

REVIEW ARTICLE

Treatment of Acne with Herbal Remedie –*Calendula officinalis*: An Overview

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ABSTRACT

Acne is a common problem that affects about 90% of teenagers. It occurs during a time of low self-esteem and high concern about appearance. There are many acne products on the market, and making an appropriate selection can be daunting. Common therapies that are used for the treatment of acne include topical, systemic, hormonal, herbal and combination therapy. Topically used agents are benzoyl peroxide, antibiotics and retinoid. Systemically used agents are antibiotics and isotretinoin. These drugs produce a number of potential side effects and development of resistance to frequently used antibiotics. This leads to treatment failure with previously used successful therapy. A variety of herbs, such as Tea tree, Aloe Vera, Neem, Tulsi, Marigold, Sea buck thorn, Turmeric etc. are used to treat acne. These are very safe and effective. This review focuses on the use of herb i.e. *Calendula officinalis* (Marigold) for the treatment of acne vulgaris that have been found to be very safe and effective.

Keywords: Acne, Anti-inflammatory, Herbs, *Calendula officinalis*.

INTRODUCTION

Acne

Acne is the common skin diseases that affects the human and mostly treated by physicians. The condition usually starts at the ages of 14 to 19 years. Acne develops earlier in females than in males, which shows the earlier onset of puberty in females and the Severity of the disease vary depending on the various factors^[2]. It is a chronic disorder of the pilosebaceous unit. Acne affects approximately 40-50 million Americans and it is estimated that nearly 85% of people have acne at some point in the course of their lifetime. It causes significant morbidity and affects patients both physically and psychologically in terms of scarring, depression, anxiety and low self esteem. The direct costs related to acne exceed \$2.2 billion annually in the U.S.^[4].

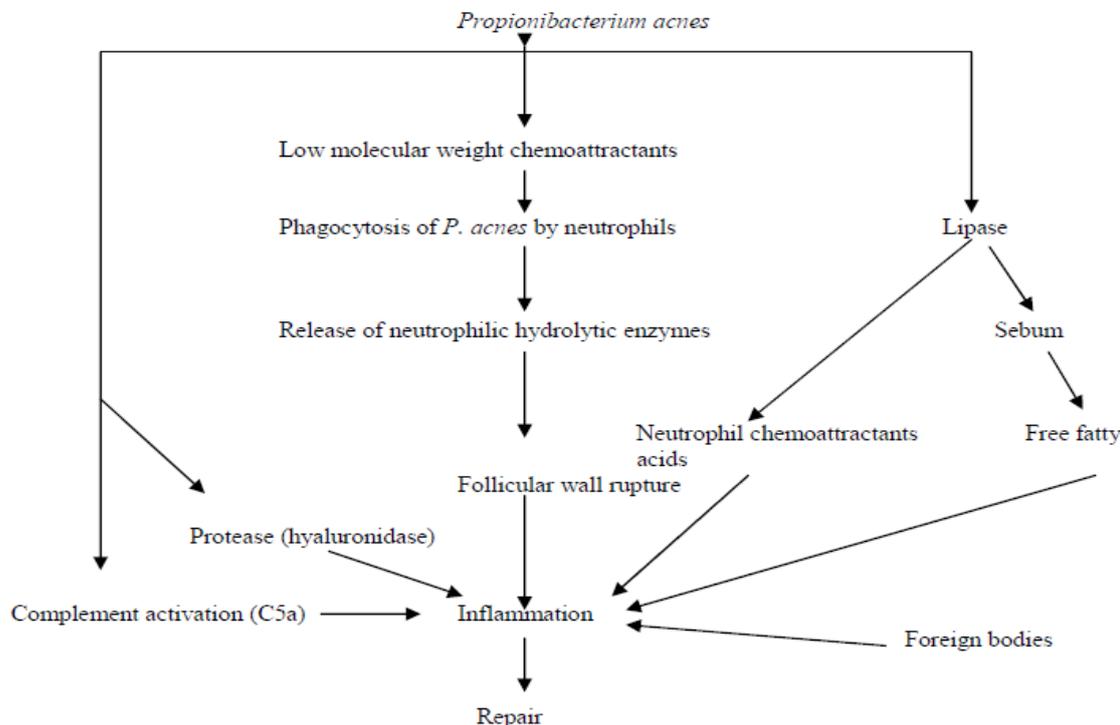
The cells of skin that line hair follicle are continuously replaced. Sebum secreted by the sebaceous glands carries dead skin cells to the surface of the skin. A change in sex hormones occurs during puberty, results in increased sebum production and the shedding of skin cells in the hair follicle. Hair follicle gets plugged due to the increased amount of sebum and cells which then

swells as more sebum is produced. The plugged follicle is called a 'comedo'. In this clogged follicles bacteria multiplies and inflammation occurs. A Comedo can be of two types- A 'closed' comedo is known as white head. The plug is under the skin. It appears as a creamy white or skin colored bump. Another type is 'open' comedo or Black head, when enough sebum builds up behind the plug to push it to the skin surface. It darkens when exposed to light due to the presence of skin pigment called melanin. Pimples or 'zits' are inflamed acne lesions and may be painful. They include small papules (red bumps) and pustules (bumps with pus) and larger, deeper nodules and cysts. These inflamed lesions develop when bacteria and oil irritate the blocked hair follicle and when blocked hair follicles burst and release bacteria, oil and irritants into surrounding skin^[1]. Bacteria that multiplies in clogged follicles i.e. *P. acne* is an member of normal flora on skin, this bacteria is responsible of release of lipase that degrades triglycerides present in sebum into free fatty acids and also releases inflammatory molecules^[19].

The main causes of acne may include hormones and genetics while it also can be occurred due to some medication especially those containing iodides, bromides, or oral or injected steroids, cosmetics, chemicals, pressure, occupation & diet as well as environmental factors which can work as catalyst^[8]. Acne typically appears on your face, neck, chest, back and shoulders, which are the

areas of your skin with the largest number of functional oil glands. Although some consider acne to be merely a cosmetic problem, it may have significant and enduring emotional and psychological effects. Acne can negatively impact mood, self-esteem, and interpersonal relationships and may lead to depression and suicidal ideation^[9].

Fig 2 Sequence of events leading to acne inflammation primarily induced by *P. acnes*^[13].



Aetiology of Acne

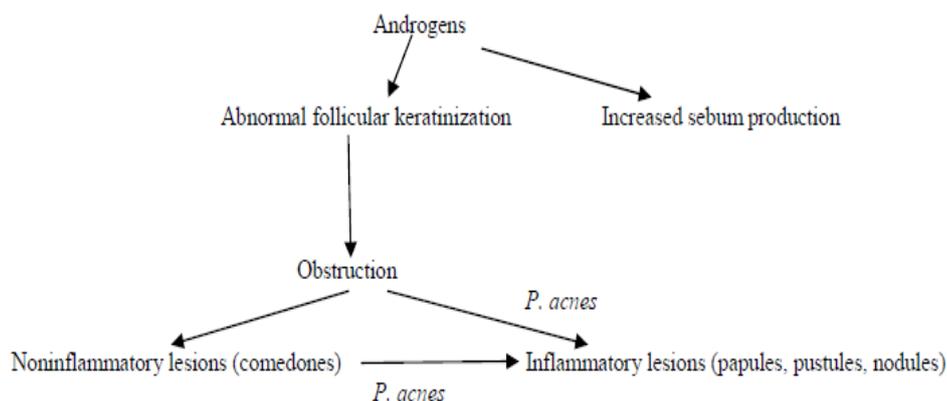
Factors promoting the development of acne are: Increased sebum production, ductal cornification, bacterial, colonization of the pilosebaceous ducts and inflammation^[17].

Mechanism in Acne treatment

Acne can be treated by using following mechanisms-

1. Correcting altered follicular keratinization.
2. Decreasing sebaceous gland activity.
3. Decreasing *P. acnes* population.
4. Producing Anti- inflammatory effect^[15]

Fig 1 basic mechanism involved in the pathogenesis of acne^[16].



Ccalendula officinalis

India is known as botanical garden of the world due to richness in natural resources. Over 6,000

plants are known to be used in folk and herbal medicines, *Calendula officinalis* is one such plant

that is used medicinally in china, Europe, US and India^[12].

Botany

Common name- Pot marigold, holligold, Garden marigold, Gold bloom.

Source- Flowers of *Calendula officinalis*, Family Compositae/Asteracea^[7]

Classification of *Calendula officinalis*

Scientific Classification Kingdom: Plantae

(Unranked): Angiosperms

(Unranked): Eudicots

(Unranked): Asterids

Order: Asterales

Family: Asteraceae

Tribe: Calenduleae

Genus: *Calendula*

Species: *officinalis*^[10]

Parts used

The flowers and the leaves are the chief parts which are of medicinal and commercial significance. The extract of flowers, essential oil from flowers is used in treatments of several ailments as skin diseases^[3]

Constituents

It contains flavonoids (Quercetin and rutin), carotenoids, essential oils, saponins, carotenes, Triterpenes, Glycosides, resins, and also contains methone, isomethone, caryophyllene, pedunculatine^[20].

Uses –

Calendula has been proved to have aromatic, anti-hemorrhagic, emmenagogue, styptic, antiseptic, and anti-inflammatory, vulnerary, spasmolytic, diaphoretic, and cholagogue activities. It may be used for gastric and duodenal ulcer, amenorrhea, dysmenorrheal, epistaxis, and, topically for crural ulcer, varicose veins, hemorrhoids, anal eczema, proctitis, lymph edema, inflamed cutaneous lesions, conjunctivitis^[11]. It is also excellent for bruises^[18]. The flower head of *Calendula officinalis* have been long used for treatment of skin ailments and to facilitate healing and reduces inflammation^[6].

Calendula Officinalis and Acne

Calendula officinalis flower extract have been proved for possessing significant anti-inflammatory activity against carrageenan and dextran-induced acute paw edema. In recent study conducted on flower extracts to find out mechanism involved in this, it was found that TNF-alpha production by macrophage culture treated with lipopolysaccharide (LPS) was inhibited by *Calendula* extract. *Calendula* also contains flavonoids, which accounts for its anti-inflammatory impact^[14].

Different hydro alcoholic extracts of marigold possesses Proven antimicrobial, antifungal and antiviral properties of against *Staphylococcus aureus* and *Streptococcus fecalis* *Prophyromonas gingivalis*, *Fusobacterium nucleatum*, *Capnocytophaga gingivalis*, *Veilonella parvula*, *Eikenella corrodens*, *Peptostreptococcus micros* and *Actinomyces odontolyticus*, *Staphylococcus aureus*, *Sarcina lutea*, *Escherichia coli*, *Klebsiella pneumonia* and *Candida monosa* on one hand, and on the other hand, the aetiology of acne. The beauty and educational center “Top Beauty” carried out an investigation with a cosmetic product containing extract of marigold on patients with acne. The results showed that after administering in 24 cases of acne at the beauty center “Top Beauty”-Sofia, very good results have been achieved and 79% of treated individuals are satisfied with its use^[5].

CONCLUSION

Acne is a chronic disease involving the pilosebaceous follicles. Sebaceous glands are found most abundantly on the face and scalp, though they are present on every part of the skin except the palms of the hands and soles of the feet. There are various synthetic drugs available in market for treatment of acne but the rapid awareness of the bad effects of modern synthetic cosmetics prompted a gradual switch over to herbal drugs. *Calendula* is a profoundly-anti-inflammatory, with both extensive folklore as well as scientific research supporting its use. *Calendula* contains terpenoids, volatile oil, glycosides and flavonoids; later one is the most important constituent responsible for anti-inflammatory activity beneficial in treatment of acne. It has been concluded from research articles that 0.04% flavonoids gives sufficient acne treatment activity.

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