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A Review of Anti- Inflammatory Phytoconstituent Use in Herbal Cosmeceuticals for The Treatment of Atopic Dermatitis

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ABSTRACT:

Eczema, another name for atopic dermatitis (AD), is a non-contagious inflammatory skin condition. Atopic dermatitis (AD) is a long-term inflammatory skin condition that typically affects the hands, legs, neck, and face. It is usually a skin condition that affects the skin of infants, kids, and adults. Additionally, the symptoms include severe itching and red skin or spat. The duration of atopic dermatitis (AD) is prolonged. An example of a type 1 IIG E-mediated hypersensitivity reaction is atopic dermatitis (also known as asthma rhinitis and dermatitis). Cosmetics with bioactive elements that support their medical benefits are known as cosmetics. Numerous herbal remedies are effective in treating arrange of dermatological conditions. Acne, atopic dermatitis, and dry skin. Atopic dermatitis can be treated using a variety of herbal remedies, some Aloe vera, coconut oil, honey, and licorice root are examples of herbal medicines. In conclusion, we know that natural herbal medication or treatment exhibits exceptional clinical efficacy for the treatment of AD in allergy patients, pregnant women, and other groups, whether it is used alone or in conjunction with other herbal therapies.

Keyword: Skin, herbal remedies, dermatological infection, phytochemicals

INTRODUCTION:

Atopic dermatitis, sometimes referred to as "atopic," is a chronic condition that primarily causes skin irritation, redness, and inflammation. It mostly causes skin that is itchy, red, swollen, and cracked. The impacted areas may also release clear fluent. In situations of early onset and severe atopic dermatitis, there is a greater chance that food allergies, allergic rhinitis, and asthma will coexist.[1]Atopic dermatitis (AD) is an inflammatory skin disease characterized by a chronic, recurrent history and persistent itching symptoms.[2] Numerous studies have established the pathophysiological significance of IL-4 release for acute inflammation and, specifically, for mechanisms of allergen-specific immune response in AD. For example, it has been demonstrated that certain T cells are resistant to household dust. In AD, dust mites release a large quantity of IL- 4.[3]Atopic eczema, one of the most common skin disorders, affecting up to 20% of children and 1-3 percent of adults globally.[4] Human skin changes in several ways when exposed to sunlight, including the physiology and appearance of skin layers associated with wrinkles and skin aging. Therefore, when the skin barrier function is compromised, changes in the stratum corneum's integrity occur before a rise in transepidermal water loss and a fall in skin moisture.[6].

Pathophysiology of Atopic Dermatitis

People who have a family history of eczema are far more likely to develop the condition themselves.

One form of chronic inflammatory skin illness that is becoming more and more common and has socioeconomic significance is atopic dermatitis (AD). Several sets of diagnostic criteria have been created, and the diagnosis is made based on clinical grounds. About 10 to 30 percent of all cases have intrinsic AD, which is clearly unrelated to classical atopic diathesis. The majority of all instances of A Dare linked to sensitization to environmental allergens and elevated serum IgE (extrinsic AD).[7]

It is usually a prevalent chronic skin inflammatory condition that is typified by recurring eczema caused by an insatiable itching sensation that results in a reduced standard of living. The disease's onset, progression, and chronicity are influenced by the intricate interactions between pruritus, immunological disturbance, and a compromised skin barrier.

Skin inflammation is caused by abnormalities infilaggrin, other stratum corneum components, and tight junctions. By downregulating numerous vital barrier-maintaining molecules, inflammation can further impair barrier function. Central sensitization weakens the integrity of the skin and encourages inflammation, while hyperinnervation of the epidermis maybe the cause of pruritus in AD. A thorough understanding of the mechanisms influencing AD presentation and disease progression impairment is essential to optimizing this patient classification.[8].

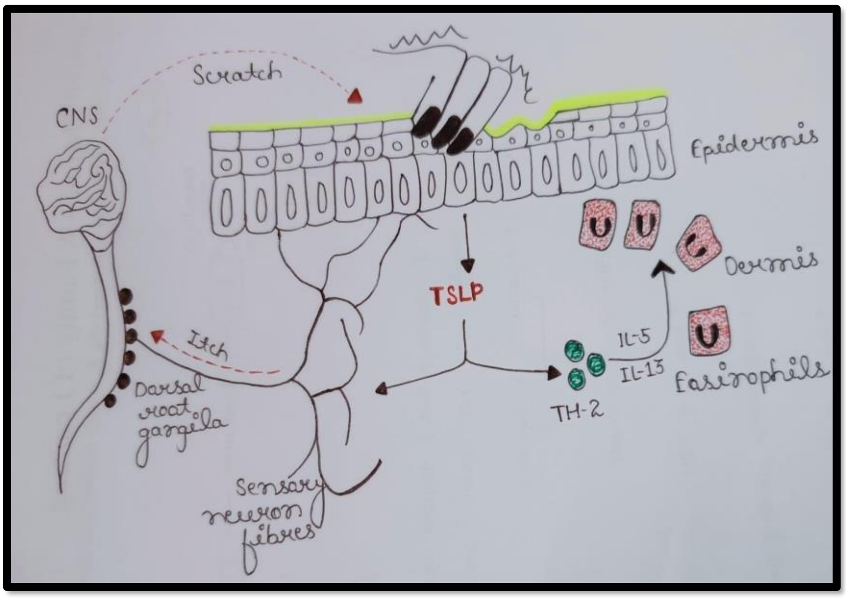

Fig No:1 Pathophysiology of Atopic Dermatitis

CURCUMA LONGA:

The anti-inflammatory effects of curcumin have been shown in numerous clinical investigations. Their findings suggest that curcumin may be helpful in lowering rheumatoid arthritis (RA) inflammation and its clinical manifestations, such as morning stiffness and joint swelling, when compared to phenylbutazone, which is used as a positive control.[7] Curcumin's effectiveness in treating individuals with stomach ulcers and/or dyspepsia was shown in another research trial.

Participants in this trial experienced remission after an average of 12weeks.[8] Urcumin has been shown to be effective in treating irritable bowel syndrome (IBS) [8] and to reduce delayed graft rejection (DGR) after kidney transplant surgery.[9] It has also been shown to help keep ulcerative colitis from getting worse.[10].

Fig No:2CurcumaLonga

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OLEA EUROPAEA:

Olive oil may not be recommended for people with atopic dermatitis (eczema) because it can weaken the skin's protective layer and exacerbate eczema. Damage to the skin barrier: Olive oil has the potential to seriously harm the skin barrier, which could aggravate or worsen atopic dermatitis. Oral olive oil has sped up the healing process of wounds and reduced hospital stays for patients with deep, second-degree burns. [15] Also, EVOO-enriched meal consumption has been shown to reduce pro-inflammatory cytokines, the disease activity index, and tumor incidence of colon cancer related with ulcerative colitis in mice as compared to SFO-fed mice.

Oleic acid: Olive oil contains oleic acid, which may make skin inflammation worse. Dry skin: Studies have shown that using olive oil on dry skin is not recommended.

FigNo:3 Oleo Europaea

ALOEVERA:

Aloe barbadensis Mill. syn. A. vera (L.) Burm. f. is a succulent plant with bright yellow tubular blossoms and thick, fleshy, pea-green leaves that are 30 to 50 cm long with jagged, spiky edges. When young, the leaves are mottled with white.[17] One kind of medical plant that is also being marketed as a natural treatment for heartburn, diabetes, and inflammatory bowel syndrome (IBS) is aloe vera. Glycoproteins, sterols (�-sitosterol, luteol), enzymes (bradykinase), and carbohydrates (mannose-6-phosphate, acemannan, acetylated-1,4polymerofmannose)aretheactiveingredientsinfreshAloeveraleaves.Thegelis made from fresh leaves and doesn't contain any artificial coloring additives.[18, 19, 20].

Fig No:4 Aloe Vera

METHI:

Grown in Poland, fenugreek, or Trigonella foenum-graecum L., is indigenous to China, India, and eastern Africa. It features complex, triple leaves and unusually shaped, rhombic seeds.[21]Mucilage polysaccharides (galactomannan) and steroidal saponins (containing aglycones: diosgenin, yamogenin, and tigogenin) are found in fenugreek seeds [22].Based onlyon its long history in traditional medicine, the product is a herbal cure with traditional therapeutic characteristics meant to be used in specific indications.[23]A part of the methanolic extract of Trigonella foenum-graecum seed containing glycoside and steroid derivatives showed potent anti- inflammatory activity in rats with carrageenan-induced paw oedema.[24]In traditional medicine, fenugreekseedsareadministeredtopicallytotreatlocalizedskininflammations,ulcers,dermatitis, and furunculosis. It can be added to a hot bath or used locally as a poultice.[25] Because of Children and teenagers under the age of eighteen are not recommended to use this product due to insufficient safety proof.[26].

Fig No :5 Methi

HONEY:

Honey is one food component whose medicinal properties have long been known. It has been utilized in many different communities for thousands of years and is still widely used today. In both in vitro and in vivo situations, honey has been shown to have broad-spectrum antibacterial properties and to promote wound healing.[27,28,29]. In particular, it has been shown that manuka honey (MH), primarily derived from the New Zealand shrub Leptospermum scoparium, suppresses the growth of cells in Staphylococcus aureus [30], the bacterium most commonly associated with wound infections. Subsequent investigation showed that it prevents the toll-like receptor (TLR)1/TLR2 pathway from inducing cyclooxygenase, nitric oxide synthase, leukocyte infiltration, and inflammation[31,32]. The Amaculopapular rash and intermittent boutsofinten se itching are hallmarks of atopic dermatitis (AD), a common chronic atopic inflammatory skin disease [33]. It is usually the first symptom of a number of allergic diseases, including allergic rhinitis and asthma, in a condition called the atopic march [34]. In children, it occurs 10–20% of the time, while in adults, it occurs 1-3 times. .

Fig No:6 Honey

SUNFLOWER;

Sunflower seed oil comes from the seeds of Helianthus annus. It has been proposed that people with tar burns can remove the heated tar using sunflower oil.[35].The concentration of oleic and linoleic acids in sunflower oil can be compared to that of olive oil. Because of its beneficial use of linoleic acid, this is the only characteristic that qualifies sunflower oil as a good ingredient for the skin product. [36]. As an agonist at the peroxisome proliferator activated receptor alpha [PPAR- Alpha], linoleic acid primarily promotes lipid production and keratinocyte proliferation [37]. Consequently, skin barrier healing is improved. However, natural oils like those from sunflower, sesame, or safflower seeds have been recommended as a viable choice for a number of topical skin conditions, and they are employed to support homeostasis of the skin barrier [38]. Sunflower seed oil comes from the seeds of Helianthus annus. It has been proposed that people with tar burns can remove the heated tar using sunflower oil.[39] Oleic and linoleic acids are the main acids present in sunflower oil. Sunflower seed oil contains a significantly higher proportion of linoleic acid than olive oil. Sunflower oil is an excellent ingredient for skin care products because it includes linoleic acid, which has numerous health advantages [40]. Previous studies by Agero et al. also looked at the effectiveness of coconut oil used topically in reducing the severity of xerosis. It has been demonstrated that sunflower seed oil maintains the integrity of the SC and hydrates the adult skin without causing erythema [41]. Consequently, skin barrier healing is improved. It has been proposed that natural oils like safflower, sesame, or sunflower seed oil are suitable choices for supporting skin barrier homeostasis [42].

Fig No:7 Sunflower Seed

COCONUTOIL:

Coconut oilis increasingly recognized for its potential benefits in managing atopic dermatitis (AD). Improvement of Skin Barrier and Hydration:[44] Research shows that applying coconut oil topically to patients with AD can greatly improve skin barrier function and hydration.[45] Symptom Reduction: According to certain clinical studies, coconut oil maybe just as effective as conventional treatments at lessening the intensity of AD symptoms.[46]

Here's a detailed overview: Properties

1. Moisturizing: Coconut oilis an effective emollient that helps retain moisture in the skin, reducing dryness and preventing flares.[47]

2. Anti-inflammatory: The medium-chain fatty acids, especially lauric acid, possess anti- inflammatory properties that can help alleviate symptoms.[48]

3. Antimicrobial: Coconut oil has antimicrobial effects, particularly against Staphylococcus aureus, which is commonly associated with AD and can worsen skin conditions.

Coconutoilcanbebeneficialformanagingatopicdermatitisduetoitsmoisturizingpropertiesand potential anti-inflammatory effects.[49] It helps to hydrate the skin and create a barrier to prevent moisture loss. Additionally, its antimicrobial properties may reduce the risk of skin infections, which can be a concern with atopic dermatitis. To use coconut oil, apply it directly to affected areas after bathing when the skin is still damp, as this can help lock in moisture. However, it's essential to patch test first, as some people may be sensitive to coconut oil. If symptoms persist or worsen, consulting a healthcare professional is advisable.[50].

CONCLUSION:

A review article about the use of cosmeceutical to treat atopic dermatitis usually highlights how these products can improve skin barrier function and relieve symptoms. It might emphasize how crucial it is to use cosmeceutical that include essential components like fatty acids, ceramides, and botanical extracts. The result may also emphasize the necessity of additional clinical research to determine the safety and effectiveness of cosmeceutical and to comprehend their long-term advantages in the treatment of atopic dermatitis. Overall, cosmeceutical should be used in conjunction with conventional treatments rather than in substitute of them, even though they offer a potential adjuvant therapy. The term "atopic dermatitis" usually captures the intricacy of the illness, highlighting the fact that its pathogenesis is multiple and involves immunological, environmental, and genetic components. It frequently draws attention to the significance of an all-encompassing management strategy that incorporates systemic medications, topical treatments, and lifestyle changes. Given the variation in patient reactions, the evaluation can also emphasize the necessity of individualized treatment approaches. Furthermore, in order to improve patient quality of life, the conclusion typically urges continued study to investigate novel therapy choices and get a deeper understanding of the long- term effects of current treatments.

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