http://ejournal.seaninstitute.or.id/index.php/healt
Jurnal Eduhealt, Volume 14, No. 03 2023
ISSN. 2808-4608

Effect Of The Addition Of VCO (Virgin Coconut Oil) Oil In Clay Mask Formulation Alfa-Tocoferol As Anti-Aging

Monica Suryani[1], Suharyanisa Suharyanisa[2], Jon Kenedy Marpaung[3]
Jurusan Farmasi, Fakultas Farmasi dan Ilmu Kesehatan, Universitas Sari Mutiara Indonesia[1,2,3]

ARTICLE INFO

Keywords:
Clay mask, alpha tocopherol, VCO oil, anti-aging

ABSTRACT

Premature aging is a natural process in life. Usually premature aging is caused by excessive sun exposure, pollution, and stress. Vitamin E and lauric acid and oleic acid from VCO oil as antioxidant that can protect the skin from free radicals and which work as maoisturizers to prevent dry skin. to formulate and evaluate clay mask preparations from alpha-tocopherol and vco oil as anti-aging. this research was conducted experimentally. The preparations of Clay mask was carried out by adding alpha-tocopherol and vco oil with concentrations of 1%:5% (F1), 1%:7% (F2), and 1%:9% (F3) respectively into the base of the clay mask and preparations. The blank (F0) was used as a clay mask base witout the additionof alpha-tocopherol and Vco oil. Tests on clay mask preparations include homogeneity test, stability test, pH test, irritation test, mask drying time test and anti-aging effectiveness measurement test using a skin analyzer on volunteers‟ faces. Parameters tested include water content, large pores, many blemishes and wrinkles. The treatment was carried out for four weeks. the results of the study showed that alpha-tocopherol and vco oil could be formulated in clay mask preparations and werw stable for 12 weeks of storage, homogeneous mask preparations, pH 5,6-6,1, stable during storage, could not irritate the skin. The higher the concentration used indicates a change in skin condition for the better with the highest concentration for four weeks for thr better with increasing water content (22,33 to 40,66), smaller pore (39,66 to 20,00), reduced blemishes (40,66 to 21,00), less wrinkles (34,00 to 16,00). alpha-tocopherol with vco oil can be formulated into a clay mask preparation and its good effevtiveness as an anti-aging can be seen in clay mask with 9% vco oil concentration. Imparoved skin condition with increased moisture content (percent recovery 33,54%), smaller pores (prcent recovery 45,96%), reduced blesmishes (percent recovery 49,11%) and reduced wrinkles (percentage recovery 44,85%). However, for some people, using a clay mask can cause allergic reactions and itching. In addition, excessive use of clay masks can also make the skin dry, which triggers excess oil production. It is hoped that future researchers will be able to make clay mask formulas with different samples.

Email :
monicasuryani2@gmail.com

1. INTRODUCTION

Facial masks are very useful for brightening facial skin, shrinking pores, reducing the presentation of oil on oily facial skin, reducing acne, and also playing a role in covering black spots on the skin (Keen 2012: 117). Of the many types of facial masks, the most popular is the wash-off type, which has a clay base in general referred to as clay facial masks or clay-based ingredients, with market names that are often called "mud packs" (Gaffney, 1992). For drying, this mask does not require a very long process, can clean deep into the pores, has excellent absorption capabilities, and cannot irritate normal skin (Balsam and Sagarin, 1972).

According to Polumulo (2015), this mud mask functions to remove dirt and detoxify facial skin. Various methods are attempted to prevent or improve the effects of aging, one of which is the use of antioxidants. Antioxidants are molecules or compounds that can reduce free radical activity by preventing cell oxidation (Ardhie, 2011). Antioxidants can be used as anti-aging

agents, which can prevent premature aging. For satisfactory use, it is necessary to use anti-aging cosmetics with antioxidants to treat the skin (Winarsi, 2007).

Vitamin E (tocopherol) is one of the better known antioxidants used in skin care formulations. Many studies have demonstrated the ability of topical vitamin E and its derivatives to inhibit UV radiation-induced lipid peroxidation, and several researchers have suggested the effectiveness of vitamin E as an anti-aging agent (Haerani, 2018). Antioxidants can be obtained from various natural ingredients that have been processed into oils, such as olive oil, conola oil, macadamia nut oil, and virgin coconut oil (VCO), which is often referred to by the public as pure coconut oil. One of the natural skin moisturizers is VCO because it can prevent tissue damage and provide protection to the skin (Rindeng and Novarianto, 2004). In addition, it also contains very high levels of antioxidants and moisturizers, which can function to prevent premature aging (Nilamsari, 2006).

The chemical components contained in VCO are saturated fatty acids. One of the compounds that contain saturated fatty acids is lauric acid. In addition to fatty acids, several other known chemical components in VCO include sterols, vitamin E, and polyphenolic fractions (phenolic acids). One of the phenolic compounds identified in VCO is alpha-tocopherol. In this study, it was found that VCO extract had high antioxidant activity (Anton, 2016). VCO has an antioxidant activity of 59.88 g/ml. The percentage of DPPH radical capture shows that VCO (IC50 17.19 g/mL) has potential as an antioxidant (Ludya et al., 2016). Based on the above background, research can be carried out on the formulation of clay masks containing Virgin Coconut Oil (VCO) with the addition of alpha-tocopherol, which can be used for facial skin care. Clay masks are known as facial care products that are effective for cleaning clogged pores. This mask is suitable for oily skin because of its ability to absorb oil content on the face while tightening the skin surface (Gayatri, 2010). Based on research by Ningsih, et al 2023, it is stated that clay masks are used for normal, oily, or acne-prone skin and have the ability to refresh the skin. The advantages of clay masks are that they can absorb excess sebum, absorb toxins and dirt on the skin, shrink pores, remove blockages in pores and remove dead skin cells. Research conducted by Febriani, et al 2021 on Making clay mask preparations found that clay masks have a tightening effect. and clean the skin. In addition, the effectiveness test results have the effect of reducing blemishes, shrinking pores, moisturizing, not causing irritation to the skin. Research objectives To find out whether Virgin Coconut Oil (VCO) and alpha-tocopherol can be combined in clay mask preparations, To find out whether differences in Virgin Coconut Oil (VCO) concentrations in alpha-tocopherol clay mask preparations affect anti-aging effectiveness, To find out whether the use of alpha-tocopherol clay masks combined with Virgin Coconut Oil (VCO) showed an improvement in skin condition for the better during four weeks of treatment. However, for some people, using a clay mask can cause allergic reactions and itching. In addition, excessive use of clay masks can also make the skin dry, which triggers excess oil production.

2. METHOD

This research was conducted experimentally. Clay mask preparations were made by adding alpha-tocopherol and vco oil with respective concentrations of 1%:5% (F1), 1%:7% (F2), and 1%:9% (F3) to the base of the clay mask and the preparation blank (F0) using a clay mask base without the addition of alpha-tocopherol and vco oil. Tests on clay mask preparations included homogeneity tests, stability tests, pH tests, irritation tests, mask drying time tests, and anti-aging effectiveness measurement tests using a skin analyzer on the faces of volunteers. Parameters tested included moisture content, pore size, number of stains, and wrinkles. Treatment is carried out for four weeks. A skin analyzer is a device designed to diagnose skin conditions. Skin analyzers can support a doctor's diagnosis by not only covering the top layer of the skin but being able to show the deeper sides of the skin layer, using normal and polarization measurement modes, equipped with a series of camera sensors on the skin analyzer. This causes this tool to display results faster and more accurately. Measurements that can be made using a skin analyzer, namely: Parameters tested included moisture content, pore size, number of stains, and wrinkles (Aramo, 2012).

Table 1. Formulation of Face Masks with Various Concentrations Virgin Coconut Oil (VCO)

Material	Concentration (%)			
	F0	FI	F2	F3
Virgin Coconut Oil	-	5	7	9
Alfa-tokoferol	-	1	1	1
Bentonit	1	1	1	1
Xanthan gum	0,8	0,8	0,8	0,8
Kaolin	30,5	30,5	30,5	30,5
Glycerin	2	2	2	2
Sodium lauryl sulfate	2	2	2	2
Titanium dioksida	0,5	0,5	0,5	0,5
Nipagin	0,1	0,1	0,1	0,1
BHT	0,2	0,2	0,2	0,2
Parfum	q.s	q.s	q,s	q.s
Aquades	100	100	100	100

Information :
F0 = Mask formula without alpha-tocopherol: VCO oil (blanko)
F1 = 1% alpha-tocopherol; mask formula: 5% VCO oil
F2 = 1% alpha-tocopherol; mask formula: 7% VCO oil
F3 = 1% alpha-tocopherol; mask formula: 9% VCO oil

3. RESULTS AND DISCUSSION

Homogeneity

The results of the homogeneity check on the formulated clay mask preparation showed that there were no coarse grains visible on the transparent glass on which the clay mask preparation was applied. This shows that the prepared clay masks are homogeneous (Ditjen POM RI, 1979).

Stability

Evaluation of the stability of the mask preparation was carried out for 12 weeks, with observations made at weeks 1, 4, 8, and 12. The mask preparation was stored at room temperature, and we observed changes in color and odor.

pH

Measuring the pH of the preparation can be done with a pH meter. The test was carried out for 12 weeks, with three repetitions, and was measured every 2 weeks. On examination of the pH of the clay mask preparation, the pH was found to be in the range of 5.6 to 6.1. This decrease in pH will not affect the preparation and is still safe to use because the pH requirements on the skin are 4.5–6.5 (Tranggono and Latifah, 2007).

Irritation

The results of the irritation test on the skin of volunteers, which can be done by applying a clay mask preparation to the skin behind the ear and leaving it for 24 hours, The skin irritation test parameters observed were red, itchy, or swollen skin.

Max Drying Time Measurement

Based on the results from the table above, the measurement results obtained for the drying time of the mask are around 5–12 minutes. The higher the concentration of the oil used, the longer the drying results will be obtained.

Anti-aging Effectiveness

Moisture

Data from the results of measurements of moisture on the facial skin of volunteers can be seen in Table 2.

Table 2. Results Of Measurements Of Moisture On The Facial Skin Of Volunteers

Formulation	Volunteer	Before	Treatment time (Sunday)				% Recovery
			7	14	21	28	
F0	1	20	20	21	24	26	23,07%
	2	26	26	27	28	29	10,34%
	3	21	21	22	23	25	16%
Average		22,33	22,33	23,33	25,00	26,66	16,47%
F1	1	20	22	24	26	28	28,57%
	2	22	24	26	28	30	28,57%
	3	23	26	28	30	32	28,12%
Average		21,66	24,00	26,00	28,00	30,00	28,42%
F2	1	24	27	30	33	36	33,33%
	2	27	30	33	35	38	30.55%
	3	25	28	31	34	37	32.43%
Average		25,33	28,33	31,33	34,00	37,00	32,10%
F3	1	28	32	36	39	43	34,88
	2	26	30	33	37	40	35%
	3	27	28	32	35	39	30,76%
Average		27,00	30,00	33,66	37,00	40,66	33,54%

From the data above, it can be seen that the use of clay masks for 4 weeks of regular treatment shows that the results of moisture on the face have increased, and the highest increase in moisture is found in formula 3, with a percent increase. The increase shows a figure of 33.54%. The increasing moisture on each volunteer's face shows that with each increase in the concentration of VCO oil, it can provide moisture to the volunteer's face.

Pore

Table 3. Results Of Measuring The Size Of The Pore (Pore) On The Skin Of A Volunteer

Formulation	Volunteer	Before	Treatment time (Sunday)				% Recovery
			7	14	21	28	
F0	1	40	39	37	35	34	15%
	2	38	37	35	34	32	15,78%
	3	41	40	38	36	33	19,51%
Average		39,66	38,66	36,66	35,33	33,00	16,76%
F1	1	39	37	35	33	29	25,64%
	2	40	38	36	34	32	20,00 %
	3	38	36	34	32	33	13,15%
Average		39,00	37,00	35,00	33,00	31,33	19,59%
F2	1	36	33	30	27	24	33,33%
	2	35	32	29	26	23	34,28%
	3	37	34	31	28	25	32,43%
Average		36,00	33,00	30,00	27,00	24,00	33,34%
F3	1	36	32	28	24	19	47,22%
	2	38	33	29	26	21	44,73%
	3	37	31	27	23	20	45,94%
Average		37,00	32,00	28,00	24,33	20,00	45,96%

From the data above, it can be seen that the use of clay masks for 4 weeks of routine treatment, shows the result that the pore size on the face decreases and the pore size decreases with the highest number found in formula 3 with the percentage increase showing the number 49.96%. The increase in the number of shrinking pores on each volunteer's face shows that with each increase in the concentration of VCO oil, it can have the effect of shrinking the pores on the volunteer's face.

Spots

Table 4. Results Of Measurements Of Stains (Spots) On The Facial Skin Of Volunteers

Formulation	Volunteer	Before	Treatment time (Sunday)				% Recovery
			1	2	3	4	
F0	1	41	39	38	37	35	14,63%
	2	39	37	36	34	33	15,38%
	3	42	40	39	38	36	14,28%
Average		40,66	38,66	37,66	36,33	34,66	14,76%
F1	1	39	37	35	33	32	17,94%
	2	40	38	37	36	34	15,00%
	3	42	41	38	34	31	26,19%
Average		40,33	38,66	36,66	34,33	32,33	19,71%
F2	1	34	33	31	29	27	20,58%
	2	36	36	34	32	28	22,22%
	3	39	37	35	33	29	25,64%
Average		36,33	35,33	33,33	31,33	28,00	22,81%
F3	1	34	31	28	24	20	41,17%
	2	36	33	29	26	21	38,88%
	3	37	34	30	25	22	40,54%
Average		36,66	32,66	29,00	25,00	21,00	40,19%

From the data above, it can be seen that the use of clay masks for 4 weeks of routine treatment has shown a decrease in the number of blemishes on the face and a reduction in the number of blemishes with the highest number found in Formula 3 with a percentage increase of 40.19%. The increase in the number of stains on each face of the volunteers showed that with Increasing each concentration of VCO oil can have the effect of reducing blemishes on the faces of volunteers.

Wrinkles

Table 5. Results Of Measurements Of Wrinkles (Wrinkles) On The Facial Skin Of Volunteers

Formulation	Volunteer	Before	Treatment time (Sunday)				% Recovery an
			1	2	3	4	
F0	1	33	32	30	29	28	15,15%
	2	34	31	29	28	26	14,70%
	3	35	33	31	30	29	17,14%
Average		34,00	32,00	30,00	29,00	27,66	15,66%
F1	1	29	28	27	26	24	17,24%
	2	31	29	28	27	25	19,35%
	3	27	25	23	21	19	29,62%
Average		29,00	27,33	26,00	24,00	22,66	21,07%
F2	1	28	26	24	22	20	28,57%
	2	30	28	26	24	19	36,66%

	3	33	30	28	26	23	30,30%
Average		30,33	28,00	26,00	24,00	20,66	31,84%
	1	30	27	24	20	17	43,33%
F3	2	28	25	22	18	15	46,42%
	3	29	26	23	21	16	44,82%
Average		29,00	26,00	23,00	19,66	16,00	44,85%

From the data above, it can be seen that the use of clay masks for 4 weeks of routine treatment has resulted in a decrease in the number of wrinkles on the face and a reduction in the number of wrinkles, with the highest number found in the F3 formula with a percentage increase showing the number 44.84%. The increasing number of reduced wrinkles on each volunteer's face shows that increasing each concentration of VCO oil can have the effect of reducing wrinkles on the volunteer's face. An anti-aging clay mask preparation made using a neutral pH clay face mask standard formula (Harry, 2000). This standard formula is modified to suit the shape of a clay mask with the addition of virgin coconut oil (VCO) and alpha-tocopherol which are used as anti-aging. The concentration of alpha-tocopherol used is a concentration of 1% then the addition of virgin coconut oil (VCO) with a concentration of 5%, 7% and 9%. The end result of this preparation is in the form of a paste with a yellowish white color (cream).

4. CONCLUSION

Virgin coconut oil (VCO) and alpha-tocopherol can be formulated in clay mask preparations; the clay mask preparations that are made get homogeneous results, there is no irritation, the pH is in the range of 5.6–6.1, and there are also no clay mask preparations that change in storage for 12 weeks. The different concentrations of virgin coconut oil (VCO) and alpha-tocopherol formulated in clay mask preparations provide different anti-aging effectiveness. The use of a clay mask preparation containing alpha-tocopherol with VCO oil for four weeks of treatment showed a change in skin condition for the better. It is hoped that future researchers will be able to make clay mask formulas with different samples.

REFERENCES

[1] Achroni, Keen. (2012). Semua Rahasia Kulit Cantik dan Sehat. Jakarta: Buku Kita.
[2] Anton, M. (2006). Pengaruh Metode Pengolahan Dan Umur Panen Kelapa Terhadap Kualitas Dan Kandungan Senyawa Fenolik Virgin Coconut Oil (Vco). Jurnal Penelitian Teknologi Industri Vol. 8. Manado
[3] Aramo. (2012). Skin and Hair Diagnosis System. Sungnam: Aram Huvis Korea Ltd. Halaman 1-10.
[4] Ardhie, M. A. (2011). Radikal Bebas dan Peran Antioksidan dalam Mencegah Penuaan. Scientific Journal of Pharmaceutical Dvelopment and Medical Application. Halaman 1,5.
[5] Ardhie, M. A. (2011). Radikal Bebas dan Peran Antioksidan dalam Mencegah Penuaan. Jakarta. Scientific Journal of Pharmaceutical Development and Medical Application. Vol.24. Halaman 1- 4.
[6] Balsam, M., S., dan Sagarin, E. (1972). Cosmetics Science and Technology. Edisi kedua. London: Jhon Willy and Son. Halaman 336-338.
[7] Basuki, K.S. (2003). Tampil Cantik dengan Perawatan Sendiri. Jakarta: Gramedia Pustaka Utama. Halaman 28-32.
[8] Bogadenta, A. (2012). Antisipasi Gejala Penuaan Dini dengan Kesaktian RamuanHerbal. Jogjakarta: Buku Biru. Halaman 15.
[9] Djuanda, A., Hamzah, A., dan Aisah, S. (2011). Ilmu Penyakit Kulit dan Kelamin. Edisi Keenam. Jakarta: Fakultas Kedokteran Universitas Indonesia. Halaman 3-6.
[10] Dwikarya, M. (2002). Kesehatan & Kecantikan : Merawat Kulit & Wajah. Jakarta: Kawan Pustaka. Halaman 1-4.
[11] Fauzi, A., R., dan Nurmalina, R. (2012). Merawat Kulit dan Wajah. Jakarta: PT Elex Media

Komputindo. Halaman 137, 156.
[12] Fauzi, A.R. dan Rina Nurmalina. (2012). Merawat Kulit dan Wajah. Jakarta: Penerbit Elex Media Komputindo. Halaman 156,173.
[13] Febriani, Y. Sudewi, Rosanna S. (2021). Formulation and Antioxidant Activity of Clay Mask of Ethanol Extract Tamarillo (Solanum betaceum Cav.). Indonesian Journal of Pharmaceutical Science and Technology.
[14] Fife, B. (2013). The Healing Miracles of Coconut Oil (3rd Editio). Colorado: Piccadilly Books Ltd.
[15] Gaffney, M., D. (1992). Cosmetics, Science and Technology. Florida: Krieger Publishing company. Halaman 660.
[16] Gayatri. (2010). Womens‟s Guide: Buku Cerdas untuk Perempuan Aktif. Jakarta: Gagas Media Komputindo. Halaman 64.
[17] Haerani, A. (2018). Antioksidan untuk Kulit. Farmaka. 16(2): 135-151.
[18] Harry, R.G. (1973). Harry‟s Cosmetology Edisi keenam. New York: Chemical Publishing Co., Inc. Halaman 103-109.
[19] Jusuf, N., K. (2005). Kulit Menua. Medan: Majalah Kedokteran Nusantara 38 (2).
[20] Halaman 184.Kalangi, S. J. R. (2013). Histologi Kulit. Jurnal Biomedik. 5(3) Halaman 12-20.
[21] Lucida, H., Salman, & Hervian, S. (2008). Uji Daya peningkatan penetrasi virgin coconut oil (VCO) dalam basis krim. Jurnal Sains & Teknologi Farmasi, 13(1), 1–15.
[22] Ludya, M., Radite, dan Fajar . (2016). Potensi Antioksidan dan Antibakteri Virgin Coconut Oil dari Tanaman Kelapa Asal Papua. Jurnal Jurusan Kimia. Universitas Negeri Papua. Papua. Halaman 1-
[23] Maharani, A. (2015). Penyakit Kulit Perawatan, Pencegahan & Pengobatan. Yogyakarta: Pustaka Baru Press. Halaman 1,8-17.
[24] Mitsui, T. (1997). New Cosmetic Science. Edisi Pertama. Amsterdam: Elseveir Science. Halaman 38.
[25] Muliyawan, D., dan Suriana, N. (2013). A-Z tentang Kosmetik. Jakarta: PT. Elex Media Komputindo. Halaman 138-289.
[26] Neupane, M.P., Park, I.S., Lee, M.H., Bae, T.S., dan Watari, F. (2009). Influence of Heat Treatment on Morphological Changes of Nano-Structured Titanium Dioxide Formed by Anodic Oxidation of Titanium in Acidic Fluoride Solution. Jeonju: Department of Bionanosystem EngineeringChonbuk National University. Halaman 157
[27] Nilamsari. (2006). Optimasi terhadap Kestabilan emulsi Krim pelembab Dari Minyak Kelapa Murni. Skripsi. Universitas Airlangga. Surabaya. Hal 1.
[28] Ningsih, W.P., Rina W, Andita E. (2023). Formulasi dan Uji Karakteristik Fisik Sediaan Masker Clay Serbuk Biji Kopi Robusta (Coffea robusta). Jurnal Farmasi Klinis dan Sains Bahan Alam. Program Studi Farmasi. Universitas Hamzanwadi.
[29] Nisa, K. dan Surbakti, E. S. (2016). Tomat (Lycopersicum esculentum Mill.) sebagai anti penuaan kulit. Majority. 5(3): 73-74.
[30] Prianto, J. (2014). Panduan Lengkap Merawat Kulit Wajah. Jakarta: PT Gramedia Pustaka Utama. Halaman 60, 118-145.
[31] Price, M. (2004). Terapi Minyak Kelapa. Penerjemah: Drs. Bahrul Ulum, SE. Prestasi Pustaka Publisher, Jakarta.
[32] Price, M. (2013). Terapi Minyak Kelapa (Cetakan 3). Jakarta: Prestasi Pustaka Publisher.
[33] Putro, D.S. (1997). Agar Awet Muda. Malang: Universitas Negeri Malang Press. Halaman 2-23.
[34] Rindengan, B, dan Novarianto, H. (2004). Pembuatan dan Pemanfaatan Minyak Kelapa Murni. Jakarta: Penebar Swadaya. Halaman 6, 9, 64-65.
[35] Rowe, R.C., Sheskey, P.J., dan Quinn, E.M. (2009). Handbook of Pharmaceutical Excipients. Edisi Keenam. USA: Pharmaceutical Press and American Pharmacists Ass
[36] Sharifipour, M., Pourafshary, P., dan Nakhaee, A. (2017). Study of The Effect of Clay Swelling on The Oil Recovery Factor in Porous Media Using A Glass Micromodel. Journal Applied Clay Science. 2(1): 125.
[37] Sukmawati, A., (2013). Pengaruh Konsentrasi PVA, HPMC, dan Gliserin Terhadap Sifat

Fisik Masker Wajah Gel Peel Off Ekstrak Etanol 96% Kulit Buah Manggis. Skripsi. Fakultas Farmasi. Universitas Udayana, Bali.

[38] Tjandrawinata, R. (2011). Anti aging. Scientific Journal of Pharmaceutical Development and Medical Application. 24(1): 4 dan 11.

[39] Tranggono, R., I., dan Latifah, F. (2007). Buku Pegangan Ilmu Pengetahuan Kosmetik. Jakarta: PT Gramedia Pusaka Utama. Halaman 11-13, 21, 26- 27,166.

[40] Utami, N. (2010). Cantik Tak Harus Mahal. Jakarta: PT Gramedia. Halaman 88- 89

[41] Wasitaatmadja, S.M. (1997). Penuntun Ilmu Kosmetik Medik. Jakarta: UI Press. Halaman 62, 69, 111-112.

[42] Winarsi, H. (2007). Antioksidan Alami dan Radikal Bebas. Penerbit Yogyakarta : Kanisius. Halaman 20.

[43] Zelfis, F. (2012). Kunci Awet Muda. Cetakan Pertama. Yogyakarta: Laksana. Halaman 23