



## Effectiveness of Gotu Kola Extract Lotion (*Centella Asiatica*) in Reducing Stretch Marks

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### A B S T R A C T

Stretch marks result from mechanical factors, namely stretching of the skin due to the development of subcutaneous structures (interstitial adipose tissue) or biochemical factors (the presence of excessive glucocorticoids that inhibit fibroblast activity and proliferation). There is no truly effective treatment for removing striae once they have formed. This study evaluates the effectiveness of administering Gotu Kola Extract (*Centella asiatica*) on the stretch mark. This paper was a Quasi-Experimental study with a pretest-posttest design. This study was conducted at the Independent Practice Midwife (IMP) Zummatul Atika in October-December 2020. The population was postpartum mothers (days 0-6) with stretch marks. Meanwhile, there were 12 respondents by purposive sampling technique. The independent variable was Gotu kola extract lotion, while the dependent variable was stretch marks with ratio data. Collecting data with a structured interview to gather the characteristics of respondents and participant observation to evaluate changes (number of stretch marks, color, moisture, and skin condition) in stretch marks before and after intervention during one month. The Gotu kola extract lotion was made in the pharmacy laboratory of PGRI Adi Buana University Surabaya within several stages. The data analysis used the paired T-test, and the result showed  $p=0.000$ , indicating a significant difference before and after the intervention. This study concludes that administering Gotu Kola Extract (*Centella asiatica*) lotion effectively reduces skin pigmentation and lines in stretch marks, increases skin moisture, and refines skin texture.

## INTRODUCTION

Striae or stretch marks are indented lines in the abdomen, buttocks, thighs, back, breasts, axillae, and groin. Skin changes often occur in pregnancy caused by hormonal imbalances. Approximately 90% of women experience skin changes, such as stretch marks and hyperpigmentation on the skin (Irianti et al., 2014b).

Any extreme stretching of the skin causes stretch marks or striae due to an increased mother's weight. On the other hand, some experts state that the cause is the combination of the estrogen, adrenocortical, and relaxing hormones changing collagen and tissue elasticity (Varney et al., 2007). According to the study by Padilla Castillo, striae is a linear depression of the skin caused by fibrosis dysfunction. It can appear at any stage of life and is associated with a genetic predisposition in some cases. It is also common during adolescence (27%) and pregnancy (60-90%) as a result of a combination of mechanical and hormonal factors (increased steroid hormones) (García Hernández, Madera González, Padilla Castillo, & Figueras Falcón, 2013). In addition, stretch marks can cause itching and reduced skin moisture causing the mother too often to scratch. Furthermore, it causes scars on the skin and makes less confident in mothers due to

the wounds. Changes in skin pigmentation caused by pregnancy will decrease after the pregnancy, except for striae (Irianti et al., 2014a).

There are practices or cultures during the puerperium that aims to reduce cellulite and hyperpigmentation on the skin. Skin elasticity is an essential factor, so preventive treatments should maintain and enhance fibroblast stimulators' dermis structure and healing agents by increasing collagen and elastin fibers production (Bylka et al., 2013). Anti-stretch mark cream effectively reduces the severity of striae, striae development and prevents striae during pregnancy (García Hernández et al., 2013). Gotu kola leaves contain triterpenes which function as collagen-forming. Triterpenes can increase lysine, proline, and amino acids metabolism. Gotu kola content also increases tropocollagen and mucopolysaccharides synthesis to restore skin elasticity and firmness (Kristiyani A, Zullies I, 2017). A study conducted in the United States from November 2008 to March 2009 showed the change in the appearance (texture, color, and softness) in striae rubra after giving onion extract, *Centella asiatica*, and hyaluronic acid cream on week 12 (Draelos, Zoe Diana, et al., 2010). Natural ingredients are safe and effective to fade stretch marks. The Gotu kola extract lotion is easy to use and not sticky. Besides, it contains aromatherapy for relaxation. This study analyzes the effectiveness of Gotu Kola extract lotion (*Centella asiatica*) on Stretch Mark.

## METHOD

This paper was a Quasi-Experimental study with a pretest-posttest design. It took place at Independent Midwifery Practice (IMP) Zummatul Atika in October – December 2020. In addition, the population was postpartum mothers (days 0-6) with stretch marks. There were 12 respondents by purposive sampling technique. The independent variable was Gotu kola extract lotion, while the dependent variable was stretch marks with ratio data. Before conducting the interview, the authors conducted informed consent to obtain respondents' willingness. Collecting data with a structured interview to gather the characteristics of respondents and participant observation to evaluate changes (number of stretch marks, color, moisture, and skin condition) in stretch marks before and after intervention during one month. The scoring was 1 for change in each stretch marks indicator and 0 for no change. The Gotu kola extract lotion was made in the pharmacy laboratory of PGRI Adi Buana University Surabaya within two months. The stages of making Gotu kola extract lotion through powder making, maceration, and lotion making with 10% emulsifier formula. The results of interviews and observations were processed through editing, coding, scoring, and tabulating. After that, a pre-post analysis was carried out using the paired T-test.

## RESULT

The results in this paper included characteristics of respondents, the frequency distribution of stretch marks, and statistical analysis.

Table 1. Respondent Characteristics by Age, Education, Parity

Characteristics	Frequency	Percentage (%)
Age		
<20 years	0	0
20-35 years	10	83.3
>35 years	2	16.7
Education		
Primary school	0	0
Junior high school	4	33.3
Senior high school	8	66.7
College	0	0
Parity		
Primipara	9	75
Multipara	2	16.7
Grandepara	1	8.3

Table 1 shows that most respondents are 20-35 years old (83.3%) and primipara (75%). Most of them are graduated from senior high school (66.7%).

Table 2. Frequency Distribution of Stretch Marks

	Number of stretch marks				Stretch marks Color			Skin Moisture		Skin Texture	
	No	1-5	5-10	>10	Black/Dark	Pink	White/Clean	Moist	Dry	Rough	Smooth
Pre-test	0	5	4	3	5	7	0	0	12	12	0
Pos-test	0	8	3	1	0	8	4	12	0	0	12

Table 2 describes that the dominant changes before and after administering Gotu kola extract lotion are in skin color, moisture, and skin texture changes. Meanwhile, the number of stretch marks cannot disappear quickly.

Table 3. Paired Samples Statistics

		Mean	N	Std.Deviation	Std Error Mean
Pair 1	Pre-test	5.25	12	1.215	.351
	Post-test	1.83	12	1.267	.366

Table 3. indicates that the mean of the stretch marks obtains a score of 5.25 in the pre-test. Meanwhile, the average value of the stretch marks after being given *Centella asiatica* extract lotion is 1.83. The mean value of post-test < pre-test shows a difference in the average value of the stretch marks before and after the intervention.

Table 4. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-test & Post-test	12	.856	.000

Table. 4 reports the correlation test results between the pre-test and post-test. The correlation coefficient (Correlation) is 0.856 with a significance value (Sig.) of 0.000, indicating a correlation between the pre-test and post-test.

Table 5. Paired Samples Test

Pair 1	Pre-test – Post-test	Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
		3.417	.669	.193	2.992	3.841	17.703	11	.000

Table.5 reveals that the Paired Samples Test results obtain  $p=0.000$  ( $p<0.05$ ). So, it can be concluded that there is a significant difference in stretch marks before and after administering *Centella asiatica* extract lotion in postpartum mothers.

## DISCUSSION

In this study, the primiparous group was more dominant in the appearance of stretch marks than the other groups. It is in line with research that reported the average incidence of stretch marks in women was in primigravida (Ramsal et al., 2009). Meanwhile, another study stated that was no correlation between pregnancy history, age at menarche, weight loss, obesity, use of hormonal contraception, and use of corticosteroids on the stretch marks (Ellysa, 2021).

This study found significant changes in the stretch marks before and after applying Gotu kola extract lotion, especially in skin moisture and texture. Lotions are a type of emollient (softener) that contains lots of water and additional ingredients that function as stabilizers (such as thickeners, gels, emulsifiers, and humectants). These ingredients keep the skin moisturized and soft (Erungan et al., 2009). Time to change the color of stretch marks from dark to light then turns to white (alba) and flat was between 6-10 months (Goldman, Rossato, & Prati, 2008). In an in vitro analysis test, the combination of Gotu kola herb extract and olive oil had a high level of sunscreen's ability with a Sun Protection Factor (SPF) 37 (Zainuddin, Saifullah, & W, 2019)

This paper showed that the stretch marks lines did not significantly disappear – there were still lines. Nevertheless, there was a reduction in stretch mark lines from 5-10 (pre-test) to 1-5 (post-test). It is in line with research that reported reducing the number of stretch mark lines after the *Curcuma domestica* hydrogel provision (Sabatina, 2018). On the other hand, a study stated that cream, lotion, and butter administration did not show significant changes to prevent Striae (Young & Jewell, 1996).

After administering Gotu kola Extract Lotion, the paired T-test results showed a significant difference in stretch marks. A study stated that Gotu kola contains Sodium Lauryl Sulfate (SLS) to clean dirt and glyceryl to moisture skin (Sari & Diana, 2019). Stretch marks treatment increases the collagen and elastin in the skin. Topical therapy on stretch marks helps to improve skin pigmentation and texture (Ud-Din, McGeorge, & Bayat, 2016). A literature review confirmed that *Centella asiatica* and massage using bitter almond oil could prevent and reduce the severity of SG (Striae Gravidarum) (Korgavkar & Wang, 2015).

In addition, Centellium oral supplementation reduces stretch marks and skin pigmentation. It also increases collagen and moisture in the skin (Hu et al., 2018).

## CONCLUSIONS

In conclusion, administering Gotu Kola Extract (*Centella asiatica*) lotion effectively reduces skin pigmentation and lines in stretch marks, increases skin moisture, and refines skin texture.

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