IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

The Natural Gotukola Extract Act as a Stretch Mark Eraser

Reshma Jagtap[1], Pratiksha Bansode[2], Vidhya Pawar[3], Prof. Rekha Kolape[4]

Department of Pharmaceutics

Mahadev Kanchan of Pharmaceutical Education & Research, Uruli Kanchan, Pune, MH-412202

ABSTRACT

Stretch marks, sometimes called Striae distensae, are noticeable lines on the skin's outer layer that are typically found on the thighs, breasts, and belly. Strieges gravidarum are stretch marks that appear on pregnant women. Striae distensae can occur in between 50 and 90 percent of expectant mothers. Stretch marks arise as a result of a quick increase in weight that occurs during pregnancy. This rapid weight gain breaks down the collagen fibers that are present between the skin's dermis and epidermal layers. The use of herbal remedies has grown as a result of the many adverse effects of synthetic drugs. Oil from Centella asiatica linn, often known as gotukola (GKO), leaves was added to the mixture to prevent negative effects. This oil increases the synthesis of collagen by stimulating dermal fibroblasts. Triterpenoids (saponins), which contain asiaticosides, are the primary active ingredient in gotukola. By increasing the body's production of collagen, they may assist to both repair and prevent the formation of new stretch marks. Common skin lesions known as striae distensae (SD) can have a major psychological and physical impact. There are numerous therapy approaches, but none of them can totally cure SD. Rich in potent triterpenic compounds, Centella asiatica (CAST) is a well-known medicinal plant that has long been used to heal wounds and promote skin regeneration.The purpose of this study was to assess the effectiveness of Centella asiatica extract as a natural remedy for stretch marks and to comprehend how it works.This study finds that applying a stick of gotu kola oil (Centella asiatica) to the skin improves skin hydration, smooths out wrinkles, and lessens skin pigmentation and lines in stretch marks.

Keywords: Centella asiatica, gotukola oil, Striae distensae, and stretch marks.

INTRODUCTION:

Stretch marks, sometimes called striae gravidarum or striae distensae, are defined by dermal and epidermal atrophy and appear as typical, disfiguring scars.
Stretch marks on the skin called striae were originally identified by Roederer in 1773, and Troisier and Ménétrier described them histologically in 1889. The earliest descriptions of stretch marks that were morphologically accurate were provided by Nardelli in 1936. A type of tissue damage on the skin caused by an excessive stretching of the dermis is known as a stretch mark, or striae.Stretch marks can appear as a result of obesity because they are brought on by the skin's abrupt expansion, particularly in regions of the body where fat is most likely to be stored.
As a result, stretch marks are typically observed on the thighs, tummy, and breasts in both men and women. They are most common near the navel, upper arms, lower back, and underarms. Stretch marks manifest as striae

rubrae, which are initially erythematous and purple, and then gradually transform into striae albae, which become pearlescent white and lose their pigmentation. Stretch mark therapy is commonly achieved with creams, lotions, and ointments; however, derma sticks are not commonly available. Compared to other dosage forms, it has a number of advantages. Applying it is simple, it doesn't require the use of your fingers, and contamination is prevented.Therefore, creating and assessing a derma stick for the treatment of striae gravidarum was the goal of the current investigation.

Triterpenes found in gotu kola leaves have the ability to produce collagen. Proline, lysine, and amino acid metabolism can all be accelerated by triterpenes. To regain the firmness and suppleness of the skin, gotu kola content also promotes the synthesis of tropocollagen and mucopolysaccharides. Stretch mark fading is safe and successful when done with natural chemicals. Not sticky, and easy to use, is the Gotu kola stick. It also includes aromatherapy, which promotes relaxation. This study evaluates the Gotu Kola stick's (Centella asiatica) efficacy in treating stretch marks.

Stretch marks, also known as stratiae distensae (SD), are common skin lesions that result from the dermis stretching.The two types of SD are striae albae and striae rubrae. The first erythematous, red, stretched-flat (or, in some cases, slightly raised) lesions, which are oriented perpendicular to the direction of skin tension and may be symptomatic, are known as the acute stage (striae rubrae). The chronic stage (striae albae) is identified when SD have diminished and appear atrophic, wrinkled, and hypopigmented.

The most significant herbal remedy for stretch marks is gotukola oil. The essential oil is derived from the leaves of Centella asiatica Linn, a member of the Apiaceae family, and is known for its triterpenoids, or "asiaticosides," which promote the production of collagen fibers. Most topical treatments promise to increase skin elasticity and improve the appearance of SD by stimulating the formation of collagen.

Striae are the most common connective tissue alterations that develop during pregnancy, usually after week 24. Between 50 and 90 percent of expectant mothers experience striae. In addition to being disfiguring, stretch marks can make patients feel humiliated or embarrassed, which lowers their quality of life.

Types of Striae distensae:

1. Striae rubrae

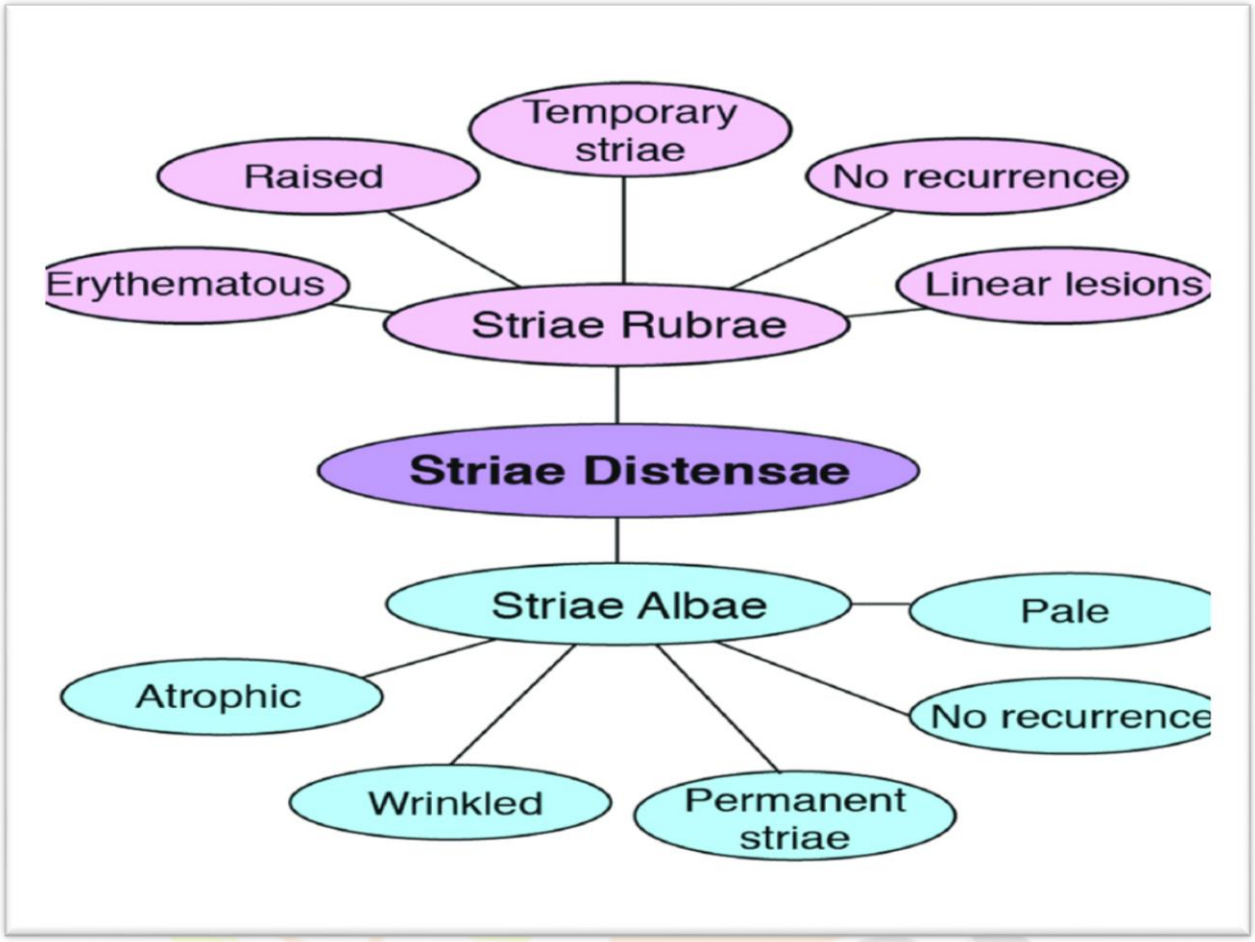
[Fig no. 1. Striae rubrae]

2. Striae albae

[Fig no. 2. Striae albae]

1. Striae rubrae:
Also known as red stretch marks, these lesions or fractures occur when a person's skin expands quickly to keep up with underlying growth.Red stretch marks are not dangerous to health, although some people may want to get treatment to make them look less noticeable. Striae rubrae are transient.

2. Striae albae:
Also known as white stretch marks.
The more chronic (or mature) stage of stretch mark production is known as striae albae, during which the markings take on characteristics of a scar, become irregularly shaped, and become hypopigmented (faded or white, losing vascular changes).
Striae albae don't go away.



[Fig no. 3. Types of Striae distensae]

Risk Factors:

Younger women who have a positive family history of SD and maternal obesity are more likely to develop striae. Pregnancy-related striae were acquired by 59.8% of the 164 primiparous Brazilian women who had given birth to a single fetus. Those who were younger, acquired more weight during pregnancy, or gave birth to babies who weighed more were more likely to have SD.
Race, age, family history, skin type, body mass index (BMI), and weight are some of the risk factors linked to the development of SD, while it is still unclear how race and the chance of developing SD are related.
While white women have been found to be less associated with SD than non-white women, some investigations have discovered that women with lighter skin tones are more vulnerable to SD. Two significant risk factors in youth are obesity and BMI.

Etiology:

A type of scarring on the skin related to dermal stretching is called striae. They frequently follow drastic fluctuations in body weight (gain or decrease) or are linked to either endogenous or exogenous corticosteroids. Theories include changes in the structure of elastic and dermal collagen, physical stretch, and hormones. The production of fibroblasts and the breakdown of proteins are both boosted by adrenocorticotropic hormones. Hormones connected to pregnancy might potentially be involved. According to reports, women with striae distensae have reduced serum relaxin levels. There has also been talk of fibrillin deficiency. Nothing is known about genetic variables, except than the fact that striae are said to be related to decreased expression of the collagen and fibronectin genes.

Epidemiology:

Adolescence, pregnancy, and obesity are the common times when SD occur. The frequency varies from 6 to 86% in teenagers and 43 to 88% in pregnant women. It has been found that 43% of obese people with a BMI between 27 and 51 are affected.

Striae atrophicans commonly follow medical disorders, such as Cushing syndrome or disease, and treatments, which typically involve the use of exogenous topical or systemic corticosteroids.

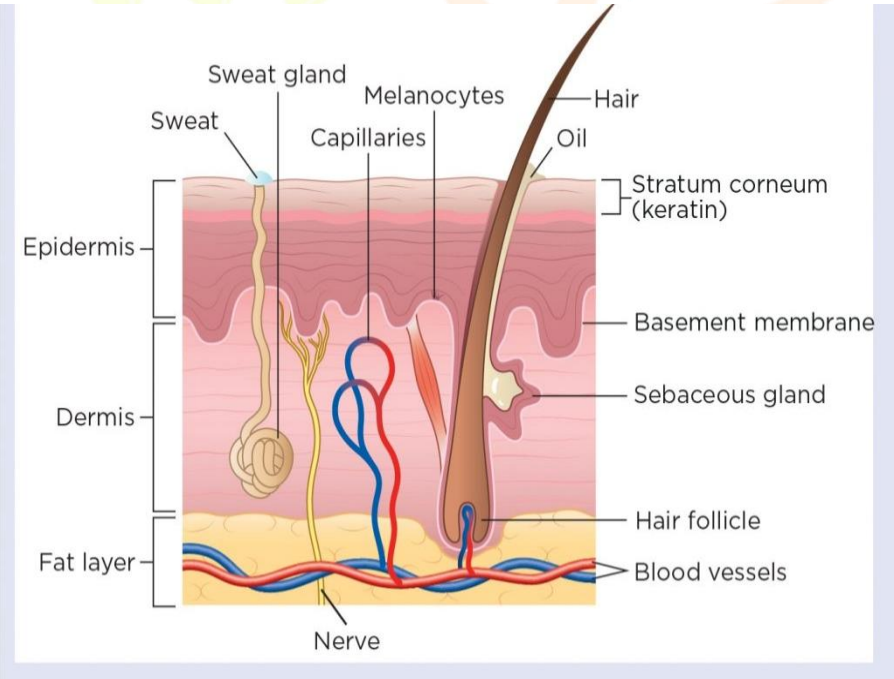
Histopathogenesis:

A number of physiological situations, including pregnancy, puberty, growth spurts, and rapid changes in the proportion of particular body parts, such as in weightlifters, the obese, or those who are losing weight, can cause strokes.
Drugs like systemic or local corticosteroid therapy and anti-retroviral protease inhibitors (indinavir) might occasionally cause SD as a side effect.

Structure of the skin:

The epidermis, which is the layer of skin that is visible, acts as a barrier for the tissue underneath it and is composed of many cell sheets. In order to replenish the shedding dead skin cells, epidermal cells originating from the bottom sheet push upward through the layers. Melanin, the pigment responsible for skin tone, is also found in the epidermis.

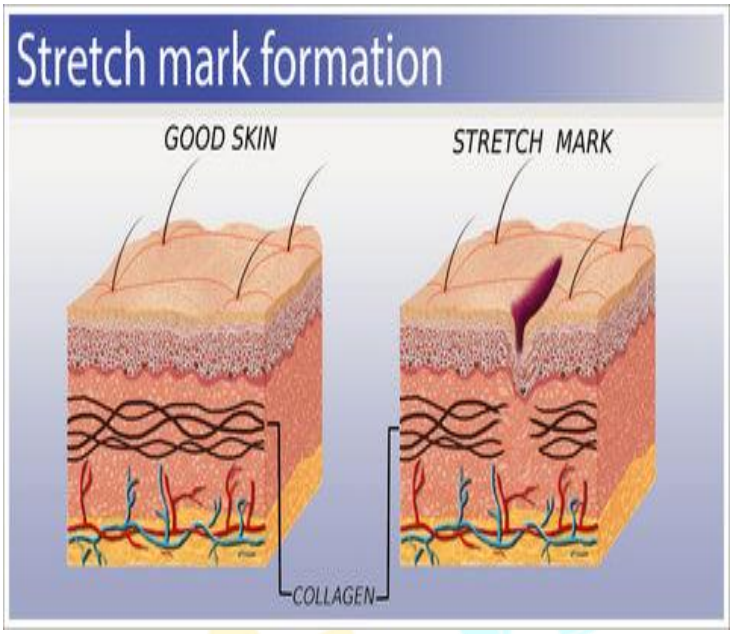
The dermis is located beneath the epidermis. Blood arteries, sweat glands, sebaceous glands, hair follicles, and nerves are all found in this deeper layer. Collagen, which gives the skin its strength, and elastin, which gives the skin its suppleness, are the two forms of fiber that make up the dermis.



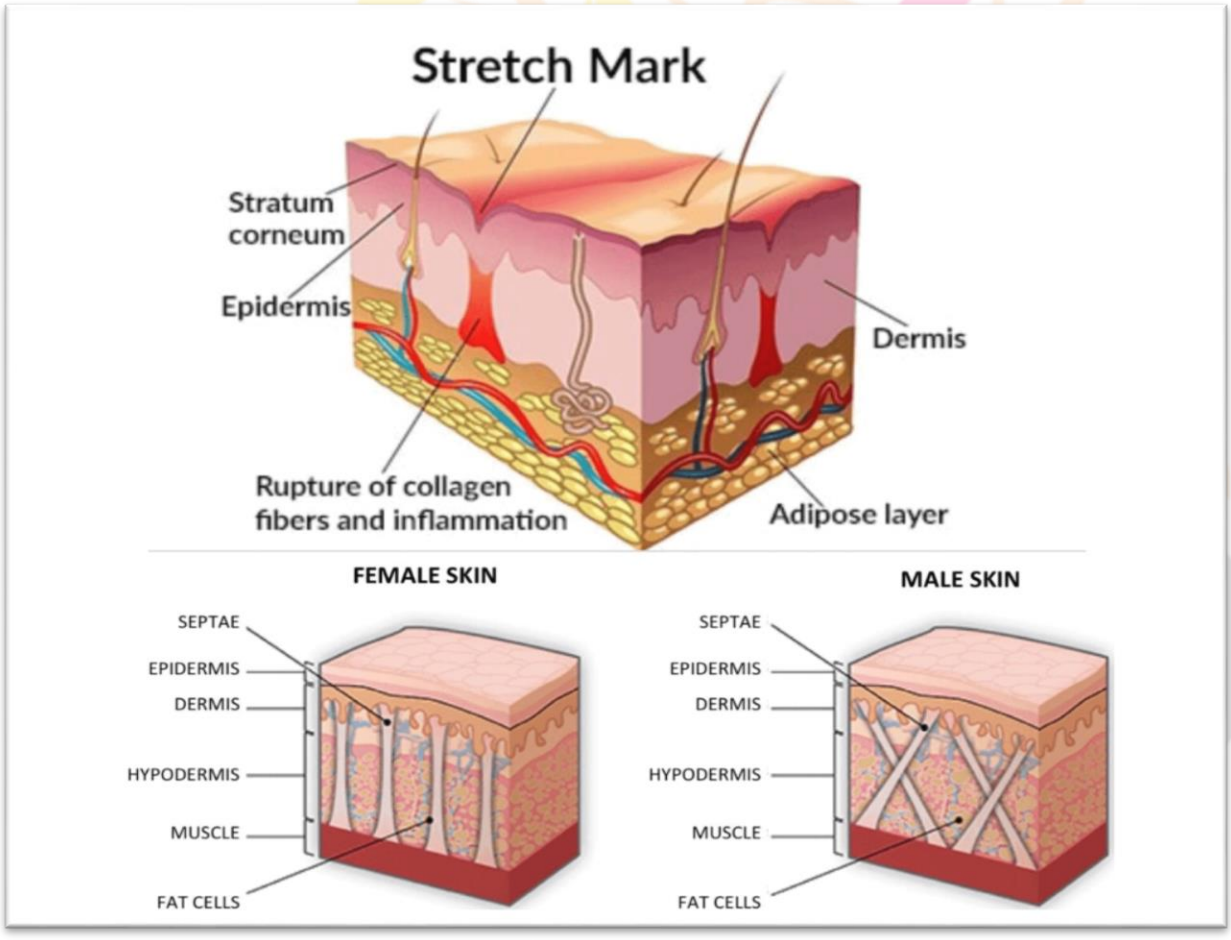
[Fig no.4. Structure of skin]

Development of a stretch mark:

• There is an inflammatory reaction in the skin that gives it its distinctive red or purple color; • The inflammation gradually goes away and is replaced by scar tissue; and
• The skin is stretched as a result of underlying tissue expansion. This results in the loss of dermal elastin, thinning of the epidermis, and excessively dense collagen fibers replacing the dermis.The scarring is permanent and has a distinctive white or silvery look.



[Fig no. 5. Stretch Mark Formation]



[Fig no. 6. Structure difference between Female skin and Male skin]

Causes:

Stretch marks appear when there is rapid stretching of skin. This may occur due to a host of reasons. Stretch marks can be seen:

• As a result of an unexpected weight gain; during pregnancy, on the abdomen and the surrounding area.
• Throughout adolescence.
• If we use lotions containing the steroid cortisol excessively.
• You are probably going to have stretch marks if someone in your family already has them.
• It is reported that some ethnic groups are more likely to get stretch marks.
• In Cushing syndrome: An illness characterized by elevated cortisol steroid production.
• In those with Ehler-Danlos syndrome: This genetic medical issue causes excessively elastic skin that is prone to bruise readily.

Symptoms:

Stretch mark symptoms may include:

• Lines on your skin that have sunken.
• Discoloration in hues of red, pink, blue, purple, black, or brown.
• Skin develops silvery or white streaks and is glossy with time.
• Itchiness

Diagnosis:

• It is not always necessary to consult a healthcare professional to diagnose stretch marks.
• They are simple to diagnose.Your healthcare practitioner will review your medical history and perform a physical examination if you visit them.
• You may be offered more tests if your physician believes that you are taking more cortisol.

Prevention:

Skin proteins called collagen and elastin assist the skin regain its natural shape after being stretched and also contribute to the skin's strength, resilience, and flexibility.
Stretch marks can be avoided by increasing collagen and elastin synthesis.
Nutrient deficits can also result in stretch marks.
There have been several topical therapies promoted as preventing stretch marks. Stretch marks may be avoided by massaging with bitter almond oil and using centella, according to Korgavkar and Wang's critical evaluation, which found no evidence in favor of either treatment. The use of topical hyaluronic acid is supported by a limited body of evidence.

a) Hydration:

Have a lot of water. Stretch marks are less likely to appear on your skin since water keeps it supple. Additionally, there is a chance that stretch marks can appear if you consume coffee. Drinking as much or more water is a good suggestion if you consume a lot of coffee, tea, or soda.

b) Diet:

It's also a good idea to eat foods that promote healthy skin, including foods:

•Vitamins A, C, and D-rich foods include carrots, citrus fruits, and milk; zinc-rich foods include nuts and fish.
• High in protein foods include lean meat, poultry, broccoli, beans, and lentils.

c) Exercise:

Both circulation and collagen production are enhanced by exercise. Strong and flexible skin is maintained by increased collagen and circulation.

TREATMENT:

Topical treatments:

The most prevalent therapies for SD are topical ones, either SR or SA. Few studies have examined the effectiveness of topicals in the management of SD, according to the findings of a report that sought to evaluate the evidence supporting the use of topicals in SD and to suggest an organized approach to managing SD. Most of them are of low quality, and the outcomes are consistently misleading.

Centella asiatica:

The following South Asian plant is commonly used as a topical therapy for striae. Centella may decrease glucocorticoid activity and promote fibroblasts, while its exact mode of action is unknown. Since centella is frequently mixed with other components, carefully planned, controlled research are needed to find out how effective centella is specifically for preventing SG.

Biological source: Obtained from the plant of centella asiatica.

Scientific name: Centella asiatica
Synonym: Gotu kola
Family: Apiaceae
Genus: Centella
Kingdom: Plantae
Order: Apiles
Chemical constituents: Triterpenoids, Asiatic acid, Brahmic acid.
Uses:

1. Gotu kola has been applied to the skin, or used topically for preventing or reducing stretch marks.
2. Also used for minor burns, psoriasis.
3. Preventing scars after surgery.

Conclusion:

In conclusion, applying a lotion containing gotu kola extract (Centella asiatica) efficiently improves skin hydration, smoothes out wrinkles, and lessens skin pigmentation and lines associated with stretch marks.

Referances:

1.Topical management of striae distensae (stretch marks): prevention and therapy of striae rubrae and albae - PMC

2.K.Korgavkar and F.Wang,Stretch marks during pregnancy: a review of topical prevention,British Journal of Dermatology,2014;606-615

3.Cloe Boira,Marie Meunier,Marine Bracq, Amandine Scandolera and Romain Reynaud,The Natural Centella asiatica Extract Acts as a Stretch Mark Eraser: A Biological Evaluation,MDPI Cosmetics,2024;11-15.

4.Miriam Brenan, Mike Clarke and Declan Devane, The Use of stretch marks products by women in pregnancy: a descriptive, cross-sectional survey, BMC Pregnancy and Childbirth:2016;16-276.

5..Cloe Boira,Marie Meunier,Marine Bracq, Amandine Scandolera and Romain Reynaud,The Natural Centella asiatica Extract Acts as a Stretch Mark Eraser: A Biological Evaluation,MDPI Cosmetics,2023;11-15.

6.Ruchita R Giri, Dr.V.V.Potnis, Formulation and Evaluation of Topical Delivery System of Herbal Active for the Management of Striae Gravidarum,INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT),2022;10:710-716

7.Indria Nuraini, Asti Rahayu, Effectiveness of Gotu Kola Extract Lotion (Centella Asiatica) in Reducing Stretch Marks, JOURNAL OF HEALTH SCIENCE, 2021;14(3):196-201.

8. Preliminary study on the development of an antistretch marks water-in-oil cream: ultrasound assessment, texture analysis, and sensory analysis - PMC

9.Poonam Rahangdale, Nandini Dani, Mina Patle, Pooja Nandane, Mansi Jain, Prachi Suryawanshi, Developing and Assesing a Cream Designed to Remove Stretch Marks from "Prunus armeniaca" and "Centella asiatica" International Journal of Science and Research Technology,2024,9(4):1801-1804

10. MOHAMED L. ELSAIE MD, LESLIE S. BAUMANN MD, AND LOTFY T. ELSAAIEE MD, Striae Distensae (Stretch Marks) and Different Modalities of Therapy: An Update, Article in Dermatologic Surgery,2009;563-573

11. Xiaohong Shu . Wei Huo . Lin Zou . Zhaoxia Li . Ying Tang . Li Li . Xi Wang, Treatment of Stretch Marks Using a New Formulation Combining Nanofractional Radiofrequency Plus Magnetic Nanofractional Radiofrequency, Dermatol Ther(Heidelb),2023; 13:1277–1288

12. C. Diehl, Stretch marks: a review .

13. Stretch Marks - StatPearls - NCBI Bookshelf

14. Management of stretch marks (with a focus on striae rubrae) - PMC

15. Nuno Mendes , Paulo Jorge Alves , Mafalda Barrosw , Jorge Magalhães Rodrigues and Jorge Machado , A Narrative Review of Current Striae Treatments,Healtcare,2022,10,2565.

16. Yichen Shen a , Qianqian Pang b , Jinghong Xu, Comprehensive pathogenesis and clinical therapy in striae distensae: An overview and current perspective, Chinese Journal of Plastic and Reconstructive Surgery 4,2023;203-207.

17. Archana J. Lokhande, Venkataram Mysore1, Striae Distensae Treatment Review and Update, Indian Dermatology Online Journal , 2019,Volume-10(4); 380-395.

18. Red stretch marks: Causes and treatment options

19. Stretch marks - Better Health Channel

20. Types of stretch marks

21. Stretch marks - Wikipedia

22. Stretch marks - Symptoms & causes - Mayo Clinic

23. How to Prevent Stretch Marks: 7 Tips

24. Stretch Marks: Causes, Treatment Options & Prevention

25. Natural Home Remedies for Stretch Marks - PharmEasy Blog