

Formulation And Physical Testing Of Face Mist Extract Jujube Leaves (*Ziziphus Mauritiana L.*) As A Skin Moisturizer

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ABSTRACT

Jujube Leaves (*Ziziphus mauritiana L.*) is a leaf widely used in various traditional medicines because it contains substances that are beneficial for the body. In addition to traditional medicine, jujube leaves (*Ziziphus mauritiana L.*) are also useful for moisturizing the skin. Face mist has many benefits such as refreshing the face, helping to control oil on the face, and providing moisture to the skin so that facial makeup can last longer. The advantages of this face mist preparation are that it is easy to use and easy to carry everywhere. Purpose: This study was conducted to formulate bidara leaf extract into a preparation in the form of a face mist by carrying out several product analysis processes including organoleptic tests, pH tests and drying time tests so that we can determine the concentration of face mist preparations that meet the requirements. Method: In this study, bidara leaf simplicia was made by a drying process after which bidara leaf extract was made by maceration using 70% ethanol until a thick extract was obtained. The population and sample in this study were in Towuti District, Lioka Village, East Luwu Regency, South Sulawesi Province. Type of Research: used in this research is experimental research in the laboratory by making 3 formulas consisting of F1 with a concentration of bidara leaf extract of 0.5 g, F2 1 g, and F3 1.5 g. Research Results: obtained pH of face mist preparations F1, F2 6 and F3 7. And the drying time on F1 2 minutes 33 seconds, F2 2 minutes 8 seconds, and F3 2 minutes 17 seconds. Suggestions for further researchers are expected to add some product analysis tests on face mist preparations from bidara leaf extract.

INTRODUCTION

Indonesia is a country with abundant natural resource potential. The diversity of plants, especially medicinal plants, is extremely high, necessitating collection and inventory to maintain its existence. One effort that can be undertaken is through bioprospecting. Bioprospecting is derived from the words "biodiversity" and "prospecting," which refers to the process of searching for biological resources that are managed and utilized for commercial purposes. (Sjakoer et al., 2022). Cosmetics are materials or preparations that are applied to the outside of the human body and the mucous membranes of the mouth to clean, perfume, change the appearance and improve body odor or maintain the body in good condition. (Nurjanah & Hanum, 2022).

Based on the Decree of the Minister of Health No. 140/1991, cosmetics are preparations/combinations of materials that are ready to be used on the external parts of the body (epidermis, hair, nails, lips, external genital organs, teeth and oral cavity with the aim of cleaning, increasing attractiveness, changing appearance, protecting so that it is in good condition, improving body odor, but not intended to treat or cure disease. (SARI, 2019). Natural ingredients are organic chemical substances produced by living organisms found in nature through primary and secondary metabolism. Primary metabolites are the metabolic products of the biosynthesis and breakdown of proteins, fats, nucleic acids, and carbohydrates, which function to aid the growth and development of living things. Natural ingredients have long been a primary source of healing and have played an important role in the treatment of various diseases to date. The most common natural ingredients used as primary ingredients in the manufacture of medicines are those derived from plants and animals. In addition to natural ingredients for medicine, natural ingredients can also be used as cosmetics. One plant that can be



used as a cosmetic is bidara leaves. (*Ziziphus mauritiana* L.) (Rumaseuw et al., 2023). Bidara Leaves (*Ziziphus mauritiana* L.), better known as the widara, is a plant with small, green fruits. This plant can grow in both wet and dry environments, meaning it can thrive in a variety of conditions. This plant has been cultivated by the people of Sulawesi since ancient times. The widara or bidara has been widely used in various traditional Sulawesi medicines because it contains substances beneficial to the body. Bidara contains water, energy, sugar, carbohydrates, fat, protein, dietary fiber, and thiamine. In addition to its traditional medicinal uses, bidara leaves (*Ziziphus mauritiana* L.) are also beneficial for moisturizing the skin. (Suparni & Wulandari, 2022).

The development of cosmetics in the modern era has become a daily necessity for women to enhance their appearance. In today's modern era, women are expected to look attractive. This is evidenced by the increasing number of women, from teenagers to adults to the elderly, using beauty products or cosmetics. For women, cosmetics not only serve to protect their bodies from the elements but also to enhance their appearance and cover up any imperfections on their faces, thus increasing self-confidence. One cosmetic used before and after makeup is face mist. Face mist can also be used in hot and dry weather to maintain skin moisture. (Hendry, nd). FaceMist is a water-based cosmetic product containing natural ingredients that are beneficial for the skin. Face mist comes in a small bottle and offers many benefits, including refreshing the face, helping control oil, and moisturizing the skin, allowing makeup to last longer. (Badriyah & Ifandi, 2020).

From the research results, Dini Mardhiyani (2022) stated that bidara leaves (*Ziziphus mauritiana* L.) have anti-diabetic, anti-inflammatory, anti-plasmodial, and anti-microbial properties, as well as hemolytic, sedative, anxiolytic, diuretic, analgesic, and antioxidant properties. Bidara leaf extract has also been shown to have anti-aging properties and provides skin-lightening, moisturizing, and viscoelastic effects on human skin. Therefore, based on the background above, researchers are interested in making a face mist preparation from bidara leaf extract (*Ziziphus mauritiana* L.) as a skin moisturizer.

METHOD

The type of research conducted was experimental research, namely the formulation and testing of face mist from bidara leaf extract (*Ziziphus mauritiana* L.) as a skin moisturizer. The research location was carried out in the Pharmaceutical Laboratory of Nani Hasanuddin Health College. The research was conducted in May-June 2023. The population in this study was bidara plants (*Ziziphus mauritiana* L.) who comes from Towuti District, East Luwu Regency, South Sulawesi Province. The samples that will be used in this study are bidara leaves (*Ziziphus mauritiana* L.) who comes from Towuti District, East Luwu Regency, South Sulawesi Province.

The tools used in this study were stirring rods, maceration vessels, beaker glasses, spray bottles, blenders, porcelain cups, measuring cups, pH paper, horn spoons, analytical scales, and containers. The materials used in this study were distilled water, bidara leaf extract, 70% ethanol, glycerin, rose flavoring and polyvinyl pyrrolidone. The formula design used the table below :

Table 1
 Face Mist Formula Design

Material	Concentration			Function
	F1	F2	F3	
Bidara Leaf Extract	0.5%	1%	1.5%	Active ingredient
Glycerin	5	5	5	Humectant
Polyvinyl Pyrrolidone	1	1	1	Dispersing agent
Rose Fragrance	1	1	1	fragrance
Aquadest	Add 100 ml	Add 100 ml	Add 100 ml	Solvent

Information :

F1: 0.5% bidara leaf extract formula

F2: 1% bidara leaf extract formula

F2: Bidara leaf extract formula 1.5%

Reasons for choosing materials were glycerin, polyvinyl pyrrolidone (PVP), dan Ethanol 70%. According to Pudjiastuti et al., (2023) glycerin is hygroscopic so it can absorb water from the air, this property is what makes glycerin used as a moisturizer in cosmetics. In addition, according to Mansauda & Andriyanto (2022) the role of PVP in the formulation is as a binding agent, povidone is widely used as an additive. Furthermore, according to Nur et al., (2023) the reason for using 70% ethanol is because this solvent is semipolar so it can attract compounds that are polar or nonpolar,



is non-toxic, is not easily overgrown with mold and germs and the heating used to concentrate the extract is less, besides that 70% ethanol has a low boiling point (78°C) so it is easy to evaporate, safe and easy to get.

The research procedures were making simple drugs, extract preparation, and making face mist. The researcher made simple drugs, namely prepare the tools and materials to be used, take 1000 grams of fresh bidara leaves and then wash them with running water, sliced and cut into small, thin pieces, dried in the sun and covered with black cloth, and after the sample is dry, grind it using a blender until a simple powder is obtained. After that, the researcher extract preparation, such as prepare the tools and materials to be used, weigh 400 grams of bidara leaf simples and then put them into a maceration vessel, add 70% ethanol until all samples are completely submerged, closed maceration vessel, extraction is carried out by maceration for 3x24 hours and stirred occasionally, then stored at room temperature protected from sunlight, and filter using a sarong, then use a hairdryer to obtain a thick extract. And then, the researcher made face mist, namely prepare the tools and materials to be used, weigh all ingredients according to the formula, put each one into a mortar and then add 5 ml of glycerin, grind until homogeneous, add 1 gram of polyvinyl pyrrolidone dissolved in hot water to each formula, grind until homogeneous, and put each into a spray bottle then fill with 100 ml of distilled water.

The researcher product analysis, such as organoleptic test, pH test, and dry time test. According to Riswanto et al., (2023) stated organoleptic test done by means of observation, including the color, shape and smell of the preparation. Moreover, according to Indra Lasmana Tarigan et al., (2021) explained about pH test, the face mist preparation must meet the skin pH criteria, namely skin pH, namely 4.5 - 6.5. Furthermore, according to Pebiansyah et al., (2022) described the drying time test is performed by spraying the face mist on the arm and observing how long it takes for the product to dry. A good drying time is less than 5 minutes.

RESULT

Based on the research that has been conducted, the following results were obtained below, the researcher started the result as a visual display, the visual display as same as below in figure 1.



Fig. 1 Visual display of Formula 1 (F1), Formula 2 (F2), and Formula 3 (F3),

In addition, the researcher explain the result as some table which was the researcher detailed its in the below and the reader may read it.

Table 2.
 Test Results Organoleptic Face Mist Extract of Jujube Leaves (*Ziziphus mauritiana* L.)

Organoleptic Observation	Formula		
	F1	F2	F3
Color	Yellow	Pale yellow	Greenish yellow
Form	Solution	Solution	Solution
Aroma	Rose Fragrance from fragrance	Rose Fragrance from fragrance	Rose Fragrance from fragrance

Based on the results, F1 has a yellow color and a solution form with a fragrance from the fragrance, F2 has a pale-yellow color and a solution form with a fragrance from the fragrance, F3 has a greenish yellow color and a solution form with a fragrance from the fragrance.

Table 3.
 Face pH test results Mist Bidara Leaf Extract (*Ziziphus Mauritiana*L.)

Formula	pH Test Results
F1	6
F2	6
F3	7

Based on the pH test, F1 and F2 were obtained with a pH value of 6, and F3 with a pH value of 7, where this pH is in accordance with the Indonesian National Standard.

Table 4.
 Test Results Organoleptic Face Mist Extract of Jujube Leaves (*Ziziphus mauritiana* L.)

Dry time (minute)	Formula		
	F1	F2	F3
	02:33	02:08	02:17

Based on the dry time test, F1 was 2 minutes 33 seconds, F2 with a time of 2 minutes 8 seconds, and F3 with a time of 2 minutes 17 seconds.

DISCUSSION

Cosmetics are materials or preparations that are applied to the outside of the human body and the mucous membranes of the mouth to clean, perfume, change the appearance, and improve body odor or maintain the body in good condition. Face mist is a water-based cosmetic product containing natural ingredients beneficial to the skin. Packaged in a small bottle, it offers numerous benefits, including refreshing the face, helping control oil, and moisturizing the skin, allowing makeup to last longer. In this study, bidara leaf extract was obtained using the maceration method. This extraction process was carried out by drying the sample in the sun, covering it with a black cloth, then grinding it using a blender and soaking it in 70% ethanol for 3 days. After soaking for 3 days, the extract was filtered using a filter cloth and then evaporated to obtain a thick extract. According to Supomo et al (2021), the solvent used in the extraction is 70% ethanol because it is a universal solvent that can dissolve chemical compounds in plants, both polar and nonpolar.

In this study, a face mist preparation was made with the active ingredient of bidara leaves which was made in 3 formulas with concentrations of 0.5g, 1g, and 1.5g, 5ml of glycerin used to moisturize and 1g of polyvinyl pyrrolidone where the method of preparation is, the bidara leaf extract that has been weighed is put into a mortar then added 5ml of glycerin after that it is crushed until evenly mixed, then add 1g of polyvinyl pyrrolidone that has been dissolved using hot distilled water. Then grind until homogeneous after all the ingredients have been evenly mixed, add enough distilled water to 100ml then put it in a spray bottle.

Product analysis testing on the face mist preparation from bidara leaf extract includes organoleptic testing, pH testing and drying time testing on the skin. In organoleptic testing using human senses to identify the color, aroma and form of the preparation made. In F1, 0.5g of bidara leaf extract was used to obtain a yellow suspension color with the addition of rose aroma as a fragrance. In F2, 1g of extract was used to obtain a pale yellow suspension color and the addition of rose aroma as a fragrance. In F3, 1.5g of bidara leaf extract was used to obtain a greenish yellow suspension color and had the aroma of the fragrance.

Based on the literature (Fadhilla, 2021), formulas F1 and F2 are pale yellow, and F3 is dark brown. All three formulas have a solid form and a distinctive aroma. In this study, F1 was yellow, F2 was pale yellow, and F3 was greenish yellow. The formulas are suspensions and have an aroma derived from the addition of fragrance. In the pH test carried out after making the face mist using pH paper, in this test the same pH results were obtained, namely pH 6 in formulas F1 and F2 while the pH in F3 was 7. So the pH value in F1 and F2 of the face mist preparations that have been made is in accordance with the Indonesian National Standard (SNI) which is 4.5 - 6.5 so that it does not exceed the set standard limit, so this face mist preparation is safe and good to use.



The drying time was tested by spraying the product on the back of the hand. The drying time for the liquid was then measured. The drying time test for the face mist preparation yielded different results for the three formulas. F1 required 2:33 minutes, F2 2:08 minutes, and F3 2:17 minutes. All three formulas met the drying time standard, with the best drying time according to the literature (Pebiansyah, 2022) being less than 5 minutes. Based on the tests that have been carried out, it shows that the three formulas made experienced changes in the organoleptic test, this is caused by the influence of differences in the active substances used. Of the three face mist formulas made, F1 and F2 are the best because the pH obtained is pH 6 in accordance with the skin pH of 4.5-6.5 so that the pH value obtained is in accordance with the Indonesian National Standard (SNI). While in the F3 test, the pH result obtained is 7 which does not comply with the pH criteria. This is because the active substance used causes the preparation to become a concentrated solution and is not recommended for use.

CONCLUSION

Based on the research that has been conducted, the following conclusions can be drawn, namely in making face mist from bidara leaf extract (*Ziziphus mauritiana* L.) F1 with a concentration of 0.5% has a yellow color with a rose aroma and the pH obtained is 6. F2 with a concentration of 1% has a cloudy yellow color, a rose aroma, and a pH obtained is 6. While in F3 with a concentration of 1.5%, a greenish yellow color, a rose aroma and a pH obtained is 7. This is the best formula is F1 and F2 because it is in accordance with the pH of the Indonesian National Standard (SNI) which is 4.5 - 6.5. And then, at the product analysis process stage, organoleptic testing, pH testing and drying time testing were carried out, as F1 obtained a yellow color with a rose aroma, pH 6. F2 obtained a cloudy yellow color, a rose aroma, and the same pH as F1, namely 6. In F3, the results were greenish yellow, a rose aroma, and pH 7.

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