

A REVIEW ON OVERALL STUDY TO DEVELOP ANTI STRETCH MARKS

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ABSTRACT

Striae distensae, or stretch marks, are common skin changes that mainly affect women. While they're not harmful, they can cause both physical discomfort and emotional distress. Stretch marks are one of the most common and harmless skin issues people face, especially in cosmetic contexts. Stretch marks, or striae, are indented lines that typically appear on areas like the abdomen, buttocks, thighs, back, breasts, armpits, and groin. skin fibers and the presence of receptors for sex hormones. Changes in the outer layer of the skin often happen later. To help prevent stretch marks, using topical creams, ointments, and oils can be effective. Recent research suggests that topical formulations containing allixin (a compound found in garlic) and probiotics might be effective for both treating and preventing stretch marks. Both allixin and probiotics have anti-inflammatory properties that can help reduce the skin's inflammatory response. They work by suppressing a key transcription factor (NF- κ B) and lowering the levels of pro-inflammatory cytokines and chemokines.

Allixin and probiotics show promise in treating and preventing seborrheic dermatitis (SD) thanks to their antioxidant, anti-inflammatory, and skin-regulating properties. Both ingredients help reduce inflammation by inhibiting a key factor called NF- κ B and lowering levels of inflammatory substances. They also combat oxidative stress, protecting collagen from damage. Their benefits for skin elasticity and hydration make them strong candidates for managing SD. Combining allixin and probiotics in a formulation could be an innovative way to address this condition. The goal

of this study is to create an anti-stretch mark gel that includes Centella asiatica, also known as Gotu kola, to help reduce the appearance of stretch marks. Centella asiatica is a well-known medicinal herb that's been used for centuries, especially in traditional Eastern medicine, and it's gaining popularity in Western countries as well. This herb has a rich variety of natural compounds that make it effective for treating different health issues, particularly in skincare, where it's often used to manage stretch marks.

Coconut, scientifically known as Cocos nucifera, is a versatile tree that thrives in salty coastal areas around the world. Coconut oil is particularly beneficial for skin health; it has antifungal and antibacterial properties and helps support the immune system. Additionally, it can reduce inflammation, promote wound healing, and protect the skin. Almond oil, derived from almonds (Oleum amygdalae), has been used in alternative medicine for its many health benefits. While there's no definitive scientific proof yet, almond oil is known for its anti-inflammatory properties and ability to boost the immune system. It's packed with important nutrients and is commonly used in both cooking and cosmetics.

Keywords: Pregnancy, Disease, Skin, Body, Centellasiatica, Triterpenoid, Saponins, immunomodulator, Oleum, Amygdalae, Ghritkumari , Rigvedic, CocosNusifeera, Striaedistense.

INTRODUCTION:

Plants have been used as natural remedies for thousands of years, based on traditional knowledge and folk medicine.

Today, there's growing interest in researching these plants, as studies are showing their potential to help treat both mild and chronic illnesses. A wealth of evidence is being gathered to highlight the effectiveness of medicinal plants found in various traditional medicine systems around the world.

Striae distensae, commonly known as stretch marks, are indented lines that can appear on various parts of the body, including the abdomen, buttocks, thighs, back, breasts, underarms, and groin. These skin changes often occur during pregnancy due to hormonal shifts. In fact, around 90% of women experience these changes, which can include stretch marks and darkening of the skin. Stretch marks are most commonly seen in pregnant women and adolescents, with certain areas of the body being more frequently affected.

Stretch marks, or striae, happen when the skin is stretched too quickly, often due to weight gain during pregnancy. Some experts believe that hormones—like estrogen and relaxin—also play a role by affecting the skin's collagen and elasticity. So, it's a combination of rapid skin stretching and hormonal changes that leads to the formation of stretch marks.

While stretch marks aren't a medical emergency, they can cause emotional and psychological distress, especially for women and certain professionals who feel self-conscious about their appearance. Despite being studied for over a century—first described in 1889—scientists still don't fully understand what causes them. Stretch marks can happen at any stage of life and may be influenced by genetics. They're particularly common during adolescence (about 27% of teens) and

pregnancy (60-90%). This is due to a mix of mechanical stretching and hormonal changes, especially increased steroid hormones. Stretch marks can also cause itching and dryness, leading some women to scratch their skin more often. In addition to being physically uncomfortable, they can make mothers feel less confident because of the scars they leave behind. While other skin pigmentation changes from pregnancy usually fade after giving birth, stretch marks tend to stick around.

Stretch marks, known as striae gravidarum (SG), affect up to 90% of pregnant women. While they aren't harmful, they can lead to emotional distress due to their appearance. Unfortunately, there's not much research focused on preventing SG during pregnancy, and the underlying causes aren't fully understood. reviewing topical treatments aimed at preventing SG, we identified two main approaches: In preventing new stretch marks from forming and reducing the severity of existing ones. Pregnant women with specific risk factors could benefit from targeted prevention strategies. The literature suggests that certain treatments show promise. Centella extract and possibly massage with bitter almond oil might help prevent or lessen SG. Hyaluronic acid has weak evidence supporting its preventive effects. Tretinoin may reduce the severity of new stretch marks, but its use during pregnancy is limited due to safety concerns. On the other hand, cocoa butter and olive oil have not been shown to effectively prevent or treat SG

**ETIOLOGY:**

Stretch marks, or striae, are a type of skin scarring that occurs when the skin stretches quickly. This can happen due to rapid weight changes or the use of corticosteroids. Several factors may contribute to their formation, including hormones, physical stretching of the skin, and changes in the structure of collagen and elastic fibers. For instance, adrenocorticotropic hormones can boost the activity of fibroblasts (the cells that produce collagen) and increase protein breakdown. Pregnancy hormones might also play a role. Interestingly, women with stretch marks tend to have lower levels of relaxin, a hormone related to pregnancy.

Additionally, a lack of fibrillin, a protein important for skin elasticity, has been suggested as a contributing factor. While genetic influences on stretch mark development haven't been thoroughly studied, some research indicates that lower levels of collagen and fibronectin genes may be linked to their formation.

EPIDERMIOLOG:

Stretch marks, or striae distensae, are common during pregnancy (affecting 43% to 88% of women), puberty (6% to 86%), and in people with obesity (43%). Striae

atrophyca, on the other hand, typically develop due to specific medical conditions, especially Cushing syndrome, or as a result of treatments like corticosteroids (either topical or systemic) or surgery. Other conditions associated with striae include Marfan syndrome, anorexia nervosa, certain fever-related illnesses, and chronic liver disease. Additionally, various medications can contribute to the development of stretch marks, including chemotherapy drugs, long-term antibiotics, contraceptives, and some psychiatric medications.

Stretch marks are more common in females than in males and may vary in prevalence among different racial groups. They often appear more noticeable on darker skin. Having a family history of stretch marks can increase the risk of developing them. During pregnancy, younger women tend to experience stretch marks more frequently than older women. Research shows that greater abdominal size and significant weight gain—whether from a larger fetus or excess amniotic fluid—are associated with a higher likelihood of developing stretch marks. Additionally, one study found that smokers are more likely to have stretch marks compared to non-smokers.

PATHPHYSIOLOGY:

The development of stretch marks involves complex biological processes. It's believed that certain enzymes called elastases, released by mast cells, and the activity of macrophages (a type of immune cell) play significant roles. In the early stages, known as striae rubrae, the skin shows an abundance of fine elastic fibers in the upper layer, with thicker, twisted fibers around the edges. There are also signs of

inflammation, such as lymphocytes (a type of white blood cell), dilated blood vessels, and swelling. Over time, the elastin and fibrillin fibers become reduced and reorganized, while collagen fibers become thicker and more densely packed.

In contrast, older stretch marks, referred to as striae albae, exhibit changes such as thinning of the skin, loss of the skin's surface structures, reduced blood flow, and horizontal bundles of collagen that look more like scar tissue. Advanced imaging techniques, like electron microscopy, have shown that there's also evidence of mast cells breaking down, activation of macrophages, and breakdown of elastic fibers in the middle layer of the skin.

HISTORY AND PHYSICAL:

The appearance of stretch marks can often be linked to situations where the skin has been stretched, such as during pregnancy, growth spurts in puberty, intense exercise, or weight gain. It's important to ask about the use of strong topical corticosteroids or prolonged systemic steroids in the past, as these can also contribute to their development. Initially, stretch marks appear as slightly raised pink or purple lines (called striae rubrae), which gradually fade over months to years into lighter, thinner scars (striae albae). These marks typically appear perpendicular to the direction of skin tension and may fade over time.

In pregnant women, they usually show up on the abdomen, breasts, and thighs, while in adolescents, they are commonly found on the thighs, buttocks, breasts (in girls), and back (in boys). Striae rubrae can sometimes be itchy, but otherwise, stretch marks are usually not painful. Most people

seek treatment because they find the marks unattractive.

EVALUATION:

Researchers have employed different methods to assess the type and severity of stretch marks when evaluating treatment effectiveness. However, these methods are not standardized or validated. Dermoscopy, a technique that allows for detailed examination of the skin, reveals that striae rubrae (the early, reddish marks) have increased pigmentation, while striae albae (the older, lighter marks) show reduced pigmentation. Despite this information, the exact necessity or usefulness of these assessments remains unclear.

SCORING OF SG:

The severity of stretch marks (SG) can be assessed using the Atwal numerical scoring system. This scale evaluates four common areas where stretch marks appear: the abdomen, hips, buttocks, and breasts.

The scoring criteria are as follows:

1. Number of Stretch Marks at each site:

- 0 = no stretch marks
- 1 = 1 to 4 stretch marks
- 2 = 5 to 10 stretch marks
- 3 = more than 10 stretch marks

2. Colour of the Stretch Marks:

- 0 = no redness
- 1 = pink
- 2 = dark red
- 3 = purple

Each body site can receive a score between 0 and 6, based on the number and color of the stretch marks. The total striae score (TSS) for all four sites can range from 0 to 24.

- A TSS of up to 12 indicates mild stretch marks - A score of 13 to 18 indicates moderate stretch marks- A score above 18 indicates severe stretch marks.

CLINICAL PICTURE AND HISTOPATHOLOGY OF SG:

Recent or immature stretch marks (SG) appear as flattened areas on the skin with a pink-red hue. They may be slightly raised and sometimes itchy. As time passes, these marks can lengthen and darken to a purple color. Eventually, they fade to a white, flat, and depressed appearance. In terms of histology, early-stage stretch marks are known as striae rubra (pink or red), while older marks, which undergo atrophic changes, are called striae alba (white).

A detailed examination of stretch marks has identified four distinct types: striae alba, striae rubra, striae caerulea (blue), and striae nigra (black). The colors of these stretch marks are influenced by the biology of melanocytes, the skin cells responsible for pigment. Recent findings suggest that stretch marks are linked to a loss of fibrillin, a protein important for skin elasticity. This loss helps explain why treatments like retinoic acid, which aims to replace fibrillin, may improve the appearance of stretch marks.

RISK FACTORS:

The most common risk factors for stretch marks (SG) include being younger, having a family history of them, and having higher pre-pregnancy and delivery

weights, as well as higher birth weight. While most studies have found a strong link between these factors and stretch marks, one study by Findik et al. did not confirm that pre-pregnancy weight or maternal age were significant risk factors. Interestingly, many studies showed a connection between having stretch marks on the breasts, hips, and thighs and the development of new stretch marks. However, one study involving 299 Caucasian women found that while stretch marks on the breasts increased the risk, those on the thighs seemed to reduce it. This highlights the importance of considering other influencing factors.

Additionally, factors like increased alcohol consumption, lower water intake, lower vitamin C levels in the blood, and expecting a male baby were also noted to be more common in women who developed stretch marks, according to some studies. Although there's speculation that diabetes and high blood sugar levels might contribute to stretch marks, the studies reviewed here did not find a significant link with diabetes or glycosylated hemoglobin levels.

Overall, the studies have limitations related to their design, size, and the specific populations they examined.

Maternal Factors Prior to Pregnancy:

1. Family History of Stretch Marks: If your relatives have had stretch marks, you may be more likely to develop them.
2. Personal History of Stretch Marks: If you've had stretch marks on your breasts or thighs before pregnancy, you might be at higher risk during pregnancy.

3. Young Age: Younger women are more prone to developing stretch marks.
4. Baseline Weight: Your weight before pregnancy can influence the likelihood of getting stretch marks.
5. Body Mass Index (BMI) Over 26: A higher BMI before pregnancy is associated with an increased risk of stretch marks.
6. Alcohol Intake Consuming alcohol prior to pregnancy may increase the risk.
7. Light Skin Colour: Individuals with lighter skin may have a higher risk of developing stretch marks.
8. Race: Depending on the study, both non-white and white individuals have been linked to a greater risk of stretch marks.

Maternal Factors During Pregnancy:

1. Increased Weight Gain: Gaining more weight during pregnancy can lead to a higher chance of developing stretch marks.
2. Higher BMI at Delivery: If your BMI is higher at the end of your pregnancy, you're more likely to get stretch marks.
3. Increased Abdominal and Hip Girth: More significant increases in belly and hip measurements may raise the risk.
4. Low Serum Vitamin C Levels: Not having enough vitamin C in your blood could contribute to stretch mark formation.
5. Low Serum Relaxin Levels: Low levels of relaxin, a hormone that helps with tissue elasticity, may increase risk.

6. Low Water Intake: Not drinking enough water during pregnancy can impact skin elasticity.

Neonatal Factors:

1. Increased Gestational Age at Delivery: Longer pregnancies may be associated with a higher risk of stretch marks.
2. Higher Birth Weight: Babies who weigh more at birth may increase the likelihood of stretch marks for the mother.
3. Increased Height and Head Circumference: Larger babies in terms of height and head size may also be linked to higher stretch mark risk.

These factors emphasize the importance of awareness and management before and during pregnancy to potentially reduce the risk of developing stretch marks.

PREVENTION:

Preventative treatments for stretch marks (SG) have shown mixed results. Among these, creams containing Centella asiatica extract, particularly Trofolastin cream, have the most supportive data for reducing or preventing stretch marks. On the other hand, using almond oil, olive oil, or cocoa butter alone hasn't been effective in significantly lowering the occurrence of stretch marks compared to a placebo. Some studies did suggest that daily massage with olive oil or almond oil might reduce the chances of developing stretch marks, but this effect could be largely due to the benefits of the massage itself.

Two proprietary creams, Alphastrria cream and Verum cream, which contain hyaluronic acid along with various

vitamins and fatty acids, have been shown to significantly reduce the incidence of stretch marks in studies. Hyaluronic acid is believed to enhance skin resistance to stretching and support the production of collagen by stimulating fibroblast activity, which may help prevent atrophy.

Lifestyle modifications:

There's limited evidence supporting the role of diet and exercise in preventing stretch marks (SG). While a higher body mass index (BMI) and weight gain during pregnancy may be linked to the development of stretch marks, it's unclear if a healthy diet and regular exercise can effectively prevent them. Some healthcare providers recommend stretching exercises, like aerobics, as potentially beneficial, but there isn't strong data to back this up.

In a study involving 80 non-pregnant individuals, most of whom had stretch marks, a three-month weight loss program didn't lead to any improvement in the severity of stretch marks, regardless of whether participants followed a diet alone, combined it with aerobic exercise, or added resistance training. This suggests that lifestyle changes may not have a significant impact on preventing or reducing stretch marks.

Common diseases during pregnancy:

Pregnant women can experience a range of skin issues, including some that are specific to pregnancy. One common problem is itching, which affects about 20% of pregnant women. This itching is often linked to known conditions like hives, eczema, drug allergies, or infections like scabies.

However, some women experience severe itching without any visible skin issues, a condition known as pregnancy itching. This typically starts in the third trimester and is mostly felt on the abdomen, although it can spread to other areas. The cause is usually related to a liver issue that affects bile secretion, known as cholestasis. Fortunately, this type of itching usually goes away after delivery but can return in future pregnancies or when using birth control pills. While it can be uncomfortable, it generally does not impact the pregnancy or the health of the baby, though women with this condition may have a higher likelihood

REVIEW OF LITERATURE:

1.Active Ingredients in Anti-Stretch Marks Gels:

a. Retinoids: Retinoids, such as tretinoin and retinol, have been widely investigated for their role in collagen synthesis, skin cell turnover, and wound healing. Research suggests that retinoids can improve the appearance of stretch marks by stimulating collagen production and reducing the breakdown of existing collagen fibers.

b. Peptides: Peptides, including palmitoyl oligopeptide and palmitoyl tetrapeptide-7, have shown promise in stimulating collagen synthesis and promoting tissue repair. These ingredients are believed to enhance the skin's elasticity and firmness, thus reducing the appearance of stretch marks

c. Vitamin E: As a potent antioxidant, vitamin E has been investigated for its potential in improving skin health.

2. Mechanisms of Action:

- a. Collagen synthesis and remodeling: Many anti-stretch marks gels aim to stimulate collagen synthesis and promote remodeling of the extracellular matrix. By enhancing collagen production, these gels may help strengthen the skin structure and improve the appearance of stretch marks.
- b. Moisture retention and hydration: Maintaining optimal skin hydration is crucial for its elasticity and overall health. Anti-stretch marks gels containing hyaluronic acid and other hydrating agents aim to replenish moisture levels, potentially improving skin texture and minimizing the visibility of stretch marks.
- c. Anti-inflammatory effects: Some active ingredients in antistretch marks gels possess anti-inflammatory properties, which may contribute to reducing redness and inflammation associated with stretch marks.

3. Clinical Studies and Evidence:

- a. Clinical trials: Several clinical studies have evaluated the efficacy of anti-stretch marks gels. While some trials reported positive outcomes, it is important to note that many studies have limitations such as small sample sizes, lack of control groups, and subjective assessment methods.

RATIONAL OF THE STUDY:

Herbal Ingredients:

- a. Plant extracts: Herbal anti-stretch gels often contain plant-derived ingredients such as Centella asiatica, Aloe vera, Gotu kola, and Calendula officinalis. These plants are known for their potential skin-regenerative, anti-inflammatory, and antioxidant properties, which may

contribute to improving the appearance of stretch marks.

- b. Phytochemicals: Many herbal extracts contain phytochemicals such as flavonoids, tannins, and polyphenols, which possess diverse biological activities. These compounds may influence collagen synthesis, promote wound healing, and modulate inflammatory responses, potentially impacting the development and visibility of stretch marks.

Mechanisms of Action:

- a. Collagen production and remodeling: Herbal ingredients in the anti-stretch gel may stimulate collagen synthesis and support the remodeling of the extracellular matrix. Enhanced collagen production can improve the elasticity and strength of the skin, reducing the appearance of stretch marks.

- b. Antioxidant and anti-inflammatory effects: Phytochemicals present in herbal extracts may exhibit antioxidant and antiinflammatory activities, protecting the skin from oxidative stress and mitigating inflammation associated with stretch marks. This could potentially lead to a reduction in redness and inflammation.

- c. Moisture retention and hydration: Certain herbal ingredients are known for their hydrating and moisturizing properties. By enhancing the skin's moisture retention, the gel may improve skin texture and minimize the visibility of stretch marks.

Efficacy and Safety Assessment :

- a. Clinical evaluation: The study will involve a randomized controlled trial to

assess the efficacy of the herbal anti-stretch gel. Participants with different types of stretch marks will be assigned to treatment and control groups. Objective measures, such as changes in the appearance, texture, and color of stretch marks, will be assessed using validated assessment tools.

b. Safety profile: The study will also focus on evaluating the safety profile of the herbal gel. Adverse events, such as skin irritation, allergic reactions, or systemic side effects, will be closely monitored throughout the study duration. Skin compatibility tests will be conducted to assess the potential for sensitization or irritation.

PLAN OF WORK:

- 1) Literature review
- 2) Selection of natural agent and chemical
- 3) Formulation of Poly-herbal anti stretch marks gel.
- 4) Result & Discussion
- 5) Conclusion
- 6) References

DRUG PROFILE:

Centella asiatica :

Morphological features:

asiatica (L.) is a low-growing, slightly fragrant perennial herb that can reach a height of about Centella 15 cm (6 inches). Its stems are smooth and have grooves, and they can root at the points where they touch the ground. This plant grows well in shady, damp areas, such as paddy fields

and along riverbanks, often forming a lush green carpet. While it can adapt to different soil types, it thrives best in sandy loam soil, which contains around 60% sand, rather than in clayey soil.

Leaves:

The leaves of *Centella asiatica* are fleshy and edible, with a yellowish-green color. They are thin and arranged alternately on long stalks. The leaves have unique shapes that can be kidney-shaped, round, or oval, and they feature seven noticeable veins. Typically, each stem node has 1 to 3 leaves, which are 2 to 6 cm long and 1.5 to 5 cm wide. The base of the leaves wraps around the stem, and the edges are slightly scalloped. Both sides of the leaves are smooth to the touch.

Stem :

The stem of *Centella asiatica* is smooth and has pink stripes, and it can root at the points where it touches the ground.

Flower:

The flowers of *Centella asiatica* are pink and white, growing in clusters called umbels. Each umbel typically has 3 to 4 flowers that can be white, purple, or pink. The flowering season lasts from April to June.

Fruits:

The fruits of *Centella asiatica* are oblong and dull brown in color, with a hard, thick, and woody outer layer. They grow to about 2 inches long and have a rounded shape with a strong outer shell. The seeds inside have a hanging embryo and are also flattened on the sides. These fruits are produced throughout the growing season.

Coconut (CocosNusifera): Coconut oil, derived from Cocos nucifera, is recognized as an effective healing agent for wounds. When applied to the skin, it can help reduce eczema symptoms in children more effectively than mineral oil. For premature infants, using coconut oil on their skin may enhance body temperature regulation, breathing, skin health, and overall growth. In addition to its healing properties, virgin coconut oil is an excellent option for skincare. It can serve as a base for body scrubs and can even be used to make lip balm and other cosmetic products.

Coconut oil is great for all skin types and is highly versatile. It has antioxidant, antimicrobial, and anti-inflammatory properties. Virgin coconut oil is especially nourishing because it's rich in nutrients and provides excellent moisture to the skin. It forms a protective barrier that prevents water from escaping, ensuring long-lasting hydration. Additionally, the fatty acids in coconut oil penetrate the skin and help repair it. When applied topically, it can improve your skin's barrier function and offer some protection against UV rays. Dandruff and hair greying can be caused by several factors, including environmental changes, stress, hormonal shifts, and infections. May help in weight loss: Virgin coconut oil is gaining popularity as a helpful oil for weight loss. It can aid in burning fat, particularly around the abdomen. The fatty acids in coconut oil may also help reduce appetite, leading to less overall food intake. Instead of being stored as fat, the oil is converted into energy by the body. Coconut oil has antifungal properties that

can help treat yeast infections, also known as candidiasis. It contains lauric acid and monolaurin, which work by changing the structure of microbial cell walls, making it harder for the infection to thrive. The high levels of lauric acid in extra virgin coconut oil are beneficial for heart health. They can help lower overall cholesterol while increasing good cholesterol (HDL) in the body. Although coconut oil contains saturated fats, these fats are known to raise HDL cholesterol levels, which is good for cardiovascular health.

Other health benefits of coconut oil:

1. Aids in Prevention of Heart Disease and High Blood Pressure
2. Treats UTI and Kidney Infection and Protects the Liver
3. Reduces Inflammation and Arthritis
4. Cancer Prevention and Treatment
5. Immune System Boost (Antibacterial, Antifungal and Antiviral)
6. Supports Memory and Brain Function
7. Improves Energy and Endurance
8. Aids Digestion and Reduces Stomach Ulcers and Ulcerative Colitis
9. May Help Reduce Symptoms of Gallbladder Disease and Pancreatitis
10. Can Improve Skin Issues (Burns, Eczema, Dandruff, Dermatitis and Psoriasis)
11. Helps Prevent Gum Disease and Tooth Decay
12. Support Bone Health
13. Helps with Type II Diabetes
14. Coconut Oil for Weight loss
15. Coconut Oil for Anti-Aging

Almond Oil:

Almond oil is extracted since ancient times.

Almond trees (*Prunus amygdalus dulcis*) originally come from Western Asia, especially Iran and nearby countries. Today, they are widely grown in various regions around the world. Because they are hardy and can thrive in dry, arid climates, almond trees have become the primary nut tree in Mediterranean areas. Oils are known for their moisturizing properties, and massaging the skin can help increase blood flow. However, it's not clear how combining massage with oils might prevent or reduce the severity of stretch marks (SG). Bitter almond oil has been used for this purpose because it is considered safe for both mothers and babies during pregnancy.

In a nonrandomized study with 141 women who had no history of stretch marks, researchers divided the participants into three groups. The first group applied bitter almond oil with a 15-minute massage every other day from weeks 19 to 32 of pregnancy, continuing with daily applications until delivery. The second group used the oil in the same way but without the massage, while the third group applied nothing at all.

The results showed that the first group, which combined oil with massage, had significantly fewer cases of abdominal stretch marks (16 out of 47) compared to the second group (31 out of 48) and the control group (33 out of 46). Additionally, for those who did develop stretch marks, the lesions were less severe in the oil plus massage group.

Since bitter almond oil alone did not show effectiveness and the effects of massage alone were not studied, more research is needed to determine which component is more beneficial for preventing stretch marks. Other studies have suggested that using massage along with emollients or creams may also help prevent stretch marks.

Almond Oil to Eliminate Stretch Marks:

During periods of rapid growth, like puberty or pregnancy, the skin can stretch quickly, which may cause the collagen and elastin fibers to break. As the skin heals, stretch marks can form. Research suggests that almond oil might help prevent stretch marks in pregnant individuals and relieve the itching that can occur as the skin heals. In one study, participants who applied almond oil to their skin daily were less likely to develop stretch marks.

Aloe Vera:

The Aloe vera plant has been valued for centuries for its health benefits, medicinal uses, and skincare properties. The name "Aloe vera" comes from the Arabic word "Alloeh," meaning "shining bitter substance," and "vera," which means "true" in Latin. Over 2000 years ago, Greek scientists regarded Aloe vera as a universal remedy for various ailments. Aloe vera has been used for medicinal purposes for thousands of years in various cultures, including those in Greece, Egypt, India, Mexico, Japan, and China. Egyptian queens like Nefertiti and Cleopatra incorporated it into their beauty routines. Both Alexander the Great and Christopher Columbus used it to treat wounds in soldiers.

By the early 1800s, Aloe vera was commonly used as a laxative in the United States. However, a significant development occurred in the mid-1930s when it was successfully used to treat chronic and severe radiation skin damage. The exact natural habitat of Aloe vera is unclear, as it has been widely cultivated around the world, although it is believed to have originated in Africa.

Anti-inflammatory action:

Aloe vera works by blocking the cyclooxygenase pathway, which helps reduce the production of prostaglandin E2 from arachidonic acid, a compound involved in inflammation. Recently, a new anti-inflammatory substance called C-glucosylchromone has been discovered in the gel extracts of Aloe vera.

Effects on the immune system:

Alprogen works by preventing calcium from entering mast cells, which helps stop the release of histamine and leukotrienes—substances that contribute to allergic reactions—from these cells. In studies on mice with implanted sarcoma cells, acemannan was found to boost the production and release of histamine and leukotrienes from mast cells. It also stimulated the production of interleukin-1 (IL-1) and tumor necrosis factor from macrophages, which triggered an immune response that led to the destruction and shrinkage of the cancerous cells. Additionally, certain small molecular-weight compounds can inhibit the release of harmful reactive oxygen free radicals

from activated neutrophils, a type of white blood cell.

Anti-inflammatory action:

Alprogen works by blocking calcium from entering mast cells, which helps prevent the release of histamine and leukotrienes that are triggered by allergens. In research involving mice with implanted cancer cells, acemannan (a substance derived from aloe vera) was found to boost the production of interleukin-1 (IL-1) and tumor necrosis factor from macrophages. These molecules play a key role in activating the immune system, leading to the destruction and shrinkage of cancer cells.

Additionally, some low molecular-weight compounds can inhibit the release of reactive oxygen free radicals from activated neutrophils (a type of white blood cell), which helps to reduce inflammation and potential tissue damage. Overall, these findings highlight how certain compounds can modulate immune responses and potentially aid in treating conditions related to inflammation and cancer.

Antiviral and antitumor activity:

The actions described can result from two types of effects: direct and indirect. The indirect effects involve the stimulation of the immune system, while the direct effects come from compounds called anthraquinones. For instance, a specific anthraquinone called aloin has been found to inactivate various enveloped viruses, including herpes simplex, varicella zoster, and influenza.

Recent studies have shown that a certain polysaccharide from aloe can prevent a harmful compound called benzopyrene from binding to liver cells in rats. This is important because it stops the formation of DNA adducts, which can potentially lead to cancer. Additionally, aloe has been linked to increased production of a protective enzyme (glutathione S-transferase) and a decrease in tumor growth triggered by another compound, phorbol myristate acetate. These findings suggest that aloe vera gel might have potential benefits in cancer prevention.

Moisturizing and anti-aging effect:

Mucopolysaccharides help keep moisture in the skin, making it feel hydrated. Aloe vera boosts the production of collagen and elastin, which are proteins that improve skin elasticity and reduce wrinkles. It also helps bind together the outer layer of skin cells, keeping them smooth and soft. Additionally, amino acids help soften tough skin, while zinc works as an astringent to tighten pores. Overall, these ingredients contribute to healthier, more youthful-looking skin.

Antiseptic effect:

Aloe vera has six natural antiseptic agents: Lupeol, salicylic acid, urea nitrogen, cinnamic acid, phenols, and sulfur. These compounds help fight off fungi, bacteria, and viruses. While aloe vera is generally safe for most people, some may experience side effects, such as skin irritation or allergic reactions. It's always a good idea to do a patch test before using it widely, especially if you have sensitive skin.

Topical:

Aloe vera can sometimes cause redness, burning, or a stinging feeling, especially in people with sensitive skin. In rare cases, it might lead to a more widespread skin reaction called dermatitis. Allergic reactions are often linked to compounds like aloin and barbaloin found in aloe. To be safe, it's best to apply it to a small area first to check for any reactions before using it more widely.

Treatment / Management:

The goal of treating red stretch marks (striae rubrae) is to decrease redness, swelling, and irritation, while for white stretch marks (striae albae), the focus is on boosting collagen and elastic fiber production, improving hydration, and reducing inflammation.

Topical treatments are often suggested to help prevent and treat stretch marks, but there's limited evidence showing they actually work. Many clinical trials on this topic have been small and of low quality, making it hard to draw strong conclusions about their effectiveness. Many pregnant women use emollients and over-the-counter products to try to prevent or reduce stretch marks, often spending a lot of time and money, even though it's unclear how effective these products really are.

Silicone gels are recommended for treating atrophic scars and can also be used for stretch marks, but the published research on their effectiveness is hard to interpret.

Tretinoin cream has shown some promise in improving red stretch marks when compared to a placebo over six months, but it can cause irritation, redness, and

peeling. It's important to note that it should not be used during pregnancy due to safety concerns. Chemical peels using different acids have also been tried for stretch marks, but their effectiveness is still uncertain. Physical treatments are also advocated but also have little evidence to support their use. Massage is a key part of topical therapy and is also used to manage scars. Exposure to broadband UV light can temporarily restore pigmentation in white stretch marks (striae alba), but this effect usually fades within a few months.

Light and laser treatments can improve the appearance of stretch marks, although it's not clear which methods are most effective or the best stage to use them. For red stretch marks (striae rubrae), certain lasers, like pulse dye lasers, can help reduce redness and swelling. On the other hand, fractional lasers, such as Erbium-YAG, stimulate the production of collagen and elastin, which may help restore color in white stretch marks. Both light and laser therapies can cause temporary redness and swelling and are generally not recommended for darker skin types due to the risk of complications like post

inflammatory hyperpigmentation (dark spots) or hypopigmentation (light spots). Non-ablative lasers are considered safer than ablative ones.

Anetoderma Radiofrequency devices use high-frequency electric currents to generate heat in the skin, which helps tighten the dermis and can improve wrinkles and cellulite. This treatment encourages the body to produce new collagen and elastin, which could enhance

the appearance of stretch marks. Some studies have shown that patients tolerate this treatment well and are satisfied with the results. Recently, there have been advancements in delivering radiofrequency energy deeper into the skin (up to 3.5 mm) using a multiple-needle approach.

Differential Diagnosis:

- Anetoderma
- Cutis Laxa
- Linear Focal Elastosis
- Mid-Dermal Elastosis
- Pseudoxanthoma Elasticum
- Striae from Topical Steroidal Abuse

CONCLUSION:

IN conclusion, using Gotu Kola Extract (Centella asiatica) Gel can help lessen the lines from stretch marks and skin pigmentation, boost skin hydration, and improve overall skin texture. It's a great option for enhancing the look and feel of your skin!

The biological effects of Centella asiatica are largely due to key compounds like asiatic acid, madecassoside, and brahmic acid. These compounds are believed to help protect the nervous system, mainly by reducing oxidative stress. Plants, including Centella asiatica, have long been recognized for their medicinal properties and there's growing interest in researching their benefits.

Centella asiatica has been traditionally used to treat various conditions, such as epilepsy, aging, skin issues, and diabetes. It plays an important role in Ayurvedic medicine. Its healing properties include promoting the growth of fibroblasts (cells that help heal wounds), boosting collagen production, and improving skin strength. It can also help reduce inflammation, which is beneficial for healing scars and minor injuries.

Research shows that using Centella asiatica can help reduce stretch marks and improve wound healing by increasing blood vessel formation and reducing inflammation. Additionally, combining Centella asiatica extract with oils like almond or coconut oil, or with aloe vera gel, can further prevent and lessen the severity of stretch marks.

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