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ACNE VULGARIS: NOVEL TREATMENT USING HERBS

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Abstract: Acne vulgaris is a chronically recurring, self-limiting inflammatory condition of the pilosebaceous unit.As a result of androgen-induced increased sebum production, altered keratinization, inflammation, and Propionibacterium acnes bacterial colonization of hair follicles on the face, neck, chest, and back, acne is a chronic inflammatory illness of the pilosebaceous unit. Although early colonization with P acnes and family history may play significant roles in the disease, it is still unknown exactly what causes acne and how treatment impacts the disease's development.The sebaceous follicle is the only part of the skin that is affected by acne vulgaris. It starts to happen soon after puberty and can last up to 40 to 50 years.Acne can be treated using herbs that have antibacterial, anti-inflammatory, anticomedogenic, and, in certain circumstances, hormone-balancing properties.

KEYWORDS : acne vulgaris, antibacterial, anti-inflammatory, anticomeodogenic.

INTRODUCTION:

Acne vulgaris is a long term skin disorder that occurs when hair follicles are clogged with dead skin cells and oil from the skin. It is characterized by blackheads or whiteheads, pimples, greasy skin, and potential scarring[1]. Anti acne aiming to prevent acne or to ease the symptoms of acne. A topical is a drug that is applied directly to the skin or to a specific area of the body. Scarring from acne is a typical side effect, and it lowers patient's quality of life. We will be better able to improve the outcomes for acne patients if new treatment options target the early processes involved in acne development as opposed to reducing the effects of end products[2].

Acne is a chronic inflammatory illness of the pilosebaceous unit resulting from androgen-induced increased sebum production, altered keratinisation, inflammation, and bacterial colonisation of hair follicles on the face, neck, chest, and back by Propionibacterium acnes. Although early colonization with P acnes and family history may play significant roles in the disease, it is still unknown exactly what causes acne and how treatment impacts the disease's development. Dietary factors like others have been suggested but not proved. Up to 20% of teenagers have facial scars from acne. Acne can linger into adulthood, which is bad for one's self-esteem. Although there is no perfect routine for treating acne, the majority of people can find one that reduces blemishes. There is a dearth of high-quality research on the relative efficacy of popular topical and systemic acne treatments. When used in conjunction, topical treatments including benzoyl peroxide, retinoids, and antibiotics typically enhance control of mild to moderate acne.

Four primary pathophysiological components, including hyperkeratinization of the sebaceous ducts, bacterial colonization and growth, mostly by Cutibacterium acnes, and inflammatory response, are involved in the multifactorial pathogenesis of acne.

Women with acne may benefit from treatment with combination oral contraceptives. In order to reduce antibiotic-resistant organisms, patients with more severe inflammatory acne typically require oral antibiotics in addition to topical benzoyl peroxide. The most effective treatment, oral isotretinoin, is administered early in cases of severe disease, but its usage is constrained by teratogenicity and other negative effects. The use of photodynamic treatment is constrained by expense, side effects, and accessibility. To better comprehend the natural history and

causes of acne, as well as the therapeutic comparative effectiveness and safety of the many medications already on the market, further study is required.

Although it can affect anyone at any age, acne affects roughly 85% of teenagers, and many cases persist into adulthood. Acne mostly affects the face, although it can occasionally spread to the neck, chest, and back as well as other parts of the body. 85% of patients with acne vulgaris are between the ages of 12 and 24 and nearly 50% are between the ages of 20 and 29, and it affects 9% of the world's population overall. Acne vulgaris is an inflammatory condition of the skin's pilosebaceous unit that mostly affects the face and trunk[3]. Acne vulgaris can cause physical scarring that lasts a lifetime, has a significant negative impact on quality of life, and has been associated to greater incidence of anxiety, depression, and suicidal ideation.

Despite being rare in maturity, new epidemiological statistics indicate an increasing incidence of roughly 40%, with females making up the majority[4-6] .Noninflammatory and inflammatory lesions, which mostly affect the face, neck, trunk, and back [7], are the predominant clinical symptoms of acne. Although acne is typically a benign, self-limiting disorder, in its most severe forms it can leave scars and cause skin discoloration. Sequelae have a significant impact on people's quality of life and are frequently linked to the emergence of psychiatric disorders [8–11].

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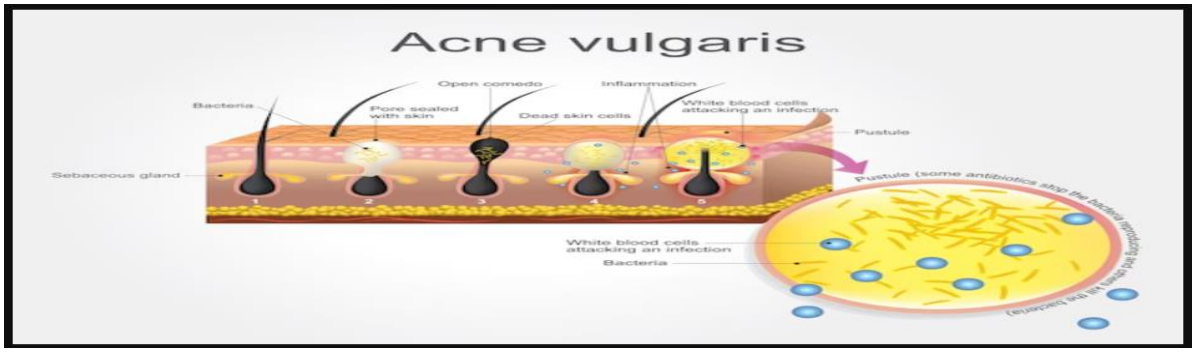

Fig 01: acne vulgaris

ACNE DEVELOPMENT: Acne begins as a point and develops into a distinct form after two to three weeks. This procedure takes place deep within your skin. On your skin, there are tiny holes called pores. In reality, these pores are hair follicles that carry incredibly fine hair. A sebaceous gland is related to each hair follicle. Sebum is an oily material that is produced by the sebaceous gland. The skin is kept soft by sebum. Via the hair follicle, this sebum gets to the skin's surface. Keratinocytes are the cells that line the hair follicle[14-18].

Today, a hormone increases in both boys and girls during puberty. The sebaceous gland is encouraged to create more sebum by this rise in testosterone. The hair follicle is filled and blocked with sebum, hair, and keratinocytes. Sebum cannot reach the skin's surface because the follicle is blocked. This indicates that cells and oil (sebum) are present in the follicle (keratinocytes). Propionibacterium acnes, also known as P. acnes, which is already present on the skin, grows in the blocked follicle when these two factors are combined.

The white blood cells assault the blocked follicle because of the bacteria there. The white blood cells attack, inflaming the skin as a result. Heat, swelling, redness, and pus are the defining features of this. The hair follicle's wall eventually breaks down, leaking all of the sebum, dead skin cells, and bacteria onto the neighboring skin . Acne results from this, and it may be minor, moderate, or severe.[19-20]

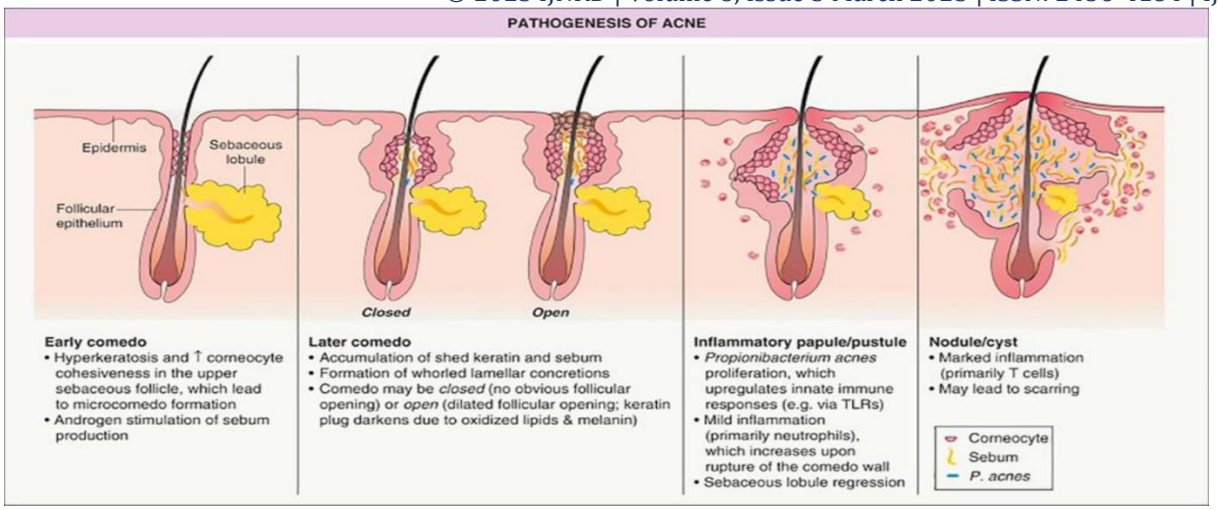

Fig 02 : Pathogenesis of acne

HERBAL THERAPY: The pharmaceutical and personal care companies continue to invest much in research and development to find effective drugs and cosmetic treatments to treat acne. The market for "cosmeceuticals" is expanding, and many herbs with a history of use in traditional cultures have entered[21]. Herbal formulations which contain several herbal extracts and have minor unwanted effects compared with contemporary medicine, are usually prescribed for moderate and severe forms of acne. As a result of their ability to detoxify the skin, several herbs are also used to treat acne.[22] Oil or extracts from plants can be used alone or in conjunction with other treatments. In comparison to antibiotics and retinoids, some herbal extracts, including those from A. dahurica, M. alternifolia, A. indica, R. coptidis, and P. quajava, have been shown to be more effective .Many herbs are described in length below for their effectiveness in treating acne.

Medicinal Plants	Family	Used Part(s)	Active Compound	Results
Aloe vera	Xanthorrhoeaceae	extracts		anti-bacterial and anti-inflammatory properties
Azadirachta indica	Meliaceae	extracts		anti-bacterial and anti-inflammatory properties
Curcuma longa	Zingiberaceae	extracts		anti-bacterial and anti-inflammatory properties
Hemidesmus indicus	Apocynaceae	extracts		anti-bacterial and anti-inflammatory properties
Terminalia chebula	Combretaceae	extracts		anti-bacterial and anti-inflammatory properties
Withania somnifera	Solanaceae	extracts		anti-bacterial and anti-inflammatory properties
Butyrospermum paradoxum	Sapotaceae	oil		anti-bacterial activity
Camellia sinensis L.	Theaceae		polyphenol, polyunsaturated fatty acid	anti-inflammatory and 5 α-reductase inhibitory activities
Commiphora mukul	Burseraceae	gugulipid, a standardized extract of the oleoresin	oleoresin	anti-bacterial activity

Table no1: clinical trial with positive effect

HERBS FOR ACNE VULGARIS TREATMENT :

NEEM : Well-liked Ayurveda herb is neem (azadirachta indica). A 2010 study found that the following chemicals are present in neem oil: antibacterial, antifungal, antiseptic ,antioxidant, anti-inflammatory[23-26] .Neem has long been used therapeutically to treat skin issues like psoriasis, eczema, and acne. Neem has antibacterial efficacy against many microorganisms, according to a 2001 study. This includes the acne-causing bacteria Staphylococcus.

TEA TREE: An herb called tea tree (Melaleuca alternifolia) is used to treat wounds and skin conditions. Its antibacterial and anti-inflammatory properties could help lessen the severity of acne lesions. A topical gel with 5 percent tea tree oil and a topical cream with 5 percent benzoyl peroxide were contrasted in a 1990 study[27-30]. The quantity of both inflamed and noninflamed acne lesions was decreased by both treatments. Tea tree oil took longer to function but had less negative side effects. Symptoms included redness, inflammation, itching, and dryness.

ALOE VERA: Ayurvedic medicines often contain aloe vera extract. Lesions of acne were considerably decreased. This Asian dermatological treatment was compatible with South Africa's therapeutic use of Aloe spp. A. vera, however, had no effect on the ROS and proinflammatory cytokines produced by P. acne[31].

CURCUMA LONGA & HEMIDESMUS INCIDUS: were included in the same ayurvedic composition to treat acne. These herbs considerably reduced the ROS generation that P. acnes caused. Its potential for treating inflammatory lesions is highlighted by the fact that their anti-inflammatory action should be stronger[32]. Because

to its modest keratolytic, anti-fungal, and bacteriostatic characteristics due to its sulphur content, the common spice poultice onion (Allium cepa) was traditionally used for acne.

LICORICE: Because of its anti-inflammatory properties, the plant licorice, also known as Glycyrrhiza glabra, was topically administered in the treatment of acne. Its antioxidant capacity was, however, modest. Moreover, the Yemeni people employed the anti-microbial and antioxidant herb Gossypium barbadense as a traditional treatment for acne because of its biologically active terpenoids[33-37].

BASIL: Because of its potent linolenic acid content and potent anti-inflammatory properties, basil or O. gratissimum has been used to treat acne both alone and in combination with A. vera gel[38].

ROSE DAMASCENE: which is primarily used as a fragrance, was discovered to significantly reduce P. acnes' ability to cause inflammation. Similar to this, acne was treated with rose oil . As a result, rose should be used as a versatile element in cosmetic goods. Because of its anti-inflammatory flavonoids, red clover, also known as Trifolium pretense, was used as a treatment for acne[39].

AUSTRALIAN EUCALYPTUS and tea tree essential oils, also known as Australian eucalyptus and tea tree, have both been widely utilized in the treatment of acne[40]. In comparison to benzoyl peroxide at the same dose, M. alternifolia oil gel was reported to successfully treat acne lesions with less negative effects. The main aroma components, terpinen-4-ol, -terpineol, and -pinene, contributed to its inhibitory effect against skin flora, including S. aureus, S. epidermidis, and P. acnes. Unfortunately, tea tree oil's terpene and limonene produced allergies in people with hypersensitive skin[41]. As a result, care should be given when choosing the dosage. Nevertheless, tea tree oil seldom causes an unfavorable reaction. As a result, it is among the most widely used and successful over-the-counter acne remedies.

An edible fruit called Punica granatum's biological activity was evaluated utilizing assays for radicals, lipid peroxidation, and superoxide[42]. Its significant anti-oxidant quality shown its potential for the creation of acne treatment solutions that have already found success in Asia. Selginella involvens was discovered to have dose-dependent effects on its ability to reduce NO generation and act as a scavenger. Moreover, this herb reduces the inflammatory response to IL in keratinocytes[43]. Its non-antibiotic, anti-microbial potential on P. acnes has also been documented, and at a concentration of less than 50 g ml 1, it was non-cytotoxic. Chinese medicinal plant root and leaf extracts have been reported to have anti-inflammatory properties. Aralia continentalis, as well as NO expression, NF-B deactivation, and COX-2 inhibition, are some of them[44-45].

CONCLUSION:

Mechanisms involving sebaceous glands, P. acnes, and ROS, herbs efficiently reduced inflammatory acne lesions. In addition to standardizing these herbs, a suitable delivery system should be created to impart their efficacies. Prior to the formulation of preparations, a dose that is optimal and effective should also be assessed in order to prevent irritation or allergy in subjects with hypersensitive skin. Their safety and effectiveness will be guaranteed by strict quality control. Also, a combination of treatments should be used because they have been shown to have synergistic effects on the etiology of acne that are more powerful than applying a single medication alone. Acne and infectious skin diseases patients are more prone to use complementary and alternative medicine, which includes medicinal plants. Research has shown that medicinal herbs have minimal unfavorable side effects and have been used for a long time. These plants offer a reliable source for developing new pharmaceuticals. In the end, herbal medicine has a lot to offer in terms of helping us more effectively handle the complex issues that acne offers.

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