

A Quick Analysis of *Mukhadushika* with a Special Focus on *Acne Vulgaris*

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ABSTRACT

Acne is a cutaneous pleomorphic disorder of the pilosebaceous unit involving abnormalities in sebum production and is characterized by both inflammatory (papules, pustules and nodules) and non-inflammatory (comedons, open and closed) lesions. The four primary factors that lead to the development of the condition are inflammation, microbial involvement, pilosebaceous duct cornification, and sebum production. Acne is the most common skin issue impacting people today, affecting 80% of teenagers. *Mukhadushika* is one of the skin conditions that *Acharya Sushruta* lists under "*Kshudra rogas*." These face breakouts have a thorny appearance similar to that of *Shalmali*. It is called *Mukhadushika* because of its propensity to affect a person's attitude and lessen face beauty. *Mukhadushika* and acne vulgaris symptoms are similar to one another. Acne is caused by the vitiation of the *doshas Kapha, Vata, and Rakta dhatu*, according to *Ayurveda*. A major part of the pathophysiology of acne is played by *kapha* vitiation, which can mimic excessive sebum production, *vata* vitiation, which can resemble hyperkeratinization, and *rakta* vitiation, which can resemble inflammatory mediators in the blood. *Ayurvedic* and contemporary sciences have both taken into consideration, the application of oral and topical drug combinations to the management of acne. Although there is remission from acne vulgaris with modern treatment, there are notable adverse effects. *Ayurveda's* primary methods for treating acne include *shodhana chikitsa* (body purification) and *shamana* (conservative medicine), or a mix of the two. Although the pathogenesis and therapy of acne have been explored in various *Ayurvedic literature*, including *Sushruta Samhita* and *Ashtanga Hrudaya*, the existing references are scattered. Therefore, a thorough analysis and compilation of *Ayurvedic* writings and literatures are required. Gaining a better understanding of the comparative pathogenesis and therapy of acne vulgaris could benefit from this review.

Key Words *Mukhadushika, Acne Vulgaris*

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INTRODUCTION

The largest organ in the body, the skin acts as the primary barrier to prevent inside tissues from being damaged by toxins, bacteria, UV light, trauma, and temperature changes. Skin color

changes could be a sign of a homeostatic imbalance within the body. "The skin is one of the important sense organs in all of the five-sense organ," according to *Maharishi Charaka*. It is known as *Sparshendriya*, because it encompasses

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the entire body as well as *Manna* (the mind)¹. There is a category of 44 ailments known as *Kshudra Roga* in *Ayurvedic* scriptures. *Mukhadushika* is among those people². The mockery of youth and the bane of humanity is acne. Although some people only view acne as a cosmetic issue, it can have serious, long-lasting emotional and psychological effects³.

Common chronic inflammatory skin disease, acne has a major negative impact on both cutaneous and psychological health³. Males and females both get acne, but as puberty approaches, men typically get more of it. The Global Burden of Disease (GBD) states that 80% of people between the ages of pubescence and thirty suffer from acne, which leaves behind psychological and physical scars that negatively impact social lives and self-esteem⁴. Numerous studies have found that between the ages of 16 and 18, 79% to 95% of people have acne. Research investigations conducted in India between the ages of 12 and 17 years have revealed that 38.13% of girls and 50.6% of boys have acne⁵⁻⁶. The disease's prevalence rate is rising daily as a result of excessive stress, hormone imbalances, junk food consumption, lifestyle changes, and long-term application of makeup, etc. By 2026⁷, it is projected that 23 million people in India would have been impacted.

The pilosebaceous follicle is connected to acne vulgaris. It is classified as a teenage condition and is typified by the development of papules, pustules, cysts, nodules, and open and closed comedones. Blackhead-filled open comedones

are typically brought on by external factors. White heads on closed comedones are typically the result of your own body. It's a skin ailment brought on by the skin's oil glands becoming clogged⁸. We call pimples, blackheads, and whiteheads because the oil that typically lubricates the skin becomes trapped in clogged oil channels. Cysts are deeper skin lesions that might occasionally be included⁹. The areas of skin that have the highest density of sebaceous follicles are typically affected by acne vulgaris; these areas include the back, the upper chest, and the face¹⁰. Numerous factors, including increased sebum production, hyperkeratinization, and disrupted hormone (androgen) synthesis, have been linked to the pathophysiology of acne, according to studies. The pilosebaceous follicle is obstructed by keratin, epithelial cells, and excess sebum accumulation. Acne lesions are the result of this obstruction, which also causes follicular enlargement beneath the skin's surface and the creation of a keratin plug¹¹⁻¹². Skin colonization, such as *P. acnes*, can result in a serious infection that leaves the face unsightly and scarred¹³⁻¹⁶. Stress, constipation, and excessive perspiration are also seen as exacerbating factors. Acne vulgaris can be treated with a variety of methods in modern medicine, including hormone therapy, antibiotics, and some surgical or para-surgical procedures. Treatment, however, has to be tailored to the lesions' kind and intensity. Prolonged use of antibiotics, comedolytics, and anti-inflammatory drugs are the mainstays of treatment¹⁶. While these treatments are a superior

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alternative for managing acne, their use is limited by their adverse effects, which include increased frequency and severity of skin dryness, scaling, erythema, burning, stinging, itching, and bacterial resistance¹⁶⁻¹⁸.

Since acne first appeared in *Yuva* or *Taruna* (adolescents), where it caused the creation of *Pidika* (small boils or pustules), it is also known as *Taruniyapidika* and *Yuvanpidika*. Acne is also known as *Mukhadushika* because of the localized spread of the disease over the face and the inflammatory and scarring characteristics of the lesions^{19,20}. *Saruja* (lightly painful), *Ghan* (stiff to the touch), *Medogarbha* (packed with oil/sebum), and the shape of *Shalmalia Kantaka* (the throne of *Salmania malabarica*) are the characteristics that define *Yuvanpidika*, *Taruniyapidika*, or *Mukhadushika*^{21,22}. Numerous authors went on to explain that *rakta dhatu*, the *doshas vata* and *kapha*, and their vitiation are the causes of acne. Acne is caused by blockage of the skin's *Lomakup* (pilosebaceous unit) by vitiated *doshas* and *dhatu*s. Furthermore, scarring results from acne rupture. Moreover, the vitiation of *Rakta* and *Vata* causes skin hyperpigmentation^{23,24}. In *Ayurveda*, acne is mostly treated with two forms of *chikitsa*: *shamana*, which is a topical and oral medication for conserving health, and *shodhan*, which is a bodily purifying method. *Vamana* and *Nasya* are included in *Shodhana*, while *Lepa*, *Upanah*, and *Kshara* are included in *Shamana* application²⁴⁻²⁶. Additionally, a number of Ayurvedic proprietary medications are sold on the market to treat

acne^{19,20,25-27}. Even so, acne is a curable condition. For mild cases, just topical medication is needed. Oral and topical therapy are necessary for mild to severe conditions.

Sushruta Samhita, *Sharangadhara Samhita*, *Chakradatta*, and other *Ayurvedic* books have expounded upon the pathogenesis and management of acne. The references that are available are dispersed²⁵. Therefore, a thorough analysis and collection of *Ayurvedic* texts and literatures is necessary to have a better knowledge of *Yuvanpidika*, also known as *Taruniyapidika* or *Mukhadushika*, and to compare it to the present scientific description of acne vulgaris.

AIM AND OBJECTIVES

- To assess, elucidate, and talk about the causes, signs, and *Ayurvedic* treatment of *Mukhadushika* (Acne vulgaris).
- To assess, elucidate, and talk about *Mukhadushika* (Acne vulgaris) management

MATERIALS AND METHODS

Information about acne vulgaris and *Yuvanpidika* is gathered from modern medicine textbooks and *Ayurvedic* scriptures, respectively. To gather pertinent information, the *Ayurvedic Samhitas'* extant comments have also been consulted. Information on pertinent topics has also been gathered by consulting index and non-index medical journals.

DESCRIPTION OF YUVAN PIDIKA IN TEXTS :-

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Yuvanpidika was originally mentioned in the *Charaka Samhita's "Tristreshniya Adhyaya"* during the ancient era (2nd B.C.). *Pidika* (pimple) is *Bahya Roga* (external disease) and *Marga ashrit roga* (disease caused by blockage), according to *Charaka*²⁶. In the thirteenth chapter of *Nidanasthana*²⁸, *Kshudhra Roga Nidanadhyaya*, *Sushruta* also describes *Yuvanpidika* or *Mukhadushika*. Additionally, he discussed *Yuvanpidika's* treatment in *Kshudhra Roga Chikitsadhyaya*, the twentieth chapter of *Chikitsasthana*²⁹. Similarly, *Yuvanpidika* is discussed in the *Kshudhra Roga* chapter of the texts of *Madhava*, *Vagbhata*, and *Yogratnakar*²⁶.

CAUSATIVE FACTORS OF YUVANPIDIKA VIS-À-VIS ACNE VULGARIS

There is a very brief explanation of the causes of acne in *Ayurveda*. It is said in *Ayurvedic* writings that practically all ailments are caused by an

imbalance of the three *doshas* and the seven *dhatu*s, or *dushyas*. Acne is thought to be caused by factors that result in *dushti*, or abnormalities, in these *doshas'* and *dhatu*s' functions²¹⁻²⁴. The pathophysiological components of *Kapha dosha* (oily, forming sebum), *Vata dosha* (dry), and *Rakta dhatu* (blood) are the primary factors contributing to the development of acne. *Dhatu dushti*, or blood impurities, is one of the primary pathogenic reasons of acne production, according to *Sushruta Rakta dhatu dushti* (blood impurities) is one of the main pathogenic factors of acne formation. Acne production is also caused by a number of other significant local and systemic pathogenic factors connected to sexual changes during puberty, according to *Sushruta*²¹. There are four basic categories of factors that cause acne: age (*Kalaja*), diet (*Aaharaja*), physical activity (*Viharaja*), and psychological issues (*Manasika*).

Table 1 The causative factor of *Yuvanpidika* or *Tarunyapitika* or *Mukhadushika*^{19-24,26}

<i>Kalaja</i> (Time/Age factor)	<i>Aaharja</i> (Food)	<i>Viharaja</i> (Activities)	<i>Manasika</i> (Mind/Stress factor)
Tarunya (young age)	<i>Ati Katu</i> and <i>Madhura</i> (excessive spicy and sweet)	<i>Vegavarodha</i> (stoppage of natural urge)	<i>Ati shoka</i> (stress)
Madhyanha (Noon)	<i>Guru</i> (heavy to digest)	<i>Jagarana</i> (insomnia)	<i>Kshobha</i> (botheration)
Vasanta rutu(blossom)	<i>Ati Snigdha</i> and <i>Dugdha varga Aahara</i> (oily food, milk and milk products)	<i>Nidra</i> (excessive sleep)	<i>Krodha</i> (anger)
Grishma rutu(Summer)	<i>Mamsa</i> (meat)	<i>Upavasa</i> (fasting)	<i>Santapa</i> (irritation)
Sharada rutu	<i>Madya</i> (alcohol)	<i>Atapa sevana</i> (Excessive sun bath)	<i>Svabhava</i> (behavioral changes)

CAUSES OF FORMATION OF ACNE ACCORDING TO DIFFERENT ACHARYAS

Age-related sexual changes are regarded in *Ayurveda* as significant contributing elements to the development of acne. According to the

Kashyap Samhita, the development of *Shukra dhatu*, or semen, and alterations in secondary sexual characteristics, including changes in sexual organs, begin at the age of sixteen. It has also been explained that the combined and strong actions of *Panch Mahabhutas* during childhood

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and adolescence³⁰ are what cause these changes in sexual nature. Other writers, including *Sushruta and Vagbhata*, have also clarified that puberty is the main time when *mukhadushika*, or acne, manifests itself. According to *Bhavprakash*, behavioral changes called *Svabhava* are the root cause of acne³¹. *Vakrasnigdhatta* and *Pidika* are referenced in the *Sharangdhara Samhita* as a result of *Shukradhatumala* (by product during semen formation)³². As per contemporary science, the pathophysiology of acne is influenced by various factors like bacteria, increased testosterone production, and others. Although the exact cause of acne is unknown, the following are some important elements that contribute to its formation:-

1. Changes in sebum production in response to androgen stimulation (or elevated androgen sensitivity)
2. Follicular hyperkeratinization/Abnormal keratinization of follicles (process leading to comedones)
3. Proliferation and colonization by *Propionibacterium acnes* (*P.acnes*) and *Staphylococcus epidermidis*
4. Release of inflammatory mediators including cytokines.
5. Hormonal fluctuations, genetic predispositions, and environmental variables all contribute significantly to the development of acne¹¹.

TYPES OF YUVANPIDIKA VIS-À-VIS ACNE VULGARIS

There is no precise explanation of the different forms of acne in *Ayurveda*. However, a lot of *Ayurvedic* doctors prescribe anti-acne medications based on the pathogenic factors—that is, vitiated *Pitta*, *Rakta*, *Kapha*, and *Vata*. These pathogenic variables can therefore be used to categorize acne.

1. *Vataja*: severe scaling, itching, and dryness, with blackish-colored acne lesions
2. *Kaphaja*: elevated greasiness and pus at the site of acne
3. *Pittaja*: inflammation, redness, and pus at the sites of acne
4. *Raktaja*: Identical symptoms to *Pittaja yuvanpidika*²¹.

For primary acne vulgaris, the American Academy of Dermatology created a classification system in 1990. There are three stages of acne according to this grading system³³.

1. Mild :- defined by the absence of nodules and the presence of one to multiple papules and pustules
2. Moderate: many papules and pustules with one to multiple nodules
3. Severe: Patients have a large number of nodules and numerous or extensive papules and pustules^{3,5,6,34,35}.

Acne vulgaris is divided into four grades according to its severity :-

1. First grade :- A few comedones, either closed or open, that don't hurt
2. Second grade: skin has some pustules and papules, which resemble tiny, solid bumps, together with comedones.

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3. Third grade (Papular acne) :- characterized by the presence of both papules and pustules

4. Fourth acne (Nodulo-cystic Acne) :- comprising comedones, papules, and pustules in all forms of acne

If left untreated, both the third and fourth grades can result in scarring due to varying degrees of skin irritation and sebaceous gland rupture.

DIFFERENTIAL DIAGNOSIS

1. Acne Rosacea :- affects senior citizens. There are no comedones, the rash has an erythematous backdrop, and papules and pustules are limited to the face.

2. A condition called hidradenitis suppurativa affects the axillae and groin and is linked to acne conglobata.

3. Pseudo folliculitis barbae caused by ingrown hairs, occurs on the neck of men with curly facial hair and clears up if shaving is stopped.

PATHOPHYSIOLOGY OF YUVANPIDIKA VIS-À-VIS ACNE VULGARIS

Ayurveda says that the pathophysiology, or *Samprapti*, of acne is a complicated process. First, the construction of a structure resembling *Shalmali kantaka* occurs due to the vitiation of *Kapha dosha*, *Vata dosha*, and *rakta dhatu* by causative factors (table 1). There is no precise explanation of the disease process available, and no Ayurvedic source explains how *Pitta Dosha* is involved. However, since the aggravating causes for *rakta* and *pitta* are similar, *Pitta* will immediately get vitiated when *Rakta* is involved.

As a result, symptoms such as swelling, redness, and burning sensations manifest. *Acharya Charaka* states that vitiated *Pitta*, which causes redness and swelling, or the creation of *pidika*, lies in the *Rakta* and *Sweda*. These oxidized substances enter the skin and block its pores, such as *Lomkup* (unit pilosebaceous). Localized edema and the development of microcomedones result from *Lomkupa* obstruction. Pustules, papules, and cyst development are caused by the paka (metabolism) of these components in microcomedones^{36,37}. *Vrana vastu*, or scar development, is caused by the rupture of these microcomedones^{21,23}. Additionally, hyperpigmentation of the skin due to *vata dosha* and *rakta dhatu* causes the formation of *Vyanga* (black spotting)²¹⁻²³. As was already mentioned, the *samprapti* of sickness is influenced either directly or indirectly by the three *doshas* as well as *Rakta*, *Meda*, and *Shukra Dhatu*. Even if the *pidika's Vyaktisthana* is on the skin, *Rasa Dhatu* may also be involved in this.

Shukradhatumala is regarded as a significant contributing element to acne. The body experiences numerous physical, hormonal, and psychological changes during adolescence as a result of the *Panchmahabhutas'* interaction with one another. There are many bi-products released during the formation of *Shukra* (semen) which gets accumulated and causes acne.

The *sampraptichakra* (pathophysiological process) of acne vulgaris as per Ayurveda science is summarized in **figure 1**

PATHOPHYSIOLOGY OF YUVANPIDIKA

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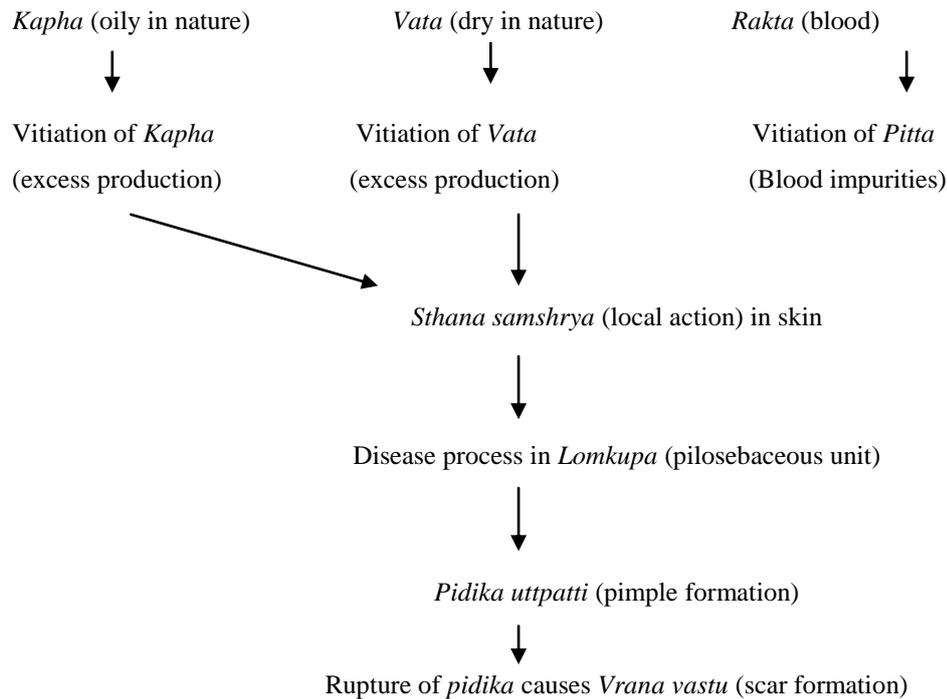


Figure 1 Samprapti chakra (pathophysiology) of Yuwan pidika as per Ayurveda^{21,23}

SAMPRAPTI GHATAKA

- Dosha – Kapha, Vata, Rakta
- Dushya – Rasa, Rakta, Meda, Shukra
- Srotas – Svedavaha, Rasavaha, Raktavaha
- Mala – Sweda, tvaka sneha
- Srotodushti – Sanga, tipravritti
- Agni – jatharagnimandya
- Udbhavavasthana – Amashayasamuttha
- Roga Marga – Bahya

According to contemporary medicine, sebaceous gland blockage is the first step in the formation of acne, even if the pathophysiology of acne is a complex process. Sebaceous glands are primarily located on the face, upper chest, and back. This skin ailment arises from the obstruction of the skin's oil glands. The oil that often lubricates the skin becomes stuck in clogged oil ducts, causing blackheads, whiteheads, and pimples.

Occasionally, it also involves deeper skin lesions known as cysts, which are closed sacs that hold fluid or semi-solid substances beneath the skin or deeper.

Pathophysiology of acne vulgaris starts at adolescence when hormonal changes (androgen) are on peak in the body. Locally on the skin, androgens are involved in the regulation of cell proliferation and lipogenesis³⁸. Hormones may also play a role in the follicular hyperkeratinization. The skin surface in acne prone areas is colonized with *Staphylococcus epidermidis* and *Propionibacterium acnes*²⁵. Although it is often acknowledged that inflammation is the primary cause of acne vulgaris, it is not evident that bacteria or their byproducts cause follicular inflammation³⁸. Nevertheless, a few experimental investigations

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have revealed that *P. acnes* is the primary organism involved in the pathophysiology of acne vulgaris. When *P. acnes* overgrows, it hydrolyzes sebum triglycerides, releasing free fatty acids and inflammatory mediators

(cytokines) that can cause nodules, cysts, papules, and other inflammatory lesions^{5,6}.

The pathophysiology of acne vulgaris as per modern science is summarized in **figure 2**

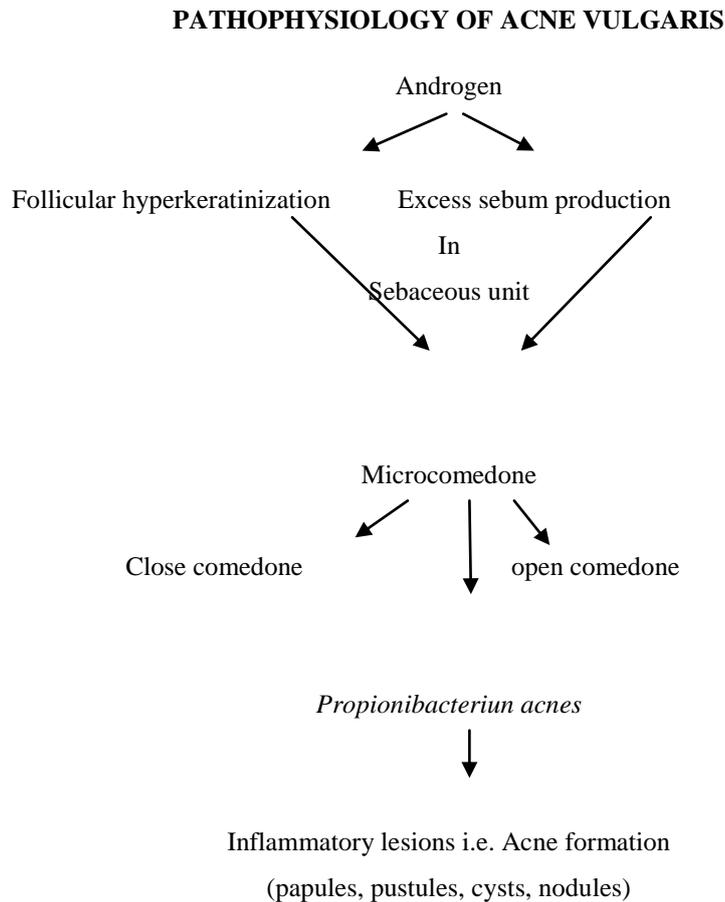


Figure 2 Pathophysiology of Acne vulgaris as per modern science^{5,6}

PURVARUPA (PREMONITARY SYMPTOMS/SIGNS) OF YUVANPIDIKA

None of the Acharyas discuss Yuvanpidika purvarupa explicitly. It might look like this:

1. *Kandu* (itching) – due to dominance of *Kapha*
2. *Todwatvedana* (pain) – because to the deterioration of *vata*
3. *Shoatha* (swelling)
4. *Vaivarnya* (skin discoloration)
5. *Daha* – due to dominance of *Pitta*

RUPA OF YUVANPIDIKA

According to *Acharya Vagbhatta*³⁹

- *Pidika* is the term for eruption. The illness manifests as an eruption.
- *Saruja*: The eruptions cause excruciating pain. There could be a slight or severe ache.
- *Ghana* is a word meaning indurate, hard, or thick. Thus, the disease's eruptions are thick and firm.

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- Medogarbha: Meda is infused into the eruptions. Comedone is the term for Meda.
- Yuna Mukha: this condition affects adults' faces. According to *Acharya Sushruta*⁴⁰.
- Shalmali Kantak Prakhya: this clarifies the pidika's shape. Shalmali Kantaka is shaped like a cone. The majority of patients have pidikas that are observed to be conical in shape.
- *Yunam vaktrey* – this explains the site of the disease and the age in which it occurs. Disease occurs in the face i.e. adolescent age group. More information on the indications and symptoms has been provided by *Acharya Vagbhatta* than by *Acharya Sushruta*.

The symptoms of *Acne vulgaris* are as follows-

- Blackheads
- Whiteheads
- Pustules
- Redness and inflammation around eruptions
- If acne is severe, cysts, abscesses

TREATMENT OF YUVANPIDIKA VIS-À-VIS ACNE VULGARIS

Line of treatment prescribed by different *Acharya* can be summarized as follows-

- *Sushruta* – *Vamana*, *Lepan*⁴¹
- *Ashtanga Hridaya* – *Lepana*, *Vamana*, *Nasya*, *Shiravyadh*⁴².
- *Bhavprakash* – *Lepa*, *Vamana*, *Abhyanga*⁴³
- *Yog Ratnakara* – *Siravedha*, *Pralepa*, *Abhyanga*⁴⁴.
- *Sharangdhara samhita* – *Lepa*⁴⁵.
- *Bhaishajjya Ratnavali* – *Siravedha*, *Pralepa*, *Abhyanga*⁴⁶

As per *Ayurveda*, treatment for acne is mainly divided into two types, i.e. medicinal treatment and surgical treatment³⁷.

1. MEDICINAL TREATMENT

Classical medicinal treatment for acne is of two types i.e.

- *Shodhana* (Purification) *chikitsa* – *Vamana*, *Virechan*, *Nasya*, *Raktamokshna* etc.
- *Shamana* (conservative) *chikitsa* – internal medicine and external application of drugs.

Whereas *Shamana Chikitsa* corrects vitiated doshas instead of removing them from the body, *Shodhana Chikitsa* expels vitiated doshas from the body^{29,37}.

SHODHANA CHIKITSA

A. **VAMANA** – *Vamana* (emesis) has been expounded upon by *Acharya Sushruta* and *Acharya Vagbhatta* as *Shodhana chikitsa*. In addition to topical and oral *Ayurvedic* medicines, *vamana* is one of the best abutting therapies for *acne vulgaris*^{36,37}. *Vamana* is a process wherein *doshas* are expelled by the mouth, or upper passages. It aids in the prevention of impending *Pitta* and *Kapha* diseases^{29,36,37}.

B. **VIRECHANA KARMA** – This particular therapy is recommended to reduce *Pitta dosha*, also known as *Pitta Sansargaja dosha*. The *Guda Marga* loses extra *pitta* due to the purgative medications. Since the property of *Rakta* is comparable to *Pitta dosha*, *Virechana* is likewise beneficial in *raktaja Vikara*.

C. **NASYA** - Introduction of medications via the nasal cavity is another type of *Shodhana Chikitsa* used to treat acne. *Nasya* is a type of systemic

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therapy for acne elaborated by *Vagbhata* in his texts²³. *Acharya Charaka* has also mentioned the *Nasya karma* in *urdhva jatrugata vikara*. In *Nasya*, different types of oils, powder, etc., have been applied to acne treatment^{23,26,47}.

D. RAKTAMOKSHANA – *Acharya vagbhata* and *Chakrapani* have mentioned *Raktamokshana* as a treatment for *Mukhadushika*. *Acharya Charaka* has opined *Raktamokshana* in all the *Raktajja* diseases. While *Acharya Shushruta* has mentioned it in some *Kshudra roga*. Frontal and temporal veins can be found in the *Lalata* region, according to *Acharya Vagbhata's* reference to *Siravedha*. By eliminating the vitiated blood and clearing the *Srotavarodha* (channel blockage), *Raktamokshana* breaks the *samprapti*.

SHAMANA CHIKITSA

Numerous treatments, whether internal or external, are made of pharmaceuticals (herbal or herbo-mineral substances). Topically, these

Table 2 Classical therapies for acne as per *Ayurveda* texts^{38,48}.

S.No	Therapy	Sushrut Samhita	Charaka Samhita	Ashtang Hrudaya	Yogratnakar	Chakradatta
1	Vamana	+	+	+	-	+
2	Nasya	-	-	+	-	+
3	Lepa	+	+	+	+	+
4	Siravyadha	-	+	+	+	+

Numerous authors have emphasized in their texts on local treatment such as *Lepa* (paste), *Taila* (oil), *Kashara* application, etc.—have been highlighted in books on local treatment^{36,38,48}. *Lepas* have antibacterial, anti-inflammatory, and astringent properties. *Lepas* improve skin complexity in addition to treating acne. In *Ayurveda*, *lepas* are specifically recommended for use on oily skin types, whereas *tailas* are recommended for dry skin types. For the

Ayurvedic compositions can be applied as of powder, gel, paste with oil, ghee etc⁴⁸. There are various methods of application such as *Swedana*, *Lepana*, *Snehana* and *Gharshana* etc.

a. Internal medication – Medication with *Kapha Vatahara* qualities, such as *srotoshodhaka* and blood purifying capabilities, can be used internally based on the *dosha* and symptoms of *Mukhadushika*. Several herbal remedies that are helpful in treating *Mukhadushika* are listed in (table 3)

b. External medication – Several external treatments have been prescribed for *Mukhadushika* and other *Kshudra rogas* in classical *Ayurvedic* writings. A number of *lepas* that are utilized to treat *Mukhadushika* are listed in (table 4).

These traditional treatments have been utilized for skin renewal in addition to treating acne. (table 2)

treatment of acne, *lepas* and *tailas* have both been utilized as anti-inflammatory drugs. Additionally, *tailas* have the ability to heal wounds and lessen the production of scars^{19,20}. Acne has been treated with a variety of herbs (table 3). A few herbs have been used as topical antiseptics and have been shown to help remove various harmful components that are present on the skin^{19,20,38,48-51}.

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Table 3 Herbs and their action^{19,20,49}.

S.No	PLANT NAME	BOTANICAL NAME	ACTION
1	Lodhra	<i>Symplocos racemosa</i>	Anti-bacterial, anti-inflammatory, anti-septic
2	Vacha	<i>Acorus calamus</i>	Anti-bacterial, anti-inflammatory
3	Dhanyak	<i>Coriandrum sativum</i>	Anti-bacterial, anti-septic
4	Yashtimadhuka	<i>Glycyrrhiza glabra</i>	Skin soothing, regulates sebum production, useful in hyperpigmentation, blood purifier, anti-bacterial
5	Shalmali	<i>Salmalia malabarica</i>	Anti-bacterial, anti-inflammatory, effective in acne vulgaris
6	Daruharidra	<i>Berberis aristata</i>	Analgesic, anti-bacterial, anti-dermatitis
7	Jatiphala	<i>Myristica fragrans</i>	Rectify uneven skin pigmentation, inhibits melanin biosynthesis, anti-inflammatory
8	Manjishtha	<i>Rubia cordifolia</i>	Useful in hyperpigmentation, increase skin complexion and skin glow, anti-oxidant, anti-inflammatory
9	Nimba	<i>Azadirachta indica</i>	Anti-bacterial, useful in various skin disorders, anti-septic
10	Khadira	<i>Acacia catechu</i>	Anti-bacterial, overall skin disorders like eczema, anti-scabies, anti-dermatitis

There are several *lepas* and *tailas* mentioned in *Ayurvedic* scriptures for treating acne. (table 4)

Table 4 Ancient topical preparations of *Ayurveda* for the management of acne^{19,20,36,48}

S.N	FORMULATIONS	CONTENTS	ACTION
Pastes			
1	Lodhradi lepa	Lodhra (<i>Symplocos racemosa</i>), Vacha (<i>Acorus calamus</i>), Dhanyak (<i>Coriandrum sativum</i>), Sarshapa (<i>Brassica campestris</i>), Saindhava lavana	Reduces acne
2	Jatiphali lepa	Jatiphala (<i>Myristica fragrans</i>), Chandana (<i>Santalum album</i>), Maricha (<i>Piper nigrum</i>)	Reduces acne, increases luster of face
3	Manjishthadi lepa	Manjishtha (<i>Rubia cordifolia</i>) mixed with honey	Reduces acne
4	Shalmali kalkadi lepa	Sharp spine of shalmali (<i>Salmalia malabarica</i>) pounded with milk and mixed with oil	Makes face like lotus
5	Siddhathadi lepa	Siddhartha (<i>Brassica campestris</i>), Vacha (<i>Acorus calamus</i>), Lodhra (<i>Symplocos racemosa</i>), and Saindhava lavana	Reduces acne and scar formation
Oils			
6	Sarshapa taila	Sarshapa (<i>Brassica campestris</i>)	Clears face and clears acne
7	Kumkumadi taila	Kumkum (<i>Crocus sativus</i>), Chandan (<i>Santalum album</i>), Laksha (<i>Laccifer lacca</i>), Manjishtha (<i>Rubia cordifolia</i>), Yashtimadhu (<i>Glycyrrhiza glabra</i>) etc	Promotes facial lusture and alleviates acne and scars
8	Kanaka taila	Madhuka, Priyangu (<i>Callicarpa macrophylla</i>), Manjishtha, Chandana etc	Cures acne and scars
9	Manjishthadi taila	Manjishtha (<i>Rubia cordifolia</i>), Madhuka (<i>Madhuca indica</i>), Laksha (<i>Laccifer lacca</i>), Matulunga (<i>Citrus medica</i>), and Yashtimadhu (<i>Glycyrrhiza glabra</i>)	Removes acne, wrinkles of face and improves facial

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lusture

Based on established knowledge of *Ayurveda*, herbal extracts and essential oils are now being effectively used in oral and topical anti-acne medicines^{19,20}. Many clinical trials have been carried out on several oral as well as topical

Ayurvedic proprietary medicines (table 5) and these medicines have shown significant safety and efficacy profile in patients with acne vulgaris³⁸.

Table 5 *Ayurvedic* proprietary medications, their dosage and indications⁵².

S.N	BRAND NAME	BRAND NAME	INDICATION (IN ACNE)	DOSAGE
TOPICAL				
1	Skinelle cream	Charaka	Pimples and blackhead (Acne vulgaris)	Twice a day or as directed by physician
2	Pimple cream	Unexo	Acne vulgaris	2-3 times a day
3	Pimple touch gel	Ratan	Pimple and Acne vulgaris	Apply on affected area leave it for an hour and then wash
4	Aricleanse cream	Ari Healthcare	Acne vulgaris, hyperpigmentation and various skin disorders	2-3 times a day
Oral				
5	Purim tablet	Himalaya	Acne vulgaris and Acne rosacea	1-2 tablets twice daily 4-6 weeks
6	Raktashodhaka	Baidyanatha	Acne vulgaris, skin rashes	1 tablet twice a day with water

2. SURGICAL TREATMENT

Surgical and parasurgical methods have been employed to treat acne if medical therapy is ineffective. In his writings, *Vagbhata* goes into detail on how *Raktamokshana*, or eliminating contaminated blood, might treat acne. In cases of severe acne vulgaris, he has also suggested *siravyadha* (venesection) to remove diseased blood²³. *Ayurveda* developed a number of other surgical techniques, including *chedana* (excision), *Agni karma* (cautery), etc., to treat severe forms of acne⁵³.

A wide range of drugs (table 6) are available in modern medicine to treat acne vulgaris. Patients are primarily prescribed these drugs based on their acne grades^{14,34,54}.

Retinoids (tretinoin, isotretinoin, adapalene etc), benzoyl peroxide, topical antibiotics (erythromycin, clindamycin, etc) are primary choice of physicians for therapy for acne vulgaris. Several other topical agents such as salicylic acid, sulphur, sodium sulfacetamide, aluminium chloride, zinc, azelaic acid, nicotinamide or combination triethyl citrate and ethyl linoleate have been used to treat acne vulgaris⁵⁴. Also, combination therapies (topical and oral) have been used in case of treatment resistance and/or severe type of acne. Commonly available topical combinations are clindamycin or erythromycin combined with benzoyl peroxide, benzoyl peroxide and topical retinoids, salicylic acid and azelaic acid and many more^{14,34,54}.

Table 6 Modern medicines for acne, their mechanism of action and side effects^{55,56}

S.N	MEDICINES	MECHANISM OF ACTION	SIDE EFFECTS
TOPICAL			
1	Retinoids (Tretinoin, isotretinoin etc)	Comedolytic agents. Reduce abnormal mitosis of keratinocytes and hyper-keratinization	Skin dryness, skin peeling, erythema and photosensitivity, teratogenicity

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2	Benzoyl peroxide	Antibacterial agent, reduces lesion counts, most effective for inflammatory lesions, it is anti-oxidants and bacteriostatic agents and are found in different strengths.	Risk of allergic contact dermatitis, burning of skin, etc. it bleaches clothing and irritates the skin if used in excess
3	Antibiotics (erythromycin, tetracycline, clindamycin etc)	Act on P. acnes and reduces inflammation	Erythema, dryness and burning sensation. Bacterial resistance
4	Topical combinations (Erythromycin + Benzoyl peroxide), (Adapalene + Benzoyl peroxide) etc	Act on P.acnes and reduce inflammation	Erythema, dryness and burning sensation. Bacterial resistance
ORAL			
5	Antibiotics	Act on P. acnes and reduce inflammation	GI side effect, bacterial resistance
6	OC pills (Estrogen + Progestine)	Decrease circulating androgens	Stomach cramps or bloating, nausea, vomiting etc
7	Aldosterone antagonist (flutamide)	Anti-androgen effects	Hepatotoxicity
8	Corticosteroids	Reduce testosterone levels and inflammation	Steroid acne
9	Retinoids (isotretinoin)	Reduces sebaceous gland size and secretions, comedone formation and follicular colonization of P.acnes	Side effect pattern resembles hyper vitaminosis-A syndrome
10	Oral combinations (trimethoprim + sulfamethoxazole 80/400)	Act on P. acnes and reduce inflammation	GI side effects, bacterial resistance.

Adults often begin taking 250 mg up to four times per day; however, in cases where resistance develops, up to 1.5 g/day may be required. Since milk, antacids, and calcium, iron, and magnesium salts reduce the absorption of these tetracyclines, it should be given on an empty stomach one hour before meals or four hours after meals. Tetracyclines should not be taken in pregnancy or by children under 12 years as they are deposited in growing bone and developing teeth, causing stained teeth and dental hypoplasia⁵⁷. In tetracycline allergic patient, erythromycin can be used as an alternative.

There are further allopathic treatments for acne, such as topical medications, hormones, antimicrobials, surgery, UV light therapy, and

intralesional injections; however, all of these have certain side effects. Despite this, tetracycline, doxycycline, azithromycin, and clindamycin resistance in acne patients is also becoming an increasing problem. These, however, have a very high relapse rate and only provide temporary relief. None of them offers a long-term remedy for the illness. Here, Ayurveda plays a crucial role in ensuring a treatment plan that can treat this ailment with fewer or no side effects and predictable success.

In order to manage any illness, it is important to closely monitor *vyadhiavastha*. *Yuvanpidika* can comprehend it by being aware of the skin layer that is engaged. In order to comprehend this fictitious categorization.

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- For *avabhasini acharya* have said *sarva varna avabhasini panchvidhachhaya prakashyati*⁵⁸, *lohita* and *avabhasini* have *pitta pradhanta*. *Pitta* is the common *dosha* among illnesses like *tilkalaka*, *nyachha*, and *vyanga* that are observed in *Lohita*⁵³.

- Diseases like *ajagallika*, *mashak*, *kilaskushtha*, *alaji*, *granti*, etc. that have *vata-kaphaj samprapti* are found in *Shweta*, *Tamra*, *Vedini*, and *Rohini*.

- Since diseases like *vidradhi*, *arsha*, and *bhagandra* are *tridoshaj* in nature, the *mamsadhara* layer might be thought of as *Tridosha bhuyishtha*.

So while treating acne vulgaris, following points should remain in mind⁵⁹

- If the lesions are linked to *kapha* and *rakta* and exhibit *pitta* dominating *lakshanas* (little *pidika*, pain, burning feeling, etc.), it indicates that *avabhasini* or *lohita* are involved. In such case, *pittahara* and *raktaprasadan chikitsa* should be performed. *Rakatamokshan* and *virechana* will be helpful in these situations. It is best to provide *raktaprasadana* and *rakspanchak dravyas* internally.

- *Kledohara kaphahara* and *rakta prasadana* should be performed if the lesions exhibit *kapha* dominance *lakshan*, such as huge deep rooted *pidika*, *Ghana*, *puyaprachiti*, and *medogarbhata*, and are connected to *vata* and *rakta*. *Vaman*, *Nasya*, and *Raktamokshana* will be helpful in these kinds of situations.

COURSE

90% of people with acne vulgaris recover by the time they are 23–25 years old, but 1% of men and 5% of women still require therapy when they are in their thirties or even forties⁶⁰.

INVESTIGATION

Usually, none are required. Sometimes cultures are required to rule out gram-negative folliculitis, anaerobic infections, or pyogenic infections. Merely a small number of labs regularly cultivate *P. acnes* and assess its antibiotic sensitivity.

DISCUSSION

One of the most prevalent skin conditions worldwide, acne is typically treated by dermatologists in the younger age range of 15 to 24 years, while it can affect people of any age³⁵. As the largest integumentary organ in the body, skin serves a multitude of purposes that are all intended to support healthy bodily activities. Unhealthy elements such as alterations in lifestyle, overindulgence in makeup and skin care items, unhealthy eating patterns, air pollution, ultraviolet radiation, stress, and so forth harm human skin, particularly the skin on the face, which is considerably thinner and more delicate. The primary features are acne, scars, blackheads, whiteheads, and greasy skin. Acne is generally found in locations with lots of oil glands, such as the face and upper section of the back and chest. Many factors can cause blockage, including bacterial colonization of the follicles, excessive protein (keratin) deposition leading to the creation of comedones, excessive oil production

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from hormonal imbalances, etc. A number of Ayurvedic works, such as the *Sharangadhara* and *Charaka samhitas*, *Ashtanga Hrudya*, *Bhavaprakash*, *Chakradatta tika*, *Yogratnakar*, and *Shushruta samhita*, as well as contemporary literature, have been evaluated in relation to acne vulgaris. After review, it was found that there are a lot of similarities between the two sciences' understandings of acne vulgaris in terms of its pathophysiology, start of symptoms, age considerations, causative factors, and treatment options. Because acne is not a dangerous or life-threatening condition but has a significant negative influence on quality of life, it has been explored in Ayurveda as a *Kshudra roga*. as it is not a serious or life threatening disorder but it seriously impacts quality of life of person^{34,35}.

In Ayurveda, the terms *Yuvanpidika*, *Tarunypitika*, and *Mukhadushika* are used to describe acne. *Tarunya*, *Yauvana*, and *Yuvan* are associated with age characteristics, such as bodily changes that take place in early childhood and adolescence (youthfulness)^{19,20}. Ayurveda and contemporary research agree that behavioral shifts that occur throughout adolescence, such as stress and rage, have also been linked to the development of acne^{29,30,61}. The term "*Dushika*" in the definition of *Mukhadushika* can be associated with microorganisms that cause acne vulgaris and inflammatory mediators⁶¹. The term "metabolism," or "*Paka*," may also have similarities to the inflammatory pathophysiology elements of acne⁶¹. Ayurvedic elements like vitiated *Kapha*, *Vata*, and *Rakta* can mirror

contemporary pathophysiological causes like hyperkeratinization, increased sebum production, and blood impurities in the *samprapti* process of acne. While *Kapha* tends to be oily, *Vata* is known to have *Pravartaka*, or stimulating activity (for hyperkeratinization)^{20,38,51}. The Ayurvedic clinical manifestations are *Pitika* (a *rakta dushti lakshan*), *Saruja*, *Ghan*, *Medogarbha*, and *Yuna Mukha*. According to *Acharya Vagbhatta*, the term "*medogarbha pidika*" describes a lesion that is filled with sebum or has a whitish color. This can be a pustule or a closed, oil-filled comedone, depending on how acne lesions are now classified. *Apakvavastha* denotes *kapha* involvement, while a *pidika* resembling *shalmali kantaka* signifies a lesion filled with *Puya* (pus). For this reason, when it comes to unknown ailments, *Ayurveda* promotes the use of *Yukti*, or feeling. It is believed that the primary disease in all *Kshudra rogas* is *rakta dushti*.

Both sciences recommend the use of oral and topical medications for the treatment of acne^{5,6,20,23,25}. Contemporary science defines acne treatment according to its severity; similarly, *Ayurveda* has recommended blood letting, or *raktamokshana*, for severe cases of acne^{23,53}. *Ayurveda* recommends *Shodhana Chikitsa* such *Vamana*, *Virechan*, *Nasya*, and *Raktamokshana* in order to eliminate the underlying causes of acne²⁴⁻²⁶. *Lodhradilepa*, *Arjunadi lepa*, *Kumkumadi taila*, *Manjishthadi tailas*, etc. are some external application in the form of *Tailas* and *lepas* which are used in *Mukhadushika*, in

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addition to *Samana chikitsa* and local application of various formulations such as *Shalmali*, *Dhanyaka*, *Vacha*, *Lodhra*, etc. The goal of contemporary science is also to eradicate *P. acnes*, one of the primary causes of acne by suggesting both topical and oral antibiotics. Both sciences have effective treatment options, but occasionally the side effects of contemporary medications prevent them from being used^{3-6,20,34,54}.

The current review aims to bring disparate sources of information about acne under one roof and compares the understanding of acne between *Ayurveda* and modern medicine. Considering the prevalence of acne in society, ongoing efforts must be made to find safer, more innovative therapies for the condition. With a deeper understanding, *Ayurveda* may undoubtedly aid in the creation of safer, more advanced acne treatment solutions.

CONCLUSION

Ayurvedic Acharyas have addressed *mukhadushika*, a prevalent skin disorder that damages adolescent beauty, in many literature. Painful eruptions that resemble *Shalmali* thorns loaded with *meda* are called *Mukhadushika*, according to *Acharya Sushruta*. *Apathya ahara*, *vihara*, and *swabhava* are a few examples of etiological causes that might cause alterations in the *dosha* and *dhatu* equilibrium. The accumulation of these deficient *Doshas* and *Rakta dhatu* in the *Twak* obstructs the *Lomkupa*.

This blockage causes swelling and the development of a sebum and pus filled thorn-like structure. The internal and external applications of herbal, mineral, and herbo-mineral *Ayurvedic* medications, as well as *shodhan* and *shaman* therapy, have been mentioned by *Acharyas*. Hence, *Ayurveda* contributes to highlighting the endearing aspects of adolescence.

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