Making_Skin_Lotion_From_Virgin.pdf

by

Submission date: 25-Jun-2020 01:08PM (UTC+0800)
Submission ID: 1349378523
File name: Making_Skin_Lotion_From_Virgin.pdf (462.47K)
Word count: 2860
Character count: 14848

Making Skin Lotion From Virgin Coconut Oil With Adding Several Natural Plants Extract as a Skin Protector

Making Skin Lotion From Virgin Coconut Oil With Adding Several Natural Plants Extract as a Skin Protector

Rini[1], T Anggraini[1], and N B Ritonga[1]

[1] Faculty of Agricultural Technology, Andalas University Padang, Indonesia

Corresponding author's email address: rinibahar59@yahoo.com

Abstract. Virgina Coconut Oil is containing saturated fatty acid compound such as lauric and oleic which can soften dry and rough skin. While the natural ingridients of black tea extract, secang wood and telang flower contain polyphenol compounds which have antioxidant activity, they also have attractive colors making them suitable as natural dyes for cosmetic ingredients. The purpose of this study was to determine how to make skin lotion from VCO with the addition of natural coloring extracts, as well to determine the physical, chemical, microbiological and the level panelists preference for color, odor, adhesiveness and appearance. The result of this study indicate that the best formulation is foun in F3 with the addition of black tea extracts. VCO skin lotion with the addition of black tea with has a specific gravity value of 0,97, stability of 70,12%, dispertion of 7,3 cm, pH 6,3, free fatty acids 0,021%, antioxidant activity 83,26%, SPF 36,13 and total plate figures were not found. The panelists preference level for color 4.0, odor 4.3, appearance 4.5 and adhesiveness 4.5.
Keywords:

1. Introduction

West Sumatra Province is one of the largest coconut producing provinces in Indonesia, in 2015 amounting to 83,660 tons [1]. Contains saturated fatty acids such as lauric and oleic acids which can soften dry and rough skin. Secang wood, black tea, telang flowers, is an ingredient that has antioxidant compounds that are good for body health, and has a distinctive and attractive color making it suitable to be used as a natural coloring agent for cosmetics, especially skin lotions. Serves to maintain skin moisture and water resistance in the skin layer so that it can soften and maintain the smoothness of the skin [2].

In addition, the use of active substances that have antioxidants can prevent various diseases caused by UV radiation. As for several classes of active antioxidant compounds such as cinnamon, flavonoids, tannins, quinones, etc. have been studied as having the ability to protect the skin from UV rays [3]. Skin care products on the market today use a lot of mineral oil as the main ingredient for the oil phase which can function as a softener, but the use of this oil is not good for health if it is used in the long term. Another alternative to substituting mineral oil in skin care product preparations is to use vegetable oils that can be extracted from plants [4]. The addition of black tea extract, telang flower extract and secang wood extract can function as natural dyes and also have the potential as antioxidants which can inhibit UV radiation to the skin. Based on this, a research entitled: "Making Sunscreen Skin Made from Virgin Coconut Oil with Additions to Various Natural Coloring Extracts".

2. Methods

This research has been at Laboratory of Chemistry, Instrument Laboratory and Microbiology Laboratory conducted Department of Agricultural Product Technology, Faculty of Agricultural Technology, Andalas University, Padang from February to October 2019. The raw materials used in this study are VCO, telang flowers, black tea, secang wood. The chemicals used in this study were stearic acid, glycerin, triethanolamine (TEA), methyl paraben, aquades, deodorizers, buffer solutions, NaOH, KOH, neutral alcohol, ethanol, HCL physiological salts, PCA, acetone, methanol, aquades, DPPH, and PCA (Plate Count Agar) media. The tools used are scales, basins, knives, blenders (philips), petri dishes, autoclaves, aluminum spoons, aluminum foil, hot plates, magnetic stirers. The tools for analysis are analytical balance, stopwatch, aluminum dish, oven, desiccator, pH meter, glass cup, measuring flask (pirex), erlenmeyer, vortex, spectrophotometer (auv-1800 shimadzu), upright cooler, filter paper and micro pipette 100- 1000 µl.

This research has been carried out at the Laboratory of Chemistry, Biochemistry of Agricultural Products and Food Nutrition, Microbiology and Agricultural Biotechnology Laboratory, Central Instrument Laboratory of the Faculty of Agricultural Technology, Andalas University, Padang from March to November 2019.

The raw materials used by VCO are of good quality from the Ika Boga Siti Nurbaya Padang Business. Black tea was obtained from PTPN VI Kayu Aro, Alahan Panjang, Solok. Fresh bouquets are obtained from the Permindo City Park and Sidewalk
Padang. Secang wood is obtained from Pasar Raya Padang.

2.1. Making Tea Extracts

The dried tea leaves are mashed with a blander then extracted by macerated using as much aquades as a solvent (1: 5) for 30 minutes with a magnetic stirer at 70 ºC, then filtered, then obtained a liquid tea extract.

2.2. Making Telang Flower Extract

Fresh telang flowers are cut with a size of 1 cm and then mashed with blander and macerated with distilled water (1: 5) for 15 minutes while stirring with a magnetic stirer at 25 ° C. Then filtered and obtained liquid extracts of telang flowers.

2.3. Making Secang Wood Extract

Secang wood that has been in the form of strands, then mashed with blander to form a powder, macerated with distilled water (1: 5) for 30 minutes while stirring with a magnetic stirer at a temperature of 70 ºC. Then filtered and obtained secang wood liquid extract.

2.4. Observations made in this study are:

2.4.1. Observation of raw materials, namely free fatty acids. Observation of skin lotion is as follows:

Chemical analysis namely pH, free fatty acids, antioxidant activity and SPF values. Physical observations are viscosity, emulsion stability, specific gravity, and spreadability. Microbiological analysis is the analysis of total plate numbers. Organoleptic testing which includes color, aroma, absorption and adhesiveness.

3. Results and Discussion

3.1. Density Value

The results of observations made on the skin lotion of the specific gravity values from the F1 to F5 formulas show that the density values are not the same in each formula, which ranges from 0.93 to 0.96, this is caused by different natural extract ingredients. When compared with F0 which is a commercial product that has been circulating on the market and is in accordance with SNI standards the value of 0.93 is also not much different than the research products, this shows that this skin lotion

product can also be said to meet standards in terms of specific gravity. Based on SNI 16-4399-1996, the specific gravity of lotion preparations ranges from 0.95-1.05, then the skin lotion products produced are in accordance with SNI [5].

Skin Lotion is mainly composed of sunscreen active ingredients, as well as a base consisting of components of the oil phase and water phase, emulsifying agents, humectants, and preservatives. Emulsifiers are distinguished as anionic, cationic and nonionic surfactants (Mitsui *et al.,* 1997). Specific gravity is the ratio of the weight of the sample volume to the weight of water with the same volume at a certain temperature. Measurement of this specific gravity is one indicator of the stability of an emulsion product. If the ratio between the pendisperdi phase and the dispersed phase is not appropriate, the lower the stability level of an emulsion preparation [6].

3.2. Scattering Skin Lotion

The purpose of the spread test is to determine the extent of skin spread when applied to the skin. Based on Table 10. shows the differences in the spread area between the five formulas, which ranges from 6.0 to 7.0 cm. High-viscosity preparations are more difficult to flow because of the large cohesion forces between the base molecule of the preparation so that skin lotions are difficult to spread and tend to accumulate. Conversely, skin lotions that have low viscosity will be easier to flow so it is easier to spread. This is related to viscosity, where the decrease in viscosity causes the spreadability to increase because the preparation is easier to flow.

3.3. pH Skin Lotion

The degree of acidity or pH is an important parameter in cosmetic products. The measurement of pH aims to determine whether the resulting lotion is acceptable to the skin or not. Skin lotion must approach the pH of the skin, which is 4,5-6,5 so as not to irritate. Too alkaline pH causes dry and scaly skin, if too acidic it can cause irritation to the skin. Skin lotion formula F2, F3, and F5 have the same pH which is 6.5. This is probably caused by the use of almost the same material in a concentration range that does not differ greatly so that it does not provide a significant pH difference. The results of pH measurements for one month are shown in Figure 1.

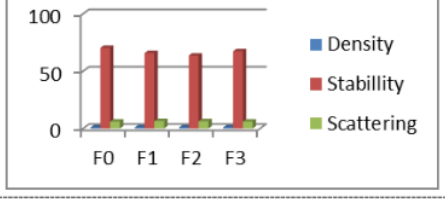

Figure 1 Physical value of skin lotion

3.4. Free Fatty Acids

Determination of free fatty acid levels is related to the content of free fatty acids in VCO, because free fatty acids contained in this skin lotion are thought to originate from VCO used as raw material. Based on the results of the analysis of the highest free fatty acid content found in formula F3 that is equal to 0.024%. The amount of antioxidant concentration added affects the rate of oxidation. Antioxidants should preferably lipid as early as possible during the induction period to produce maximum effect. The induction period is the period where lipid oxidation is still slow. Phenolic antioxidants are usually used to prevent damage due to oxidation reactions in food, cosmetics, pharmaceuticals and plastics [7].

3.5. Antioxidant Activity

The value of antioxidant activity of skin lotions ranging from 80.40 to 87.24% is a high enough value compared to skin lotion products on the market with an antioxidant activity value of 57.65%. This high antioxidant activity comes from the ingredients used in making skin lotions, VCO also contains phenolic compounds which provide high antioxidant activity [8]. In addition, it turns out that the antioxidant content in VCO is very high, such as tocopherol and beta-carotene. Tea generally contains polyphenol compounds in the form of catechins which provide antioxidant activity so that it can reduce or prevent cell damage due to free radical compounds. Tea is a rich source of polyphenols, especially flavonoids. The main flavonoids contained in black tea including catechins (flavan-2-OLS) are Epicatechin (EC), Epicatechin-3-gallate (ECG), Epigallocathecin (EGC), and Epigallocathecin-3-gallate (ECG). The main polyphenols in black tea are tannins and flavonoids [9].

3.6. Sun Protection Factor

From the results obtained in each formulation with the lowest value of 19.21 in formulation F2 (addition of pandan leaf extract), the highest SPF value 36.13 was produced in formulation F3 (addition of black tea extract), this value was classified into high SPF because based on SNI 16-4399-1996 the minimum SPF contained in the lotion sedan was 4. When compared to one of the commercial products circulating in the market, an SPF value of 30.04 was claimed as a sunscreen. This proves that skin lotion made from VCO with the addition of natural extracts has the potential as a sunscreen cosmetic sedan because it has a proteection value to the sun or better known as high SPF. The high SPF value of a cosmetic sedan is influenced by the active components contained in it, and this is closely related to the antioxidant compounds in the ingredients. Sunscreen functions to absorb or spread sunlight so that the intensity of light that is able to reach the skin is much less [10].

Active sunscreen compounds absorb at least 85% of UV radiation over a range of wavelengths from 290 to 320 nm, and possibly to wavelengths in excess of 320 nm. By absorbing UVR, the chemical sunscreen will block UVR transmission to the epidermis physically reflecting UV radiation [11].

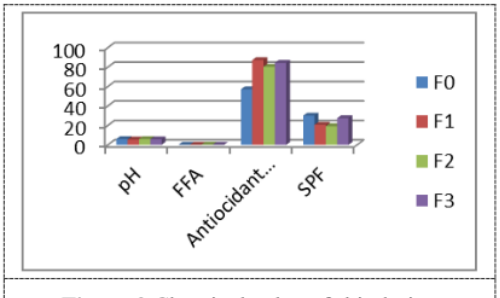

Figure 2 Chemical value of skin lotion

3.7. Organoleptic Value

In the organoleptic test, it is found that skin lotion is fragrant, semi-solid, soft-textured and has a thick consistency. In physical homogeneity tests, skin lotions appear to be physically homogeneous due to the even distribution of particles in the skin of the panelists.

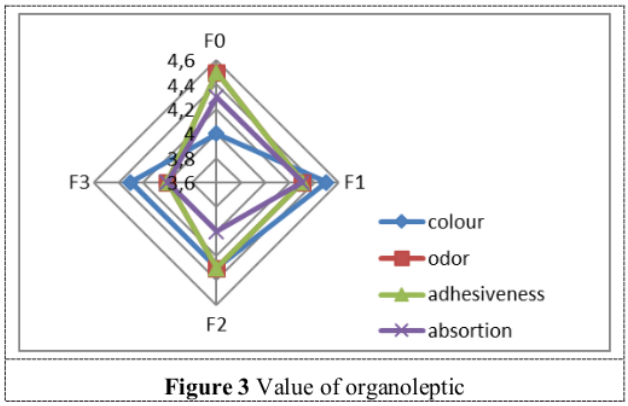

Figure 3 Value of organoleptic

When skin lotion is applied to the skin it feels soft. All formulas produce the same organoleptic, this is because all formulas use the same component ingredients and manufacturing methods which distinguish only the addition of natural coloring extracts. The purple color in formula I is produced from the color of telang flower extract. The intensity of the resulting purple color is categorized as very bright or deep purple. In formula II the intensity of the green color produced from pandan leaf extract and this color. The difference in the color of skin produced from the five formulas is influenced by variations in the extract of natural dyes used in each formula. Of the four parameters tested, among others, color, aroma, adhesiveness and absorption, the most striking difference is color, this is due to the addition of extracts of different natural dyes to each formulation. Organoleptic values of skin lotions made from VCO from all formulations can be seen in Figure 3. Homogeneity test for skin lotions is done to find out the mixing of skin lotion ingredients evenly without any separation between phases in a preparation. Homogeneity of a preparation is influenced by the mixing process at the time of preparation of the preparation. Based on the results of the study note that the difference in the addition of extracts of natural ingredients gives a different effect on color but does not greatly affect the odor, absorption and adhesiveness value.

4. Conclusion

The addition of extracts of natural ingredients in the manufacture of sunscreen skin lotion provides a protective effect against the sun, with a relatively high SPF value. The highest SPF value was produced by the formulation with the addition of black tea extract which was 36,13, the specific gravity value was 0.96, the emulsion stability was 70.23%, the spread capacity was 7.0 cm, the pH value was 6.5, the free fatty acid was 0.024%, the activity antioxidant 83.75%, and the organoleptic value of color is 4.0, aroma is 4.3, adhesiveness is 4.3 and absorption is 4.0.

References

[1] Badan Pusat Statistik 2015 *Produksi Perkebunan Kelapa* Padang: BPS Sumatera Barat
[2] Mitsui 1997 *New Cosmetic Science* New York: Elsevier
[3] Hogade M G, Basawaraj S P, and Dhumal P 2010 Comparative Sun Protection Factor Determination of Fresh Fruits Extract of Cucumber vs Marketed Cosmetic Formulation, *Research Journal of Pharmaceutical, Biological and Chemical Science* 1**(3)** 55–99
[4] Rahmanto A 2011 *Utilization of Jatropha Curcas Oil* (*Jatropa curcas, Linn*) *as a Component of Hand and Body Cream Product Formulation* Bogor: Agricultural Industrial Technology Study Program, IPB Postgraduate School
[5] Badan Standarisasi Nasional 1996 *Sediaan Tabir Surya SNI 16-4399 No. 014320-1996*
[6] Nussinovitch A 1997 *Hidrocoloid Aplications* London: Blackie Academic & Professional
[7] Huang Y C, Chang Y H, and Shao Y Y 2005 Effect of genotype and Treatmen on the

Antioxidan Activity of Sweet Potato in Taiwan *Foood Chemistry* 96**(2006)** 529–538
[8] Marina A M and Amin I 2009 *Virgina Coconut Oil* Emerging Fungtional Food Oil: Trend Food Sciene and Technology
[9] Rowe R C, Sheskey P J, and Owen S C 2009 *Handbook of Pharmaceutical Excipients,* 5th edition London: Pharmaceutical Press p301
[10] Rai R, Shanmuga S C, and Srinivas C 2012 Update on Photoprotection *Indian Journal of Dermatology* 57**(5)** 335–342
[11] Dutra E A, Daniella A G, Erika R M K, and Maria I R 2004 Determination of sun protection factor (SPF) of sunscreens by ultraviolet spectrophotometry *Brazilian Journal of Pharmaceutical Sciences* 40**(3)**

Making_Skin_Lotion_From_Virgin.pdf

ORIGINALITY REPORT

4%	4%	9%	5%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	I K Budaraga, D P Putra. "Study of Green Tea Catechin Dipped with Moringa Leaves", IOP Conference Series: Earth and Environmental Science, 2020 Publication	4%

Exclude quotes	On	Exclude matches	< 3%
Exclude bibliography	On		