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The Effect of Giving Cucumber Masks against Melasma in Acceptors of Combination Injection Contraception Users at the Independent Midwife Practice in Bungursari, Purwakarta, Indonesia

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ABSTRACT

Background: Cucumber is one of the natural ingredients that has been widely used traditionally to maintain facial skin health. Cucumber is rich in antioxidants which have the potential to suppress the inflammatory process that arises due to hormonal imbalances in melasma sufferers due to the use of injectable contraception. This study aimed to determine the effect of using a cucumber mask on the incidence of melasma in acceptors injection contraception users at the independent midwife practice in Bungursari, Purwakarta, Indonesia. **Methods:** This study was an experimental study in which a total of 30 research subjects participated in this study. Data analysis was carried out using SPSS 25 software in a bivariate manner to determine the effect of using cucumber masks on melasma. **Results:** After using the cucumber mask on the first day, there was an improvement in melasma in the intervention group compared to before using the cucumber mask, $p=0.02$ ($p<0.05$). Likewise, after using the cucumber mask on the second to the seventh day, there was an improvement in melasma in the intervention group compared to before using the cucumber mask, $p <0.05$. **Conclusion:** There is an effect of using a cucumber mask on melasma in acceptors of injection contraception users at the independent midwife practice in Bungursari, Purwakarta, Indonesia.

1. Introduction

Melasma often occurs as colored spots or stains of chocolate or gray on the face, especially in the areas of the cheeks, forehead, and upper lip. Risk factors for melasma include excess sun exposure, hormonal changes, and genetics. The use of hormonal contraception, including injectable birth control containing the hormone progesterone, can affect the balance of hormones in the body and trigger the development of melasma in some women. Hormones play an important role in the occurrence of melasma. Hormonal changes, especially estrogen, and progesterone, can affect the production of melanin (the pigment that gives skin its color) and the activity of

melanocytes (cells that produce melanin) in the skin. An increase in the hormones estrogen and progesterone can trigger overstimulation of melanin production, which in turn can cause melasma. In pregnancy, significant hormonal changes often are the main cause of melasma in pregnant women. This condition is known as the "mask of pregnancy" or chloasma. The drop in estrogen after delivery can help fade melasma in some cases. In addition, the use of hormonal contraception, including birth control pills, birth control injections, or birth control implants, can also affect the hormones in the body. The hormonal components in contraceptives can trigger changes in melanin production and accelerate the development of

melasma in some women who are prone to this condition.¹⁻⁵

Melasma does not cause pain but reduces self-confidence in sufferers. The current management of melasma is in the form of a fairly invasive procedure by doing a peel or exfoliating process for skin that has melasma. However, this action has quite serious risks if it is not carried out properly and professionally, and the cost of processing is also quite expensive. This, of course, creates problems for melasma sufferers to access this service. Efforts to explore new therapeutic modalities are efforts that have an urgency to work on. Cucumber is one of the natural ingredients that has been widely used traditionally to maintain facial skin health. Cucumber is rich in antioxidants which have the potential to suppress the inflammatory process that arises due to hormonal imbalances in melasma sufferers due to the use of injectable contraception.⁶⁻¹⁰ This study aimed to determine the effect of using a cucumber mask on the incidence of melasma in acceptor injection contraception users at the independent midwife practice in Bungursari, Purwakarta, Indonesia.

2. Methods

This study was an experimental study with a pre and post-test approach with a control group and used primary data obtained from acceptors injection contraception users at the independent midwife practice in Bungursari, Purwakarta, Indonesia. A total of 30 research subjects participated in this study, where the research subjects met the inclusion criteria. The inclusion criteria in this study were acceptors injection contraception users at the independent midwife practice in Bungursari, Purwakarta, Indonesia, and willingness to participate in this study which was marked by signing informed consent. The research subjects were grouped into two groups, namely the intervention group and the control group. This study was approved by the medical and health research ethics committee.

The intervention group was research subjects who received cucumber mask interventions made from 0.5

cm thinly sliced cucumbers, then placed on facial skin that had melasma 3 times a day for 7 days. Meanwhile, the control group was a research subject who did not receive the cucumber mask intervention. To assess improvement in melasma, a skin lightness meter is used quantitatively. The higher the score, the better the melasma. This study also assessed the sociodemographic as well as clinical aspects of the study subjects. Data analysis was carried out using SPSS software version 25. Univariate analysis was performed to assess the frequency distribution of each data variable test. Bivariate analysis was performed to assess the effect of each test variable, with a p-value <0.05.

3. Results and Discussion

Table 1 presents the effect of cucumber masks on melasma in injection contraception acceptors. After using the cucumber mask on the first day, there was an improvement in melasma in the intervention group compared to before using the cucumber mask, $p=0.02$ ($p<0.05$). Likewise, after using the cucumber mask on the second to the seventh day, there was an improvement in melasma in the intervention group compared to before using the cucumber mask, $p<0.05$.

Cucumber contains citric acid, which can help brighten the skin and help reduce melanin production, which is the main cause of melasma. In addition, cucumbers also contain vitamin C, which can help improve skin elasticity and texture. Cucumber also contains antioxidants that can fight harmful free radicals and reduce skin damage. Other vitamins in cucumbers can also help clean pores and reduce excess oil production. Cucumber also has anti-inflammatory properties, which can help reduce swelling and inflammation of the skin. Carbohydrates in cucumber can also help increase skin moisture. Cucumber also contains Vitamin C, which can help increase collagen production and minimize wrinkles on the face. Vitamin A in cucumbers can also help reduce wrinkles and make skin appear softer.¹¹⁻¹³

Table 1. The effect of cucumber masks on melasma in injection contraceptive acceptors.

Variable	Cucumber mask day	Group	Mean rank	SD	95%CI	p-value*
Melasma	Day 1	Control	2.50	1.2345	3.59-5.08	0.083
		Intervention	5.00	0.845	3.53-4.47	0.02
Melasma	Day 2	Control	3.00	1.014	3.64-4.76	0.317
		Intervention	6.00	1.014	3.64-4.76	0.02
Melasma	Day 3	Control	2.50	1.404	3.62-5.18	0.046
		Intervention	7.00	1.047	4.09-5.25	0.01
Melasma	Day 4	Control	3.50	1.447	3.87-5.47	0.023
		Intervention	8.50	0.743	4.72-5.54	0.00
Melasma	Day 5	Control	3.50	1.407	4.09-5.65	0.020
		Intervention	8.50	0.640	5.11-5.82	0.00
Melasma	Day 6	Control	3.00	1.438	4.14-5.73	0.010
		Intervention	8.00	0.488	5.40-5.69	0.00
Melasma	Day 7	Control	4.50	0.915	5.03-6.04	0.002
		Intervention	8.50	0.488	5.40-5.94	0.00

*Wilcoxon test; pre-post test; $p < 0,05$.

Cucumber also contains minerals such as magnesium, potassium, and calcium which can help maintain healthy skin. In addition, cucumber also contains enzymes that can help remove dead skin cells and help brighten the skin. The high water content in cucumber can also help keep the skin moist. The vitamins, minerals, and enzymes present in cucumbers can help improve skin elasticity and slow down the aging process. Cucumber also contains vitamin C, which can help increase collagen production, thereby minimizing wrinkles. Cucumbers can also help reduce acne and reduce swelling on the face. Cucumber also contains antioxidants which can help prevent free radicals that can cause damage to the skin. Cucumbers can also be used as a natural face mask that can help brighten and moisturize the skin.¹⁴⁻¹⁶

In addition, cucumbers can also reduce excess oil production on the face. Vitamin C contained in cucumbers can help prevent damage to skin cells from sunlight, thereby preventing premature aging. Cucumber also contains potassium which can help keep the skin moist. Cucumbers can also help reduce acne and inflammation by reducing excess oil

production. The content of enzymes can also help clean the skin. Cucumbers can also help lighten the skin. The antioxidant content in it can also help reduce wrinkles and keep the skin elastic. Cucumbers can also help soothe irritated skin and treat other skin problems. Vitamin C in cucumbers can also help increase collagen production and help skin look brighter.¹⁷⁻¹⁹

4. Conclusion

There is an effect of using a cucumber mask on melasma in acceptors injection contraception users at the independent midwife practice in Bungursari, Purwakarta, Indonesia.

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