporate any additional cosmetic agents as needed. By choosing appropriate products, reading labels carefully, and following a consistent skincare routine, females can improve the appearance and health of their skin. Consultation with a skincare professional can also be helpful in identifying the most suitable cosmetic agents for individual skin concerns.

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