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A Review On Herbal Agents For Used For Antiacne Activity

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Abstrat - Acne is a common skin disorder which is common in adolescents and adults. It is a common cutaneous inflammatory disorder of the pilosebaceous unit. It manifests primarily on the face, although it can also affect the upper arms, trunk, and back. Due to hormonal changes 99.5% of teenage boys and 83% of teenage girls are affected by acne which may continue throughout adolescence. Acne causing bacteria are Propionibacterium acne and Staphylococcus epidermidis. Herbal formulations are receiving more concentration in public because of their high-quality properties and less side effects. The idea that natural medicines are safer and have fewer negative effects than synthetic ones make them more acceptable. there have been a lot of topical and systematic treatments for Acne at use synthetic components. Because synthetic medications have a high risk of side effects and can be used in both internal and exterior therapy, Natural treatments are thought to be a safer and more effective option for treating acne.

Keywords- Herbal, Acne, Natural medicines, Pilosebaceous, Cutaneous Inflammatory.

1] Introduction to Acne

Acne vulgaris or simply known as acne is a human skin disease characterised by skin with scaly red skin (seborrheas), blackheads and whiteheads (comedones), pinheads (papule), large papule (nodules), pimples and scarring.[1] Acne affects skin having dense sebaceous follicles in areas including face, chest and back.[2] Acne may be of inflammatory or non-inflammatory forms.[3] Acne is usually caused by increase in androgens level like testosterone mainly during puberty in both male and female.[4]

1.1] Etiology of Acne: Acne develops due to blockage of follicles, hyperkeratinization and keratin plug formation and sebum (microcomedo). With increased androgen production, sebaceous glands are enlarged and sebum production is increased. The microcomedo may enlarge to form an open comedo (blackhead) or closed comedo. Comedones occur as a result of clogging of sebaceous glands with sebum, naturally occurring oil and dead skin cells[5,7] the naturally occurring commensal bacterium Propionibacterium acnes can cause inflammation and inflammatory lesions like infected pustules or nodules and papules in the dermis around the microcomedo or comedone resulting in redness, scarring or hyperpigmentation.[6,7]

Causes of acne: Acne is a multifactorial disease: genetic factors,[8] stress,[9] androgens,[10] anexcess sweating all influence its development and/or severity.[11] Corticosteroids, oral contraceptives,

iodides, bromides, lithium, and chemicals such as dioxins are known to induce acne eruptions, as are endocrine disorders such as Cushing's syndrome and polycystic ovary syndrome.[12]

1.2] Treatment of Acne - According to the European guidelines, the treatment of acne vulgaris is based on the **t**ype and severity of acne, considering the patient's comorbidities and preferences.[13,14] For mild to moderate comedogenic acne, the administration of topical agents is recommended, particularly retinoids, benzoyl peroxide, and azelaic acid.[13] Topical mono therapy treatment is usually sufficient to control the symptoms of mild acne.[15] For mild to moderate papulopustular acne, the administration of fixed combinations of benzoyl peroxide with adapalene or benzoyl peroxide with clindamycin is strongly recommended. In more severe cases, topical retinoids, namely, adapalene, can be associated with systemic antibiotics.[13] For severe papulopustular acne or moderate to severe nodular acne, treatment with oral isotretinoin mono therapy is recommended. In women, the administration of anti androgenic hormonal therapy associated with systemic antibiotics and/or topical treatments other than antibiotics can also be considered.[13,16]

2] Plants useful in Acne

1] Plants useful in Acne 2.1] Aloe vera

Synonym: Aloe, musabbar, kumari.

Biological source: Aloe is the dried juice of the leaves of *Aloe barbadensis* miller

Family: Asphodelaceae (Liliaceae*)*

Chemical constituents: anthraquinones/anthrones, carbohydrates, inorganic compounds, Proteins (Lectins, lectin-likesubstance), Saccharides (Mannose, glucose, L- rhamnose, aldopentose) Vitamins (Vitamin A, B12, C, E, choline and folic acid), Hormones (Auxins and gibberellins)

Uses: aloe vera gel is an active ingredient in hundred of skin lotion, cosmetics, healing properties, immunostimulant, anti-inflammatory, antimicrobial, healing from deep scrapes, frostbite, burns of the conjunctiva, and even canker sores, anti-diabetic effects, anti- wrinkle properties.[17,18,19]

Fig. 1: Aloe vera.[20]

2.2] Orchid tree

Synonym: orchid tree, camel's foot tree, kachnar and mountain-ebony.

Biological source: *Bauhinia variegata* is a species of flowering plant in the legume.

Family: Fabaceae.

Chemical constituents: terpenoids, flavonoids, and tannins, saponins, reducing sugars, steroidsand cardiac glycosides.

Uses: treating skin diseases, asthma, sore throat, abdominal discomfort, skin ulcers, bleeding hemorrhoids, cough, dysentery, heartburn, hematuria, indigestion, malaria.[21]

Fig. 2: Orchid.[22]

2.3] Sweet gale

Fig. 3: Sweet gale.[24]

Synonym: bog-myrtle, sweet gale

Biological source: *Myrica gale* is a species of flowering plant

Family: Myricaceae

Chemical constituents: myrcene (23.18–12.14%), limonene (11.20–6.75%), *α*-phellandrene(9.90–6.49%) and *β*-caryophyllene (9.31–10.97%).

Uses: reduce skin redness and swelling (inflammation), treat skin infections and wounds due to itsantimicrobial and antiviral properties.[23]

2.4] Lemon grass Synonym: malabar grass

Biological source: Lemon grass (*Cymbopogan flexuosus)* is a native aromatic tall sedge

Family: poaceae.

Chemical constituents: citral-a (33.1 %), citral-b (30.0 %), geranyl acetate (12.0 %) and linalool **Uses:** The plant is used as a fragrance and flavoring agent and in folk medicine as an antispasmodic, hypotensive, anticonvulsant, analgesic, antiemetic, antitussive, anti rheumatic,antiseptic and treatment for nervous and gastrointestinal disorder.[25]

Fig. 4: lemongrass.[26]

2.5] Chamomile

Synonym: German chamomile, Hungarian chamomile (kamilla), wild chamomile, blue chamomile, or scented mayweed.

Biological source: Chamomile (*Matricaria chamomilla* L.) is a well-known medicinal plant species.

Family: Asteraceae.

Chemical constituents: flavonoids, coumarins, volatile oils, terpenes, organic acids, polysaccharides.

Uses: anticancer, anti-infective, anti-inflammatory, antithrombotic, antioxidant, hypolipidaemic, hypoglycaemic, antihypertensive, antidepressant, neuroprotective activities.[27]

Fig. 5: Chamomile.[28]

2.6] Coffee

Synonyms: coffee bean coffee seed.

Biological source: it is the dried ripe seed of coffee *arabica Linn.*

Family: Rubiaceae

Chemical constituents: Caffeine, alkaloids, phenolic acids, flavonoids, terpenoids

Uses: Antioxidant Activity, Lipid-Lowering Effect, Lowering Blood Sugar, Neuroprotection.[29,30]

2.7] Dandelion

Synonym: blowball, cankerwort, doon-head-clock, witch's gowan, milk witch, lion's-tooth, yellow-gowan, Irish daisy, monks-head, priest's-crown, and puff-ball.

Biological source: Dandelion (*Taraxacum officinale L. syn. Taraxacum vulgare L.)*

Family: Asteraceae.

Fig. 6: Coffee.[31]

Chemical constituents: sesquiterpenoids, phenolic compounds, essential oils, saccharides,flavonoids, sphingolipids, triterpenoids, sterols, coumarins.

Uses: diuretics, antioxidants, bile agents, anti-inflammatory, analgesic, and anti-cancer agents.[32]

2.8] Elderberry

Synonym: elder, elderberry, black elder, European elder, European elderberry, and European blackelderberry.

Biological source: *Sambucus* is a genus of flowering plants in the family Adoxaceae. The variousspecies are commonly referred to as elderflower or elderberry.

Fig. 7: Dandelion.[33]

Family: *Adoxaceae.*

Chemical constituents: carbohydrates, proteins, fats, fatty acids, organic acids, minerals, vitaminsand essential oils.

Uses: antioxidant, antipyretic and diuretic agent, antibacterial, antiviral antidepressant and anti-tumour and hypo glycemic properties, and to reduce body fat and lipid concentration.[34]

2.9] Guggul

Synonym: Scented bdellium, Gum guggul.

Biological Source: Guggul is an oleo-gum resin which exudes out as a result of injury from the bark of *Commiphora wightii* (Arnott) Bhandari [syn. *Commiphora Mukul* (Hook. Ex Stocks) Engl; *Balsamodendron Mukul* (Hook. Ex Stocks)]

Family: Burseraceae.

Fig. 8: Elderberry.[35]

Chemical constituents: volatile oil, terpenoidal constituents such as mono terpenoids, sesquiterpenoids, diterpenoids, and triterpenoids; steroids; flavonoids; guggultetrols; lignans; sugars; and amino acids.

Uses: Hypolipidaemic activity, Anti-inflammatory and Anti arthritic activity, Anti atherosclerotic activity, Cardioprotective activity, Cytotoxic activity, Skin diseases, Anti fertility activity, anti- hyperglycaemic

activity, Anti microbial activity.[36,37]

2.10] Scarlet jungle flame Synonym: *Ixora Coccinea* plant

Biological Source: *Ixora Coccinea* is a species of flowering plant

Family: Rubiaceae.

Chemical constituents: triterpenes (62.60%), mono terpenes (31.73%), sesquiterpenes (3.35%), ester (2.29%). Major constituents of triterpenes were unsolicited acid, oleanolic, lupeol.

Fig. 9: Guggul.[38]

Uses: skin disease, chronic ulcer, menstrual irregularities, hypertension, sprain.[39]

Fig. 10: Scarlet jungle flame.[40]

2.11] Juniper

Common name: Juniperus communis.

Biological source: Juniperus are coniferous trees and shrubs in the genus Juniperus of the cypress.

Family: Cupressaceae.

Chemical constituents: Flavonoids, Volatile Oil, Coumarins, Bicyclic Diterpenes.

Uses: Antioxidant Activity, Anti-Inflammatory Activity, Hepatoprotective Activity, Anti diabetic and Anti hyperlipidemic Activity, Analgesic Activity, Antibacterial Activity, Antimicrobial Activity, Anti fungal Activity, Antimalarial Activity, Anti hypercholesterolemic Activity, Neuroprotective Activity.[41]

Fig. 11: Juniper.[42]

2.12] Miracle leaf

Synonym: cathedral bells, air plant, life plant, miracle leaf, Goethe plant **Biological Source:** The genus *Kalanchoe* encompasses succulent perennial plants. **Family:** Crassulaceae

Chemical constituents: triterpenes, steroids, alkaloid, diterpenoidal lactones, glycosides, phenolics, aliphatic compounds.

Uses: antioxidant, anti diabetic, anti neoplastic, immunomodulation, anti lipidemic, anti allergic.[43]

Fig. 12: Miracle leaf.[44]

2.13] Lemon Synonym: *Citrus limon*

Biological source: Lemon (*Citrus limon*) is a flowing plant.

Family: Rutaceae

Chemical constituents: flavonoids, vitamin-c, phenolic acids.

Uses: Anti-inflammatory activity, Anticancer activity, Anti-inflammatory activity, Antibacterial activity, Anti fungal activity, Antiviral activity, Anti-allergic activity, Hepatoregenerative activity, Anti-obesity activity, Effects on the cardiovascular system, Effects on the nervous system, Effects on the respiratory system, Treatment of menstrual disorders.[45]

FIG.13: Lemon.[46]

2.14] Lavender

Fig. 14*:* Lavender.[49]

Synonym: English lavender, French lavender, and true lavender.

Biological source: Lavender (*Lavandula anguvstifolia*) is a shrub of the family Lamiaceae

Family: Lamiaceae.

Chemical constituents: linalool, linalyl acetate, β-ocimene, terpinen-4-ol, lavandulyl acetate **Uses:** Antioxidant activity, Antibacterial activity, Anti fungal activity, Anti parasitic activity, Anti proliferative activity, Anti-inflammatory activity, Pain relief effect, Wound healing effect, flavouring agent in perfumery and cosmetics.[47,48]

2.15] Karanj

Synonym: Indian beech, pongame oil tree, karanj

Biological Source: *Milletia pinnata* is a species of small tree belonging to the *pea (Fabaceae)*

Family: Fabaceae.

Chemical Constituents: alkaloids, triterpenoids, coumarin, flavonoids, isoflavonoids, phenols,phytosterols.

Uses: Wound healing, skin disorders, cough, rheumatoid pain, ulcers, menstrual disorder, inflammation, bronchitis, toothache, muscle ache, tuberculosis, hepatitis and bruises.[39]

Fig.15: Karanj.[50]

2.16] Neem

Fig.16: Neem.[54]

Synonym: Nimba tree, Indian lilac, miracle tree

Biological source: Neem consist of the fresh or dried leaves and seed oil of *Azadirachta indica J.* Juss *(Melia Indica or M. azadirachta* Linn.*)*

Family: Meliaceae.

Chemical constituents: azadirachtin, imbolinin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin, ascorbic acid.

Uses: Antioxidant Activity, Antioxidant Activity, Antioxidant Activity, Hepatoprotective Effect,Wound Healing Effect, Anti diabetic Activity, Antimicrobial Effect, Antiviral Activity.[51,52,53]

2.17] Oregon grape

Fig. 17: Oregon grape.[56]

Synonym: Oregon hollygrape, tall Oregon grape, holly leaved barberry, and creeping barberry **Biological source:** *Mahonia aquifolium, t*he Oregon grape or holly-leaved barberry, is a species offlowering plant.

Family: Berberidaceae

Chemical constituents: berberine, berbamine, oxyacanthine,

Uses: treatment of acne vulgaris, anti-inflammatory, Psoriasis and Atopic Dermatitis.[55]

2.18] olive

Fig.18: Olive.[58]

Synonym: Olea europaea

Biological source: Olive oil is a fixed oil obtained by expression of the ripe fruits of *Olea europaeaLinn.* or Indian olive *(O.ferruginea*), belonging to family *Oleaceae*.

Family: Oleaceae

Chemical Constituents: Oleic acid, Palmitoleic acid, Lignoceric acid, Caffeic acid, Hydroxytyrosol, Vanillic acid.

2] Marketed Formulation Of Plants For Anti-Acne Table 1: Marketed Formulation of plants for Anti-Acne.

Sr. no.	Plant	Marketed product	Manufactured by
1	Turmeric	Plum turmeric & whiteclay acne action facewash	Pureplay skin sciencespvt.ltd
2	Neem	Himalaya purifyingneem facewash	Himalaya wellness company
3	Coffee	mCaffeine Anti AcneCappuccino CoffeeFace mask	Ultra beauty carepvt. ltd.
4	Alovera	Mamaearth aloe veragel	Honasa consumer pvt.ltd.
5	Lemon	Clean & Clear lemonfresh face wash	johnson & johnsonpvt.lt
6	Pomegranate	Have a pomegranatecleansing foam Remove impurities & all skin type.	It's Hanbul
7	Lemon grass	Soulflower lemongrasshaldi soap	PT Invent india pvt.ltd.
8	Tea	Mamaearth Tea Tree spot gel pimple removal face cream with tea tree & salicylic acid for acne & pimples	Honasa consumer pvt.ltd.
9	Olive	Fresh olive vit-E nigntgel	Nat Habit
10	Papaya	GEMBULE Biocarepapaya scrub	AV Cosmo Lifestyle

CONCLUSION

Millions of individuals suffer from the common skin disorder known as acne vulgaris. Numerous traditional plants and herbs are used to cure acne because they have antibacterial, antiviral, and antifungal properties that aid in the treatment of acne. Herbal and natural medicinal plants are widely used and have little to no evidence of adverse effects. These plants are a dependable source for creating novel medications. Certain plants have demonstrated antibacterial and anti-inflammatory properties. For the treatment of acne, medicinal plants and herbs offer a wide range of therapy alternatives. Numerous research have shown that many magical herbs that are an efficient and secure remedy to treating acne have been kept in our ancient heritage. Pharmaceutical companies are looking for new alternatives to help desperate teenagers and others escape from acne-related diseases ranging from undesirable blemishes to transforming inflammation. The use of cutting-edge technologies in long-term, ongoing research to identify these botanicals as potent, modern skincare products is crucial. In order to maximise the benefits of natural substances for customers, it is anticipated that this study would inspire researchers, cosmeticians, academics, chemists, industrialists, and dermatologists to use these herbs more precisely in topical dermato-cosmetic formulations.

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