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Formulation of Antiaging Activities in Creams Made From Natural Active Ingredients

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ABSTRACT
Anti-aging treatments have become a major focus in the beauty industry, with anti-aging creams being one of the most sought after products to treat the signs of skin aging. This cream is formulated with the aim of inhibiting the premature aging process, reducing the appearance of wrinkles, and disguise skin imperfections. Natural ingredients with antioxidant activity have been in the spotlight in the development of anti-aging cream formulations, due to their ability to fight skin damage caused by free radicals. In an effort to identify effective cream formulations, the literature review method was used to evaluate various relevant reference sources. This literature review revealed several natural ingredients that have anti-aging potential, such as tamarind leaf extract, banana peel, purple eggplant, and moringa leaves, as well as ylang-ylang oil and lemon oil. In addition, fruits such as rambutan and lemon, as well as red spinach leaves, also stand out for their high antioxidant content, including vitamin C and lycopene. This research provides insight into the various natural ingredients that can be used in anti-aging cream formulations, leading to the development of more effective and environmentally friendly products in caring for skin.

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INTRODUCTION

Premature aging is a natural process that can be influenced by a number of intrinsic and extrinsic factors. Intrinsic factors rrefer to internal changes that occur in the body, such as increased production of free radicals and DNA damage. Free radicals can damage cell structure and DNA, which in turn can result in skin aging and other symptoms of aging. On the other hand, extrinsic factors, such as exposure to UV rays and smoking habits, also play an important role in premature aging. Exposure to UV rays from the sun, especially UVA and UVB rays, is the main cause of skin aging and can increase the risk of skin cancer such as malignant melanoma. In recent decades, research has focused on developing effective UV filters to protect skin from UVB (280–320 nm) and UVA (320–400 nm) sun exposure (Ammar et al., 2016). Prolonged exposure to sunlight can cause an increase in the expression of proteins such as collagenase, gelatinase, and stromelin, which are enzymes responsible for the degradation of the skin matrix (Chu et al., 2021). As a result, the skin

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can experience premature aging with the appearance of dark spots, fine lines, and wrinkles (Cecchi et al., 2018). To protect the skin from exposure to UV rays, the use of sunscreen or cream with a high SPF (Sun Protection Factor) is highly recommended (Huerta-Madroñal et al., 2023). Apart from that, a healthy lifestyle, which includes a balanced diet, regular exercise, and avoiding smoking, can also help reduce the risk of premature aging (Sharma & John, 2023).

Exposure to UVA and UVB rays from the sun not only causes direct skin damage but also initiates a series of biochemical reactions that lead to premature aging and severe skin damage (Hemagirri & Sasidharan, 2022). One of the main mechanisms involved in this process is the formation of reactive oxygen species (ROS), or reactive oxygen radicals (Leoty-okombi et al., 2022). ROS are highly reactive and unstable molecules that form in skin cells in response to UV light exposure (Hwang et al., 2017). When the amount of ROS increases significantly, it creates a condition known as oxidative stress. Oxidative stress causes damage to various cell components, including DNA, proteins, and lipids, which in turn can trigger the process of apoptosis, or cell death (Meza et al., 2021). In addition, UVB exposure can activate various cellular signaling pathways, including cytokine receptors and TGF-β receptors (Peslak et al., 2022). Activation of this receptor triggers increased production of proteins such as Protein Activator-1 (AP-1) and NF-kB factors. AP-1 and NF-kB then stimulate the production of enzymes called matrix metalloproteinases (MMPs) (Younis et al., 2023). Increased production of MMPs causes degradation of type I collagen, which is the main component of the skin extracellular matrix (Bertran et al., 2022). Type I collagen provides strength and elasticity to the skin, and its degradation due to MMPs causes loss of skin density and elasticity (Rouvrais, Bacqueville, Bogdanowicz, et al., 2017). The result is the appearance of wrinkles, fine lines, and loss of skin firmness, which are signs of premature aging, or what is known as photoaging (Rouvrais, Bacqueville, Patrick, et al., 2017). In addition, NF-kB activation can also increase the inflammatory response in the skin in response to ROS (Ruangchuay et al., 2021). This inflammatory response can accelerate the aging process and cause further damage to skin cells (Song et al., 2023). By understanding this mechanism, it is important to take steps to protect the skin from UV exposure, such as using sunscreen with a high SPF, using physical protection such as hats and protective clothing, and limiting direct exposure to sunlight at certain times. Therefore, ongoing research in the development of antioxidant and anti-inflammatory products is also important in efforts to protect the skin from damage due to UV exposure and reduce the risk of premature aging.

Sunscreen has long been one of the main tools in fighting the dangers of UV radiation because it can provide effective protection against UVA and UVB rays. Studies by (Chu et al., 2021) and (Battistin *et al.*, 2020) show that sunscreen significantly reduces the risk of skin damage caused by UV exposure, thereby reducing the risk of premature aging and skin cancer. One additional feature often found in sunscreen is its antioxidant content. Antioxidants are compounds that can fight free radicals and inhibit the cell oxidation process. The study by Paul *et al.* (2022) highlights the important role of antioxidants in reducing cell damage and preventing premature aging. By inhibiting oxidation reactions

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that can damage cell structure, antioxidants help maintain skin health and strength. Not only synthetic chemicals, but many natural plants also contain potential antioxidant compounds. A number of studies have examined plants such as rambutan, tomatoes, eggplant, nettle leaves, and moringa leaves, as well as libo fruit, and found that they contain powerful antioxidant compounds. Extracts from these plants have been used in skin care products and sunscreens to provide additional protection and increase effectiveness in fighting premature aging. Through a combination of the physical protection of sunscreen and the anti-aging effects of antioxidants, these products can provide holistic, comprehensive protection against skin damage caused by exposure to UV rays and other environmental factors. Further research into the potential of these plants as sources of antioxidants could help develop more effective and natural sunscreen formulations and skin care products. Cream is a cosmetic innovation that is very popular, especially among women who care about their appearance and skin care. Compared to other cosmetic products, cream has the advantage of being a thick emulsion with a high water content, around 60%. This is the advantage of the cream in providing hydration and moisture to the skin, making it a very convenient and preferred choice for daily skin care. Apart from that, the high aesthetic value is also a special attraction for cream users. One of the cream variants that is very popular is anti-aging cream. In the world of cosmetics, anti-aging creams have become a reliable solution to overcome the signs of premature aging. This cream is specially formulated with various active ingredients and the latest technology that can help prevent and reduce the appearance of wrinkles and repair skin damage that has occurred. The various active ingredients contained in it, such as antioxidants, peptides, and vitamins, aim to provide a bioactive effect that can stimulate collagen production, restore skin brightness, increase elasticity, and maintain skin elasticity. Anti-aging creams not only help maintain a youthful and healthy appearance but also provide comprehensive care for the skin (Cecchi et al., 2018).

Recent studies have shown that anti-aging creams with active natural extract ingredients have the potential to reduce signs of premature aging on the skin. These active ingredients often contain antioxidant compounds that can fight cell damage and slow down the skin's aging process. These studies show that anti-aging cream formulations using natural ingredients can be an attractive alternative to skin care. Various natural ingredients, such as plant extracts, vegetable oils, and other natural ingredients, have been studied for their effects on stimulating skin cell regeneration, increasing moisture, and improving skin texture. The aim of this literature review is to investigate anti-aging cream formulations based on natural ingredients as a solution to overcome premature aging. It is necessary to understand more deeply the effects and mechanisms of action of this natural ingredient before we can develop skin care products that are more effective and safe. By combining scientific knowledge with advanced formulation technology, we can create anti-aging creams that are not only effective in reducing wrinkles and fine lines but also provide long-term benefits for skin health and beauty. Based on the review above, this literature review will provide a comprehensive view of the potential of natural ingredients in anti-aging skin

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care, as well as provide a strong basis for the development of future skin care products that are more innovative and effective.

METHODS

This research is an experimental effort that adopts a descriptive literature study method, as explained by (Sutopo & Sugiyono, 2021). This approach was carried out with the aim of collecting relevant data from various studies related to anti-aging cream formulations and the use of natural ingredients that have anti-aging effects. This research aims to facilitate researchers' understanding of the existing context and findings so that it can become a solid foundation for renewable research. The inclusion criteria in this study were very selective, only including international and national journals that were substantially relevant to the research topic. The articles included have been published within the last ten years, from 2017 to 2023, to ensure the freshness of the information presented. Using a literature study approach, this research aims to provide a comprehensive review of various studies that have been carried out in the context of anti-aging cream formulations using natural ingredients. It is hoped that this research will provide an in-depth understanding of the latest developments in this field and provide a strong basis for the development of more effective and innovative anti-aging skin care products in the future.

RESULTS AND DISCUSSION

Based on the results of a literature study, it was found that the compounds with the greatest antiaging potential are flavonoid antioxidants, vitamin C, and lycopene. These antioxidant compounds have the ability to protect the skin layers, namely the epidermis and dermis, especially elastin and collagen, which are important components in maintaining skin strength, elasticity, and moisture. When the skin is exposed to UV light, there is an increase in the production of enzymes such as elastase, collagenase, and hyaluronidase. These enzymes are responsible for the degradation of collagen, elastin, and hyaluronic acid in the skin. This condition often occurs due to exposure to sunlight, which can cause the formation of wrinkles (sagging skin).The results of a review of several review data sources show that cream formulations made from natural ingredients have the potential to be an effective antiaging solution. The evaluation of the preparation and antioxidant activity of the formulation is presented in tables 1 to 7. These data provide valuable information for researchers and decision-makers in the development of skin care products using natural ingredients with strong anti-aging activity.

Table 1. Formulation and Evaluation of Anti-Aging Tamarind Leaf Extract (Tamarindus indica L.) Cream

No	Material	F(-) O/W	F(-) W/O	F O/W	F W/O
1	Tamarind leaf extract			0.008 gr	0.008 gr
2	CMC 5%			Add dissolved	Add dissolved
3	Base cream O/W	100 gr		Add 100	
4	Base Cream W/O		100 gr		Add 100

Source: Jannah & Aznam (2022)

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Table 1 above shows the antiaging cream formulation containing tamarind leaf extract and other ingredients used to make two different types of cream: O/W (oil-in-water) cream and W/O cream (water-in-oil). Tamarind leaf extract is the active ingredient chosen because it has the potential to be an antioxidant and a natural ingredient that is useful for caring for the skin. The antioxidant content in tamarind leaf extract can help protect the skin from damage caused by free radicals and exposure to UV rays. The table above is 1) Tamarind Leaf Extract is a tamarind leaf extract that is used as an active ingredient in antiaging cream formulations. In the table, this extract is added in the same amount for both types of cream, namely 0.008 grams. 2) CMC 5%: CMC (carboxymethyl cellulose) is a substance that is usually used as a binder or stabilizer in cream formulations. In the table, CMC 5% is added in dissolved form. 3) Base cream O/W is a base cream of the O/W (oil-in-water) type that is used as the basis for antiaging cream formulations. In the O/W cream formulation, tamarind leaf extract is added to the base cream, weighing 100 grams. Base Cream W/O is a base cream of the W/O (water-in-oil) type that is used as the basis for antiaging cream formulations. In the W/O cream formulation, tamarind leaf extract is also added to the base cream, weighing 100 grams. By using this formulation, two types of antiaging cream can be produced with different textures and compositions, according to user preferences and needs. O/W creams are usually lighter and easily absorbed by the skin, while W/O creams tend to be richer and suitable for dry or sensitive skin. Application of this formulation opens up the opportunity to produce two types of antiaging cream that offer different skin care experiences. O/W cream, with a dominant water phase, promises a light and fast-absorbing texture, suitable for those who want a fresh and not heavy skin sensation. Meanwhile, W/O cream, with a more dominant oil phase, offers extra moisture and protection for skin that tends to be dry or sensitive. These formulations allow manufacturers to meet individual user preferences and provide solutions tailored to varying skin needs, making them an inclusive and powerful choice in the skin care industry.

Table 2. Formulation and Evaluation of Anti-Aging Cream Using Banana Peel Extract

	Ingredients	Amount (g)
Oil phase	Stearic acid	4
	Spermaceti	2.5
	Cetyl alcohol	3.5
	Glycerin	2.5
Water phase	Triethanolamine	1
	Benzyl alcohol	1
	Water	35
	Extract	0.5

Source: Science & Alaaddin (2022)

The formulation includes two main phases, namely the oil phase and the water phase, which combine various ingredients to create a quality cream. The oil phase consists of stearic acid, spermaceti, cetyl alcohol, and glycerin, working together to provide a rich, soft texture and maintain skin moisture. On the other hand, the water phase contains

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benzyl alcohol as a preservative and water as the main solvent. Triethanolamine is added as a pH-regulating agent to maintain the product's pH balance. Extracts are active ingredients introduced into formulations to provide additional benefits for the skin. A carefully regulated composition, this formulation aims to produce an effective cream for providing optimal skin care, taking into account the moisture and nutritional needs as well as the skin's pH balance.

Table 3. Antiaging cream formulation from purple eggplant (Solanum melongena L.) and tomato (Solanum lycopersicum L.) extracts

No	Ingredients	Function	Formula % b/b		
			F1	F2	F3
1	Purple eggplant skin extract	Active ingredients	3	3	3
2	Tomato Extract	Active ingredients	20	20	20
3	Vaseline album	Emollient	25	25	25
4	Stearic acid	Thickener	8	8	8
5	Glycerin	Humectant, emollient	10	10	10
6	Span 60	Emulgator	1,75	2,75	2,25
7	Tween 80	Emulgator	3,25	2,25	2,75
8	Methyl paraben	Preservative	0,1	0,1	0,1
9	Propyl paraben	Preservative	0,05	0,05	0,05
10	Aquadest	Solvent	Ad 100	Ad 100	Ad 100

Source: Ratnasari & Puspitasari (2018)

In the formulation of this cream, there are a number of ingredients that have different roles in creating an effective skin care product. Purple eggplant skin extract and tomato extract act as the main active ingredients with the same concentration in each formula, namely 3% for purple eggplant skin extract and 20% for tomato extract. These two extracts are known for their high antioxidant content, which can help protect the skin from free radical damage and stimulate cell regeneration. Each formula uses Vaseline album as its main emollient, providing additional moisture and protection for the skin. Additionally, stearic acid acts as a thickener to give the cream a cohesive texture, while glycerin acts as a humectant and emollient to maintain skin moisture. Span 60 and Tween 80 function as emulsifiers, which help mix the water phase and oil phase homogeneously. Finally, we add methyl paraben and propyl paraben as preservatives to inhibit the growth of microorganisms in the product. We mix all these ingredients with distilled water as a solvent to reach 100% of the total composition, ensuring product stability and safety. A careful combination of these ingredients, this cream formulation is designed to provide optimal benefits to the skin with effective and consistent care.

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Table 4. Formulation of antiaging cream from Moringa leaf extract, ylang-ylang oil, and lemon oil

Formula	Active Ingredient Composition				% Active Ingredients
	Sunflower Oil	Moringa Leaf Extract	Ylang Ylang Oil	Lemon Oil	
F1	100%	-	-	-	3%
F2	-	100%	-	-	3%
F3	50%	50%	-	-	3%
F4	50%	-	50%	-	3%
F5	50%	-	-	50%	3%
F6	25%	50%	25%	-	3%
F7	25%	50%	-	25%	3%
F8	50%	25%	25%	-	3%
F9	50%	25%	-	25%	3%

Source: Nurhadianty et al. (2021)

The various cream formulas presented offer unique combinations of active ingredients and carrier oils, designed to provide a variety of benefits for the skin. Formula F1 uses 100% sunflower oil as its base, with the addition of 3% moringa leaf extract as an active ingredient. Meanwhile, Formula F2 relies entirely on Moringa leaf extract at a concentration of 100%. Formulas F3 and F4 combine sunflower oil with moringa leaf extract or ylang-ylang oil at a 50:50 ratio, each providing a balanced blend of moisture and nutrients. The F5 formula uses a combination of sunflower oil and lemon oil in equal ratios, offering a refreshing and brightening effect on the skin. Meanwhile, Formulas F6, F7, F8, and F9 introduce a more complex combination of sunflower oil, moringa leaf extract, ylang-ylang oil, and lemon oil, providing a wider variety in the benefits offered. With the active ingredient concentration remaining at 3% in each formula, its effectiveness is guaranteed to be consistent, ensuring an optimal skin care experience for users.

The variations in the combination of active ingredients and carrier oils in each formula provide flexibility in designing skin care products to suit individual needs. For example, a formula with moringa leaf extract and ylang-ylang oil is suitable for skin that needs additional nutrition and moisture, while a formula with lemon oil can provide a refreshing and brightening effect for dull skin. A consistent active ingredient concentration of 3% in each formula ensures uniform efficacy across all products. It is important to ensure that each cream application provides the expected benefits without having to worry about differences in effectiveness between product variants. Consumers can choose the formula that best suits their skin's needs without sacrificing the quality or consistency of expected results.

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Table 5. Formulation and Evaluation of a Novel Antiaging Cream Containing Rambutan Fruit Extract

	Component	Amount (%w/w)
Active ingredients	SMEF (meat methanol consecutive extract), CMEF (meat methanol extract), SMEP (skin methanol successive extract), and CMEP (skin methanol extract)	3%
Oil phase	Stearic acid	10%
	Cetyl alcohol	6%
	Liquid paraffin	6,6%
Water phase	Glycerine	5%
	Methyl paraben	0,05%
	Propylene glycol	30%
	Deionised water q.s	100%

Source: Sekar et al. (2017)

In this formulation, the main components are various methanol extracts, namely SMEF (meat methanol consecutive extract), CMEF (meat methanol extract), SMEP (skin methanol successive extract), and CMEP (skin methanol extract), used as ingredients. active with a concentration of 3% w/w. The oil phase of this cream consists of stearic acid, cetyl alcohol, and liquid paraffin, respectively, with concentrations of 10%, 6%, and 6.6% w/w. Meanwhile, the water phase consists of glycerin (5% w/w), methyl paraben (0.05% w/w), propylene glycol (30% w/w), and as much deionized water as needed to reach 100% of the formulation composition. This combination formulation is designed to provide comprehensive skin care benefits by utilizing the active properties of methanol extract and providing moisture and skin protection through balanced oil and water phases.

Table 6. Activity Test of Anti-Aging Cream for Ethanol Extract of Red Spinach Leaves (Amaranthus tricolor L.) on the Back Skin of New Zealand Rabbits Exposed to UV-A Rays

Ingredients	F1 (%)	F2 (%)	F3 (%)	F4 (%)
Extract *	0,5	1,0	2,0	-
Propylene glycol	7,0	7,0	7,0	7,0
Dinatrium Edetat	0,005	0,005	0,005	0,005
TEA	1,0	1,0	1,0	1,0
Vaselin	5,0	5,0	5,0	5,0
Cetyl alcohol	3,0	3,0	3,0	3,0
Stearic acid	3,0	3,0	3,0	3,0
Glyceryl monostearate	0,1	0,1	0,1	0,1
Nipagin	0,1	0,1	0,1	0,1
Nipasol	0,1	0,1	0,1	0,1
Aquadest ad	100 g	100 g	100 g	100g

Source: Rezky Putri et al. (2023)

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This formulation creates four different product variants; each variant has different proportions of ingredients to meet various skin care needs. The extract, as the main active ingredient, is present in gradual concentrations ranging from 0.5% to 2.0% in formulations F1 to F3, while no extract is added in formulation F4. Propylene glycol, disodium edetate, TEA, vaseline, cetyl alcohol, stearic acid, glyceryl monostearate, nipagin, and nipasol are the other components in the formulation; concentrations are constant in each product variant. All ingredients are mixed in distilled water in appropriate quantities to reach a total of 100 grams of formulation. Varying the proportions of these ingredients, each product variant offers a unique combination designed to provide different skin care benefits, from hydration to protection and nutrition, according to the user's individual needs.

Table 7. Anti-Aging Cream Formulation made from Lemon Peel Extract (Citrus limon)

Komponen krim	Komposisi (%b/b)	Konsentrasi ekstrak kulit jeruk lemon (g)	konsentrasi
Setil alkohol	0,5	F0	0%
Trietanolamin	1	F1	2,5%
Natrium edetat	0,05	F2	5%
Gliserin Nipagin	8	F3	7,5%
Air Suling	0,1	F4	10%
	Ad 100		

Source: Silalahi et al. (2019)

This cream is a formulation that relies on various important components to create an effective skin care product. The main components include cetyl alcohol, triethanolamine, sodium edetate, glycerin, and nipagin, the concentrations of which vary depending on Various amounts of lemon peel extract, ranging from none in the F0 formulation to up to 10% in the F4 formulation, enhance the skin's benefits. This cream, using distilled water as a medium, optimally hydrates the skin, with a customized combination of these components expected to deliver a range of treatment effects, from refreshing to deep hydration. Each of these cream formulations is tailored to meet diverse skin needs, providing effective and scalable solutions for daily skin care.

Table 8. Cream Formulation of Moringa Leaf Extract (Moringa oleifera) as an Anti-Aging Preparation

Composition%	F1	F2	F3	F4
Stearic acid	15	15	15	15
Cetyl alcohol	6	6	6	6
Potassium hydroxide	0,7	0,7	0,7	0,7
Methyl paraben	0,3	0,3	0,3	0,3
Propyl paraben	0,06	0,06	0,06	0,06
Glycerin	5,0	5,0	5,0	5,0
Propylene glycol	3,0	3,0	3,0	3,0
Moringa leaf extract	0	3,0	6,0	9,0
Aquades (g)	add 100	add 100	add 100	add 100

Source: Sugihartini & Nuryanti (2017)

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The presented cream formulation contains various components designed to provide effective skin care benefits. The main components include stearic acid, cetyl alcohol, potassium hydroxide, methyl paraben, propyl paraben, glycerin, propylene glycol, moringa leaf extract, and distilled water. The proportion of each component varies depending on the type of formulation; the concentration of Moringa leaf extract increases gradually from F1 to F4. These components are designed to create a cream that not only provides optimal moisture to the skin but also offers the added benefits of moringa leaf extract, known to have antioxidant and anti-aging properties. This formulation offers a holistic and effective skin care solution, customizable to the user's individual preferences and needs. The application of this formulation allows the production of four different types of cream with a composition that can be adjusted to meet the various needs of the user's skin. Variations in the concentration of active ingredients and complementary ingredients in each formulation provide wide flexibility in designing skin care products according to skin type, skin problems faced, and individual preferences. Formulations with a higher concentration of Moringa leaf extract are more suitable for those who want stronger antioxidant and antiaging benefits. Meanwhile, formulations with a higher glycerin and propylene glycol content are more suitable for skin that tends to be dry and needs extra hydration. On the other hand, formulations with lower concentrations of potassium hydroxide are preferred by individuals with sensitive skin that is prone to irritation. In addition, the four types of cream produced from this formulation can be adjusted to suit user preferences in terms of texture and absorption. For example, creams with a higher proportion of the oil phase can provide a richer and more moisturizing sensation for skin that tends to be dry, while creams with a higher proportion of the water phase are lighter and more easily absorbed for oily skin. These formulations not only provide diverse solutions for skin care but also allow manufacturers to produce products that can be tailored to the individual needs and preferences of different skin types. It encourages inclusivity and flexibility in the skin care industry, with the aim of meeting diverse consumer needs and expectations.

Table 9. Use of Urtica dioica L. Leaf Extract as a Natural Antiaging Cream

Component	Composition
Ethanol Extract of Urtica Dioica L. Leaves	0,5%
Stearic acid	20 g
Cetyl alcohol	0.5 g
Triethanolamine	1 g
Sodium hydroxide	0.2 g
Glycerin	8 g
Nipagin	0.1 g
Aquadest	ad

Source: Maimunah et al. (2020)

This cream contains several components designed to provide comprehensive skin care benefits. The main components include ethanol extract from the leaves of Urtica dioica L., which is present in a concentration of 0.5%, and stearic acid, which acts as an emulsifier

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in the formulation. Additionally, cetyl alcohol, triethanolamine, sodium hydroxide, glycerin, and nipagin are also present in the composition to provide moisture, stability, and effectiveness to the formulation. The proportions of these ingredients are carefully regulated to create a product that is effective and safe for the skin. Water is used as a solvent and balancer in the formulation to achieve the desired consistency and ensure a more stable product. With this combination, this cream is expected to provide significant benefits to the health and appearance of the skin, making it an attractive option in your daily skin care routine.

Table 10. Formulation of Anti-Aging Cream Preparation with the Active Ingredient of Libo Fruit Extract (Ficus Variegata, Blume)

Component	Composition %
Ekstrak Buah Libo	5%, 10%, 15%
Asam Stearat	7%
Cetyl alcohol	2%
Mineral oil	20%
Propil paraben	0,05%
Glycerin	10%
Metil Paraben	0,05%
Tween 80	2%
TEA	2%
Oleum Rosae	0.005%
Aquades	ad 100

Source: Amin et al. (2018)

This cream consists of various components designed to provide effective skin care. The main components include libo fruit extract, which has varying concentrations ranging from 5% to 15%, stearic acid, cetyl alcohol, mineral oil, propyl paraben, glycerin, methyl paraben, Tween 80, TEA, and oleum rosae. The proportions of each of these components have been determined in the formulation, with certain contents in specified percentages. Libo fruit extract, as the main active ingredient, provides additional benefits for the skin with different concentrations in each cream variant. Other components, such as stearic acid, cetyl alcohol, and mineral oil, play a role in providing a good texture and consistency to the cream. Preservatives such as propyl paraben and methyl paraben are added to maintain product stability, while glycerin functions as a humectant to maintain skin moisture. In addition, oleum rosae provides a refreshing aroma, while Aquades is used as a solvent to achieve a total of 100% of the formulation composition. A precise combination of various components, this cream aims to provide comprehensive and refreshing skin care benefits to users.

CONCLUSION

From the variations in cream formulations that have been discussed, it can be concluded that the adoption of various components with different concentrations allows the

development of skin care products that can be tailored to individual needs. The presence of active ingredients, carrier oils, emulgators, preservatives, and other elements provides various benefits, including protection, hydration, slowing the aging process, and refreshing the skin. In addition, the anti-aging potential of tamarind leaf extract, banana peel, purple eggplant, and moringa leaves, as well as ylang-ylang oil and lemon oil, is used. In addition, fruits such as rambutan and lemon, as well as red spinach leaves, also stand out for their high antioxidant content, including vitamin C and lycopene, which add a dimension of nutrition and protection to the skin. By deeply understanding the characteristics of each component, the cream formulation can be optimized to achieve the best effectiveness in caring for and beautifying the skin. The selection of the right ingredients and careful concentration settings are the keys to producing quality and effective skin care products.

SUGGESTION

Conduct further research on the effectiveness and safety of each cream formulation developed, including clinical trials on humans, to confirm the promised benefits and ensure the absence of adverse side effects. Explore further variations in components and concentrations in cream formulations to find the optimal combination for each skin type and skin care need. Pay attention to the latest trends and innovations in the cosmetics and dermatology industries to continue developing relevant and effective formulations. Strengthen research on natural ingredients and plant extracts as alternatives that are more environmentally friendly and have the potential to provide greater benefits for the skin. Provide consumers with clear and detailed information about the composition and benefits of each cream product to help them make choices that suit their skin needs.

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