

Review Article

## Herbal remedies for Acne vulgaris—A review

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### ABSTRACT

Pimples are one of the most common skin disorders worldwide. It occurs on almost 45% teenagers and adults, and is seen in a smaller percentage of young children. Pimples, blackheads, whiteheads and lesions appear in the various oil-producing areas of the body; the face, back, chest, neck, shoulders and upper arms. Most of people use allopathic drug which have more side effect hence need herbal drug treatment. Now, the popularity of the remedies is increasing since people are becoming more aware about the side effects of the chemicals used in conventional treatment. Natural remedies have no such problem and are assured to be completely safe, as the products used for the treatment are purely natural, which most often does not have any side effects. Another unpleasant leftover of pimples are the scars. The natural remedies are supposed to offer permanent cures for scars, if used continuously for longer period of time. Furthermore they can preventively act against future pimples attacks. The traditional medicine systems such as Chinese traditional medicine, Indian engineering online course system- Ayurveda, and Kempo – the Japanese medicinal system, are effective in present circumstances too. Many of the alternative medicine systems such as homeopathy also depend on natural remedies for treatment. These remedies are commonly used as topical application, but oral remedies are also available. They can be utilized in different preparation such as poultice, powder, and decoction.

## 1. INTRODUCTION

A pimple, also known as a zit or spot is a small papule or pustule; small skin lesions or inflammation of the skin - they are oil glands (sebaceous glands) that are infected with bacteria, become inflamed, and then fill up with pus. Pimples are caused when the sebaceous glands located at the base of hair follicles become overactive. According to Med lexicon's medical dictionary: a pimple is a papule or small pustule; usually meant to denote an inflammatory lesion of acne. The main underlying reason for acne is hormonal imbalance. Hormones make the oil glands produce too much oil. This hormonal imbalance is the reason that so many teenagers develop acne. Puberty is a time where the hormone metabolism undergoes major changes. Boys are more

prone to severe acne than girls, because boys have higher levels of hormones. Women are more likely to suffer from ongoing acne, since the female hormone metabolism is more prone to imbalances.

Inside the pore are sebaceous glands which produce sebum. When the outer layers of skin shed (as they do continuously), the dead skin cells left behind may become 'glued' together by the sebum. This causes the blockage in the pore, especially when the skin becomes thicker at puberty. The sebaceous glands produce more sebum which builds up behind the blockage, and this sebum harbors various bacteria including the species *Propionibacterium acnes* [1].

## 2. ACNE

Pimples! We have all experienced those nasty, painful blots on our faces as teenagers, varying in size from the ultra-small and almost unnoticeable, to the big, attention-grabbing ones. Pimples appear at all the wrong places, at equally wrong times. They invariably appear at the tip of our nose the night of the first date or the school prom. However, the outbreak of pimples is episodic, not continual. However, there is another skin condition which is similar in some ways to that disorder, but more severe in its appearance. It occurs on various parts of the body besides the face, and is much more difficult to cure. It can appear at any time during a person's life, although the disorder most often begins in adolescence. This dermatological condition is called Acne.

### 2.1. Definition of Acne

Acne is one of the most common skin disorders worldwide. It occurs on almost 45% teenagers and adults, and is seen in a smaller percentage of young children. Pimples, blackheads, whiteheads and lesions appear in the various oil-producing areas of the body; the face, back, chest, neck, shoulders and upper arms. The main reason for this is an over-production of oil by the sebaceous glands in the skin. This causes the oil to combine with dead skin cells, which clogs the pores in that area. Scientists are focusing on the roles played by hormones, bacteria and genes that can increase the risk of developing acne.

Acne exists in several forms, including acne vulgaris, acne fulminans and acne conglobata. Each differs in its cause, severity and prognosis. Some forms cannot be successfully treated but most acne is completely curable. With the wide range of treatment options available today, ranging from topical ointments to surgical procedures, the best treatment depends upon the type and severity of the condition. Non-prescription drugs, such as topical medications, may cure some forms but oral medications or even surgery may be required for others. Patients with moderate to severe acne must consult with a qualified doctor or a dermatologist who will help them to decide the most suitable treatment combinations for them [2].

### 2.2. Development of Acne

Acne affects millions of people all over the world. The statistical distribution of the condition, by age and gender is:

- 85% of adolescents and pre-adolescents are affected by acne.
- 11% The condition occurs on some children under 10 years of age.
- Boys are more likely to have a severe form of the disease than teenage girls.
- About 12% of women between 22 and 45 years of age are affected by acne.
- About 3% of all men are affected during their adult life.
- Women are more prone to acne during adulthood because of premenstrual hormonal changes as well as consistent use of cosmetics.
- The incidences of acne reduce sharply after the age of 45.

Sebaceous glands: The sebaceous glands are tiny skin glands which secrete sebum - an waxy/oily substance - to lubricate the skin and hair of mammals (humans are mammals). In human beings they exist throughout all skin sites except the palms and soles; there is a greater abundance of sebaceous glands on the face and scalp. In our eyelids, meibomian sebaceous glands secrete a special type of sebum into tears. Several medical conditions are linked to an abnormality in sebaceous gland function, including:

- Acne (pimples):
- Sebaceous cysts - closed sacs or cysts below the surface of the skin.
- Hyperplasia - the sebaceous glands become enlarged, producing yellow, shiny bumps on the face.
- Sebaceous adenoma - a slow-growing tumor (benign, non-cancerous) usually presenting as a pink, flesh-colored, or yellow papule or nodule.
- Sebaceous gland carcinoma - an aggressive (cancerous) and uncommon skin tumor.



Fig. 1. Healthy pore of skin with no infection.

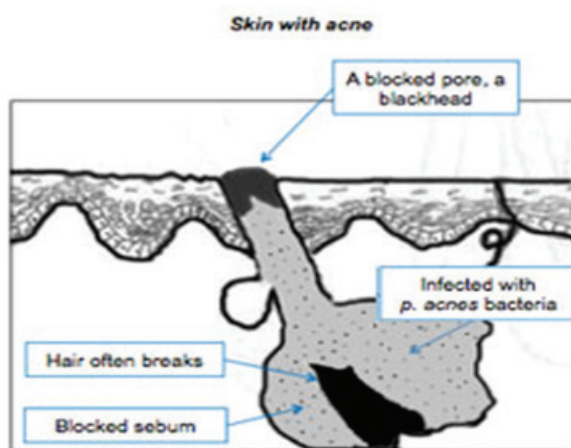


Fig. 2. Skin with Acne.

If a breakout occurs, doctors recommend that they be treated promptly to prevent the risk developing severe acne. There is also the danger that untreated severe acne may result in visible scars on the skin.

### 3. SIGNS AND SYMPTOMS OF PIMPLES

#### 3.1. Types of pimples

1. **Whiteheads** – also known as a closed comedo. These are very small and remain under the skin, appearing as a small, flesh-colored papules.
2. **Blackheads** – also known as an open comedo. These are clearly visible; they are black and appear on the surface of the skin. Some people mistakenly believe they are caused by dirt, because of their color, and scrub their faces vigorously - this does not help and may irritate the skin and cause other problems.
3. **Papules** – these are small, solid, rounded bumps that rise from the skin. The bumps are often pink.
4. **Pustules** – these are pimples full of pus. They are clearly visible on the surface of the skin. The base is red and the pus is on the top.
5. **Nodules** – these are morphologically similar (similar structure) to papules, but larger. They can be painful and are embedded deep in the skin.
6. **Cysts** – these are clearly visible on the surface of the skin. They are filled with pus and are usually painful. Cysts commonly cause scars.

#### 3.2. Types of acne

There are many variations of acne, ranging in severity from mild to severely disfiguring.

**3.2.1. Acne Vulgaris - mild/moderate:** Acne Vulgaris is the most common form of acne. Acne vulgaris lesions include blackheads, whiteheads, papules, pustules, nodules and cysts.

Mild to Moderate acne vulgaris consists of the following types of acne spots:



Fig. 3 Whiteheads

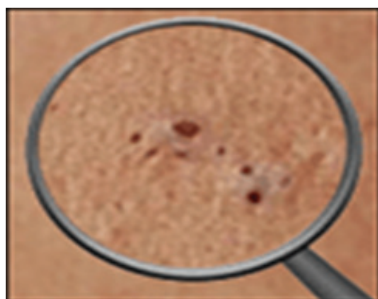


Fig. 4 Blackheads

**3.2.2. Whiteheads:** Whiteheads result when a pore is completely blocked, trapping sebum (oil), bacteria, and dead skin cells, causing a white appearance on the surface. Whiteheads are normally quicker in life cycle than blackheads.

**3.2.3. Blackheads:** Blackheads result when a pore is only partially blocked, allowing some of the trapped sebum (oil), bacteria, and dead skin cells to slowly drain to the surface. The black color is not caused by dirt. Rather, it is the skin's own pigment, melanin, reacting with the oxygen in the air. A blackhead tends to be a stable structure, and can often take a long time to clear.

**3.2.4. Papules:** Papules are inflamed, red, tender bumps with no head. Do not squeeze a papule. It will do no good, and may exacerbate scarring.

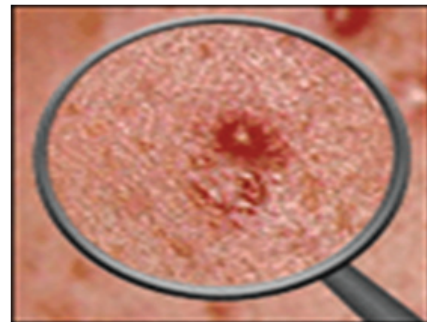


Fig. 5 Papules

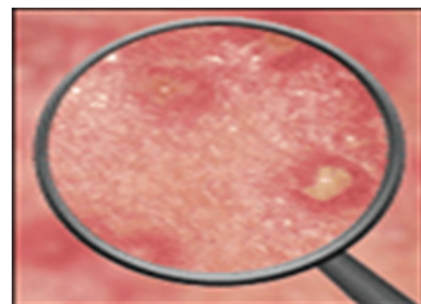


Fig. 6 Pustules

**3.2.5. Pustules:** A pustule is inflamed, and appears as a red circle with a white or yellow center. Pustules are your garden variety zit. Before you pop or squeeze such a lesion, be sure to read about how to pop a pimple. The Regimen provides a step-by-step program on how to treat pustules.

**3.2.6. Acne Vulgaris - Severe**



Fig. 7 Acne Vulgaris

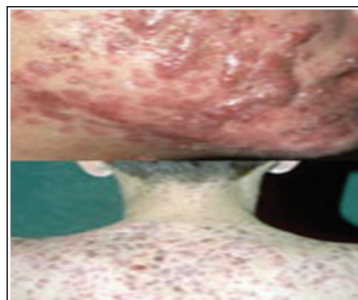


Fig. 8 Acne Conglobata

They merely require a few years of endurance and a lot of patience before disappearing altogether from our lives, remaining just an interesting part of the memories of our adolescent years.

### 3.3. Severe acne vulgaris is characterized by nodules and cysts

**3.3.1. Nodules:** As opposed to the lesions mentioned above, nodular acne consists of acne spots which are much larger, can be quite painful, and can sometimes last for months. Nodules are large, hard bumps under the skin's surface. Scarring is common. Unresolved nodules can sometimes leave an impaction behind, which can flare again and again. Absolutely do not attempt to squeeze such a lesion. You may cause severe trauma to the skin and the lesion may last for months longer than it normally would. Dermatologists often have ways of lessening swelling and preventing scarring, such as injecting the lesion with cortisone.

**3.3.2. Cysts:** An acne cyst can appear similar to a nodule, but is pus-filled, and is described as having a diameter of 5mm or more across. They can be painful. Again, scarring is common with cystic acne. Squeezing an acne cyst may cause a deeper infection and more painful inflammation which will last much longer than if you had left it alone. Dermatologists often have ways of lessening swelling and preventing scarring, such as administering a cortisone shot are sometimes confused for one another.

**3.3.3. Rosacea:** It affects millions of people, most of whom are over the age of 30. It appears as a red rash which is normally confined to the cheeks, nose, forehead and chin. The redness is often accompanied by bumps, pimples, and skin blemishes. Blood vessels may also become more visible on the skin. Blackheads are not part of rosacea. It is more prevalent in women, but often more severe when found in men. Left untreated, it can cause swelling of the nose and the growth of excess tissue, a condition called rhinophyma. Treatment is often different for rosacea than for acne, and it is important that you consult a dermatologist if you suspect you are experiencing rosacea

**3.3.4. Severe forms of acne:** Severe forms of acne are rare, but they inflict great hardship to the people who experience them.

**3.3.5. Acne Conglobata:** This is the most severe form of acne vulgaris and is more common in males. It is characterized by numerous large lesions, which are sometimes interconnected, along with widespread blackheads. It can cause severe, irrevocable damage to the skin, and disfiguring scarring. It is

found on the face, chest, back, buttocks, upper arms, and thighs. The age of onset for acne conglobata is usually between 18 to 30 years, and the condition can stay active for many years. As with all forms of acne, the cause of acne conglobata is unknown. Treatment usually includes isotretinoin (Accutane), and although acne conglobata is sometimes resistant to treatment, it can often be controlled through aggressive treatment over time.



Fig. 9. Acne Fulminans



Fig. 10. Gram-Negative Folliculitis

**3.3.6. Acne Fulminans:** This is an abrupt onset of acne conglobata which normally afflicts young men. Symptoms of severe nodulocystic, often ulcerating acne are apparent. As with acne conglobata, extreme, disfiguring scarring is common. Acne fulminans is unique in that it also includes a fever and aching of the joints. Acne fulminans does not respond well to antibiotics. Isotretinoin (Accutane) and oral steroids are normally prescribed.

**3.3.7. Gram-Negative Folliculitis:** This condition is a bacterial infection characterized by pustules and cysts, possibly occurring as a complication resulting from a long term antibiotic treatment of acne vulgaris. It is a rare condition, and we do not know if it is more common in males or females at this time. Fortunately, isotretinoin (Accutane) is often effective in combating gram-negative folliculitis.

**3.3.8. Pyoderma Faciale (Rosacea Fulminans):** This type of severe facial acne affects only females, usually between the ages of 20 to 40 years old, and is characterized by large painful

nodules, pustules, and sores, all of which may scar. It begins abruptly, and may occur on the skin of a woman who has never had acne before. It is confined to the face, and usually does not last longer than one year, but can wreak havoc in a very short time. Doctors often prescribe isotretinoin (Accutane) and systemic corticosteroids are sometimes use an adjunct [3].

#### 4. CAUSES OF PIMPLES & ACNE

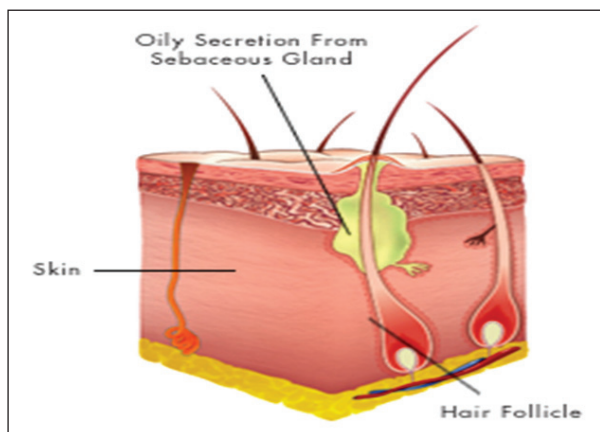


Fig. 11 Surface of skin

Pimples usually develop after blackheads or whiteheads have become infected. There are oil glands on your chest, face and back numbering in the thousands. In fact, between the nose and cheek areas there are as many as two thousand oil glands every square inch. The function of these oil glands is to lubricate the skin by producing oil, or sebum. Oil that is produced in the glands flows through follicles or tiny ducts to the surface of the skin. It usually starts far beneath the surface of the skin. A blemish (or internal lump) begins about 2 to 3 weeks before it appears on your skin's surface. Acne first begins to form in your sebaceous hair follicles. You know this as "pores", the tiny holes on you skin. Deep within each hair follicle, sebaceous glands generate sebum, the oil that keeps your skin soft, moist and pliable. As part of your skin's renewal process the old cells die and are shed off. Normally, this cell shedding process happens gradually, and fresh new skin takes its place.

But sloughing (the process where living tissue is separated from dead skin tissue) is not the same for everyone. Some people shed cells evenly while others don't. The result of uneven sloughing is that dead cells become sticky, clogging together to form a plug, similar to a cork in a bottle. This plug traps oil and bacteria inside the follicle. The trapped oil begins to form a lump as your skin continues its normal oil production. Your body's natural defense system then sends an army of white blood cells to attack the bacteria. The whole process takes around 2 to 3 weeks, resulting in a pimple.

Many teenagers experience pimple outbreaks. It is at this time that the skin attempts to adjust to hormonal changes that occur during puberty. There is a tendency for most people when seeing a 'ripe' pimple try to pick or squeeze it. This will cause further damage to your skin as germs or bacteria from your fingertips can cause inflammation and scarring as a result. The risk of infection

is also increased. Most times, when acne is ignored, it can leave visible scars on your skin

The sebaceous glands, which produce sebum, exist inside the pores of our skin. The outer layers of our skin are being shed continuously. Sometimes, dead skin cells are left behind and get stuck together by the sticky sebum, causing a blockage in the pore.

Pore blockage is more likely to occur during puberty (the process of physical changes by which a child's body becomes an adult body capable of reproduction). More sebum is produced by the sebaceous gland - as the pore is blocked, it accumulates behind the blockage. This accumulated and blocked sebum has bacteria, including *Propionibacterium acnes*; this slow-growing bacterium is linked to acne. *Propionibacterium acnes* generally exists harmlessly on our skin - however, when the conditions are right, it can reproduce more rapidly and become a problem. The bacterium feeds off the sebum and produces a substance that causes an immune response, leading to inflammation of the skin and spots. The skin of people who are prone to acne are especially sensitive to normal blood levels of testosterone - a natural hormone found in both males and females. In such people the testosterone can make the sebaceous glands produce too much sebum, making the clogging up of dead skin cells more likely, which in turn increases the probability of blocking the pores, etc. You cannot catch pimples from another person; they are not infectious. There is no scientifically compelling evidence to prove that pimples are caused by diet. For most people, acne begins during adolescence. One of the main reasons is the excessive production of sebum due to the higher levels of sex hormones in the body during puberty. To understand the various factors which cause acne, we need a brief insight into the anatomy of the skin surface; the hair follicles, as well as the production and role of sebum.

#### 5. THE HAIR FOLLICLE AND THE SEBACEOUS GLANDS

There are many hair follicles on our skin. The sebaceous glands (oil glands) exist near the surface of the skin and open into the hair follicles. The oil, or sebum, which they produce constantly, enters the follicle. This helps in protecting the skin from drying out. Overproduction of sebum is a major factor in the development of acne. Before covering the various causes of acne, here is information about the production, role and regulation of sebum.

Sebum, an oily and complex mixture of lipids (a group of fats and similar compounds including waxes, oils, sterols, triglycerides, phosphatides and phospholipids), is produced by the sebaceous glands. Sebaceous glands exist over almost all of the body, but especially on the forehead, chin and back. Cells in these glands disintegrate in about a week and produce sebum. The rate of production depends on age and gender. Adult females produce less sebum than adult males, having pimples or acne can be hereditary. Here are some factors that don't usually cause acne, at least by themselves:

## 5.1. Heredity

With the exception of very severe acne, most people do not have the problem exactly as their parents did. Almost everyone has some acne at some point in their life.

## 5.2. Food

Parents often tell teens to avoid pizza, chocolate, greasy and fried foods, and junk food. While these foods may not be good for overall health, they don't cause acne or make it worse. Although some recent studies have implicated milk and dairy products in aggravating acne, these findings are far from established.

## 5.3. Dirt

As mentioned above, "blackheads" are oxidized oil, not dirt. Sweat does not cause acne, therefore, it is not necessary to shower instantly after exercise for fear that sweat will clog pores. On the other hand, excessive washing can dry and irritate the skin.

## 5.4. Stress

Some people get so upset by their pimples that they pick at them and make them last longer. Stress, however, does not play much of a direct role in causing acne.

## 5.5. Hormones

Some women break out cyclically, but most women (and men) don't. Some oral contraceptive pills may help relieve acne, but unless a woman has abnormal menstrual periods and excessive hair growth, it's unlikely that hormones play much of a role in causing acne. Pregnancy has a variable effect on acne; some women report that they clear up completely, and others get worse, while many others see no overall change.

## 5.6. Cosmetics

Most cosmetic and skin-care products are not pore-clogging of the many available brands, those which are listed as "water-based" or "oil-free" are generally a better choice. In occasional patients, the following may be contributing factors:

## 5.7. Pressure

In some patients, pressure from helmets, chinstraps, collars, suspenders, and the like can aggravate acne.

## 5.8. Drugs

Some medications may cause or worsen acne, such as those containing iodides, bromides, or oral or injected steroids (either the medically prescribed prednisone or the steroids that bodybuilders or athletes take). Other drugs that can cause or aggravate acne are anticonvulsant medications and lithium, which is used to treat bipolar disorder. Most cases of acne, however, are not drug-related.

## 5.9. Occupations

In some jobs, exposure to industrial products like cutting oils may produce acne.

## 6. BASIC CAUSES OF ACNE

### 6.1. Lifestyle

Moderation and regularity are good things, but not everyone can sleep eight hours, eat three good meals, and drink eight glasses of water a day. You can, however, still control your acne even if your routine is frantic and unpredictable. Probably the most useful lifestyle changes you can make are to apply hot compresses to pustules and cysts, to get facials and never to pick or squeeze pimples. Playing with or popping pimples, no matter how careful and clean you are, nearly always makes bumps stay redder and bumpier longer. People often refer to redness as "scarring," but fortunately it usually isn't in the permanent sense. It's just a mark that takes months to fade if left entirely alone.

### 6.2. Other skin conditions can mimic acne

**6.2.1. Rosacea:** This condition is characterized by pimples in the middle third of the face, along with redness, flushing, and superficial blood vessels. It generally affects people in their 30s and 40s and older. There is sometimes no "bright line" separating acne from rosacea; however, there are no blackheads or whiteheads in rosacea.

**6.2.2. Pseudofolliculitis:** This is sometimes called "razor bumps" or "razor rash." When cut close to the skin, curly neck hairs bend under the skin and produce pimples. This is a mechanical problem, not a bacterial one, and treatment involves shaving less (growing a beard, laser hair removal.) Pseudofolliculitis can, of course, occur in patients who have acne too.

**6.2.3. Folliculitis:** Pimples can occur on other parts of the body, such as the abdomen, buttocks, or legs. These represent not acne but inflamed follicles. If these don't go away on their own, doctors can prescribe oral or external antibiotics, generally not the same ones used for acne.

**6.2.4. Gram-negative folliculitis:** Some patients who have been treated with oral antibiotics for long periods develop pustules filled with bacteria resistant to the antibiotics which have previously been used. Bacterial culture tests can identify these germs, leading the doctor to prescribe different antibiotics or other forms of treatment.

## 7. PRETREATMENT

Since everyone gets acne at some time, the right time to treat it is when it bothers you. This can be when severe acne flares suddenly, mild acne that just won't go away, or even when a single pimple decides to show up the week before your prom or wedding.

### 7.1. Cleansing and skin care

Despite what you read in popular style and fashion magazines, there is no magic product or regimen that is right for every person and situation.

### 7.2. Mild cleansers

Washing once or twice a day with a mild cleansing bar or liquid (for example, Dove, Neutrogena, Basis, Purpose, and Cetaphil

are all inexpensive and popular) will keep the skin clean and minimize sensitivity and irritation.

### 7.3. Exfoliating cleansers and masques

A variety of mild scrubs, exfoliants, and masques can be used. These products contain either fine granules or salicylic acid in a concentration that makes it a very mild peeling agent. These products remove the outer layer of the skin and thus open pores. Products containing glycolic or alpha hydroxy acids are also gentle skin exfoliants.

### 7.4. Retinol

Not to be confused with the prescription medication Retin-A, this derivative of vitamin A can help promote skin peeling.

## 8. REMEDIAL APPROACH FOR ACNE:

### 8.1. Antibacterial cleansers

The most popular ingredient in over-the-counter antibacterial cleansers is benzoyl peroxide.

### 8.2. Topical (external) applications

These products come in the form of gels, creams, and lotions, which are applied to the affected area. The active ingredients that kill surface bacteria include benzoyl peroxide, sulfur, and resorcinol. Some brands promoted on the Internet and cable TV (such as ProActiv) are more costly but not really any better than ones you can buy in the drugstore. Benzoyl peroxide causes red and scaly allergic skin in a small number of people, which goes away as soon as you stop using the product. Keep in mind that benzoyl peroxide is a bleach, so do not let products containing benzoyl peroxide leave unsightly blotching on colored clothes, shirts, towels, and carpets.

### 8.3. Reduce the oil

You cannot stop your oil glands from producing oil. Even isotretinoin only slows down oil glands for a while; they come back to life later. What you can do is to get rid of oil on the surface of the skin and reduce the embarrassing shine. Use a gentle astringent/toner to wipe away oil. (There are many brands available in pharmacies, as well as from manufacturers of cosmetic lines.) Products containing glycolic acid or one of the other alpha hydroxy acids are also mildly helpful in clearing the skin by causing the superficial layer of the skin to peel (exfoliate). Masques containing sulfur and other ingredients draw out facial oil. Antibacterial pads containing benzoyl peroxide have the additional benefit of helping you wipe away oil.

### 8.4. Cosmetics

Don't be afraid to hide blemishes with flesh-tinted coverups or even foundation, as long as it is water-based or oil-free (which makes them noncomedogenic). There are many quality products available.

### 8.5. Facials

While not absolutely essential, steaming and “deep-cleaning” pores is useful, both alone and in addition to medical treatment, especially for people with “whiteheads” or “blackheads.” Having these pores unclogged by a professional also reduces the temptation to do it yourself.

### 8.6. Pore strips

Pharmacies now carry, under a variety of brand names, strips which you put on your nose, forehead, chin, etc., to “pull out” oil from your pores. These are, in effect, a do-it-yourself facial. They are inexpensive, safe, and work reasonably well if used properly.

### 8.7. Toothpaste

One popular home remedy is to put toothpaste on zits. There is no medical basis for this. Ditto for vinegar [4].

## 9. PIMPLES AS COMMON DISEASE

Pimples are the most common skin disease for adolescents. According to the British Medical Journal (Clinical Evidence, Authors: Sarah Purdy, David DeBerker):

1. More than 80% of teenagers get acne at some point.
2. A community sample of 14 to 16 year-olds in the United Kingdom revealed that acne affected 50% of them.
3. A sample study of adolescents in New Zealand found acne was present in 91% of boys and 79% of girls.
4. A sample study of adolescents in Portugal found that the average prevalence of acne (in both sexes) was 82%.
5. 30% of teenagers with acne required medical treatment because of its severity.
6. General practitioners (GPs, primary care physicians) in the UK reported that 3.1% of 13 to 25 year-old patients visited them complaining of acne.
7. The incidence of acne is similar in both adult males and females.
8. Doctors report that acne appears to peak at 17 years of age.
9. Acne incidence (presence, occurrence) in adults is increasing, doctors report. We don't know why.

## 10. COMMON HERBAL DRUGS USED FOR TREATMENT OF ACNE

### 10.1. Neem (*Azadirachta Indica*)



Fig. 12 Neem twig

**10.1.1 Significance of Neem:** According to herbalist Rosemary Gladstar, all components of the neem tree are strongly anti-bacterial and anti-inflammatory. These two qualities are the main reasons for the beneficial effect of neem and neem oil for acne. If you suffer from serious acne it is advisable to see a doctor, and the most severe cases require the help of a dermatologist.

Pimples can be successfully treated with neem. Neem kills bacteria that cause Acne / Pimples and prevents it from coming back. Neem can either be applied topically, through creams and lotions (Neem leaves also can be crushed and applied on acne) or it can be taken internally (Neem supplement is completely safe because it is nothing but a wonderful herb). Going for Neem Supplement will be a wise decision because it takes care of Facial Pimples, Back Pimples and other skin disorders like Psoriasis and Eczema as it purifies blood, detoxifies internally and helps maintain healthy and glowing skin. Many herbalists recommend neem products as some of the most efficient home pimples treatments. Neem is a mild treatment that does not upset your skin further. Neem does not only kill the pimples causing bacteria, it also soothes redness and inflammation. Neem is totally free from any side effect. Neem is an excellent antibacterial herb and it can indeed be very helpful with pimples. People do report great results when using it. But don't run out now to grab the next available neem soap bar and that mega savings pack of neem capsules. There is a bit more to it. Pimples is a complex medical condition. Everybody is different, every case of pimples is different, and sometimes it can be a bit tricky to figure out the best treatment. All the parts of the neem tree and active principles and extracts have a lot of notable pharmacological actions. Neem is bitter. It can be used as a poultice in case of boils; it works as anti-septic, demulcent, a tonic in catarrhal affections, stomachic, stimulant. It is obliquing in snake bite, scorpion sting, hypoglycemic, in rheumatism, as an painkiller, antipyretic, sedative, anti-bacterial, anti-protozoa, antiviral, anathematic and in skin related problems. The tree stem, root and bark possess astringent, tonic, and anti-periodic properties. The bark of neem is beneficial in malarial fever and useful in other cutaneous diseases [5,6]. Neem is a tree native to Southeast Asia that is renowned for its therapeutic benefits for the skin. The Neem tree is often called the "village pharmacy," as Neem has been used for 1,000's of years to support the health and wellness of the human body for a broad array of uses. Neem leaf, bark and oil have traditional and modern uses to help heal the skin for issues such as: pimples, fungal and bacterial infections. Neem is renowned for its cooling, soothing & astringent actions to support healthy skin.

[A] **Cooling:** Neem is known for its refrigerant actions, meaning that it helps to lower body temperature and cool the skin. This cooling action is very appropriate with acne which is often described as a red, hot and inflamed condition.

[B] **Soothing:** Both Neem leaf and Neem oil help to reduce inflammation when topically applied. Neem is rich in quercetin (a polyphenolic flavonoid). Quercetin is recognized for its anti-inflammatory, bactericidal and antifungal

actions which help to soothe the skin. Neem oil is rich in essential fatty acids that help to protect, moisturize and balance out the skin tone and texture. Neem oil will also help to lower any unfriendly bacterial levels on the skin that may be caused by blemishes. These soothing qualities are ideal for acne prone skin which tends to be overly oily or extremely dry, red and irritated.

[C] **Astringent:** The gently astringent action of Neem helps to tighten and heal the skin and lessen secretions. This action helps heal pimples more quickly, close pores, normalize, balance and promote healthy skin. The idea of using oil on acne prone skin seems a bit scary at first. I encourage you to give Neem oil or Neem oil based products an opportunity. Often times, people with acne find that when they feed the skin healthy oils on the outside, that this in turn helps to balance oil production of the skin and leads to less blemishes. It is important to use high quality, organic and or wild crafted Neem oil, leaf and or bark. Choose products with a high percent of other organic ingredients that are gentle on the skin.

**10.1.2. Description:** It is a tall evergreen tree with the small bright green leaves. It is up to 100 feet tall. It blossoms in spring with the small white flowers. It has a straight trunk. Its bark is hard rough and scaly, fissured even in small trees. The colour of the bark is brown grayish. The leaves are alternate and consist of several leaflets with serrated edges.

**10.1.3. Other Species:** *A. juss*, *A. azedarac* are the other related species of Neem tree. *A. juss*, *A. azedarac* are the other related species of Neem tree. *A. juss*, *A. azedarac* are the other related species and other species.

**10.1.4. Location:** Neem tree is found throughout India. It is a popular village tree. Although it is also widely grown in Ranthambore National Park, Bandhavgarh national Park, Mrugavani National Park, Bannerghata National Park, Sariska Wildlife Sanctuary and Guindy National Park.

**10.1.5. Cultivation:** Neem tree can easily be grown in the dry, stony, shallow and clayey soils. It needs very little water and plenty of sunlight. It grows slowly during the first year of planting. It can be propagated through the seeds and cuttings. Young neem tree cannot tolerate excessive cold.[7,8]

## 10.2. Turmeric



Fig. 13 Turmeric plant.

Turmeric (*Curcuma longa*) is a rhizomatous herbaceous perennial plant of the ginger family, Zingiberaceae. It is native to tropical



South Asia and needs temperatures between 20 °C and 30 °C and a considerable amount of annual rainfall to thrive. Plants are gathered annually for their rhizomes, and propagated from some of those rhizomes in the following season. When not used fresh, the rhizomes are boiled for several hours and then dried in hot ovens, after which they are ground into a deep orange-yellow powder commonly used as a spice in curries and other South Asian and Middle Eastern cuisine, for dyeing, and to impart color to mustard condiments. Its active ingredient is curcumin and it has a distinctly earthy, slightly bitter, slightly hot peppery flavor and a mustardy smell.

In medieval Europe, turmeric became known as Indian saffron, since it was widely used as an alternative to the far more expensive saffron spice. Erode, a city in the south Indian state of Tamil Nadu, is the world's largest producer and most important trading center of turmeric in Asia. For these reasons, Erode in history is also known as "Yellow City" or "Turmeric City". Sangli, a town in the southern part of the Indian western state of Maharashtra, is the second largest and most important trading center for turmeric in Asia. Turmeric is known as "Manjal" and turmeric powder is known as "Manjal Thool" in Tamil language and in Tamil Nadu, India

**10.2.1. Overview:** Turmeric is a shrub in the ginger family that's grown in Asia, India and Africa. It's golden in color and has a bitter taste, making it an often-used spice in curry powder, mustard and some cheeses. This herb, which is sometimes referred to as Indian saffron, may help clear up pimples. Do not use turmeric for pimples without consulting your doctor about the risk and benefits of treatment.

**10.2.2. Mechanism:** The Acne Resource Center touts turmeric as very useful in treating acne. According to its website, it can clear up pimples whether taken as a supplement or in a food, or if directly applied to the skin. Medline Plus, a website of the National Institutes of Health, acknowledges that laboratory studies have shown turmeric has anti-inflammatory activity, which would explain its ability to bring down the swelling of a pimple.

**10.2.3. Format:** If you want to take turmeric internally to help pimples, the Acne Resource Center suggests taking it mixed with warmed milk. If you prefer to apply it directly to acne, turmeric and coconut oil can be mixed into a paste and dabbed on pimples. The mixture takes about 20 minutes to dry, and you can leave it on overnight. In the morning, wash your skin as you normally would.

**10.2.4. Availability:** Dried turmeric is available in health food stores, and in the spice section of many supermarkets. You can also find it at ethnic markets, where the selection of the freshest herb is probably best, according to the World's Healthiest Foods. The color doesn't necessarily affect its potency. However, you should store it in a sealed container and keep it in a place that's dark, dry and cool.

**10.2.5. Considerations:** Turmeric fights pimples in a number of ways. The Acne Resource Center says it can dry out blemishes while stopping formation of new ones. It's also said to not be drying to skin. The website notes that South Indian women

use it as a daily face mask to maintain their smooth, clear skin. Turmeric may already be in your natural skin care products; it has many synonyms, including curcuma, shati and zingiberene.

**10.2.6. Warnings:** Medline Plus says allergic reactions to turmeric are possible. If you experience a rash, discontinue use until consulting your physician. If you have difficulty breathing or swelling of the mouth, lips or throat, seek immediate medical attention. Medline Plus also warns that the herb may increase the risk of bleeding, so make sure all of your health care providers are aware you're using it.

**10.2.7. Turmeric Function:** The most active ingredient contained in turmeric is curcumin. According to Advance Health, curcumin from turmeric has powerful anti-inflammatory and antibacterial properties. These are beneficial for the treatment of pimples because turmeric can reduce the swelling and redness caused by acne. It can also kill the bacteria in blocked pores as well as preventing any more bacteria from building up.

**10.2.8. Uses of Turmeric:** Bodies responding to seasonal changes with the flu, coughs, and running noses, are immediately administered with honey mixed with turmeric, or turmeric mixed in milk by the homemaker, to soothe and to cure. The Friday oil bath routines with the application of Haldi is almost sacrosanct with the South Indian women, resulting in beautiful skin, and hairless bodies! In fact, in South India, it is considered very auspicious and therefore, is the first item on the grocery list. The turmeric plant is tied around the vessel used to make Sweet pongal on the harvest festival, which is celebrated on the Makarshankranti Day, universally celebrated on 14th jan. every year.

In many North Indian traditional wedding ceremonies, haldi is applied to both, the groom and the bride, not only to make them look good with fresh glowing skins, but to ward off the evil eye. It is considered by the Hindus as a symbol of prosperity and as a cleansing herb for the whole body. Pieces of crushed roots mixed with seawater are sprinkled to remove the negative influences from places. Indians therefore, are no strangers to the multiple uses of Turmeric (*Curcuma longa*). It is well recognized as the best anti-oxidant, hypoglycemic, colorant, antiseptic and wound healer. Used in cooking as a spice for over 2,500 years, turmeric has a bitter, musty flavor similar to mustard. It is this spice that gives Indian curries their characteristic bright yellow-orange color.

The healing properties of turmeric have made it a most sought after ingredient in cosmetics and drugs, as the leaf oil and extract can also be used as sunscreens and bio-pesticides.

In fact, Turmeric has been in the global limelight for the granting of the controversial patent on it! Its modern approved applications in European medicine, stem from its traditional uses in Asia. Turmeric is used extensively in the Indian systems of medicine (Ayurveda, Unani, and Siddha). It is used as a carminative and stomachic in the treatment of digestive disorders such as flatulence, bloating, and appetite loss. Turmeric is used internally as boiled powder, fresh juice, and confection and externally as paste, oil, ointment, and lotion. It is also applied topically for ulcers, wounds, eczema, and inflammations. In both the

Ayurvedic and Siddha systems of medicine, a Turmeric, with its antibacterial action, prevents bacterial infections on wounds. Turmeric also has a long history of use for its anti-inflammatory and antiarthritic effects. As in India, it is used in China, Japan, and Korea for a range of indications including, Amenorrhea. Turmeric has been investigated for its cholagogous influence on the secretion of bile, pancreatic, and gastric juices. It is currently being evaluated for its anticarcinogenic and antimutagenic properties. The roots are pounded and pressed to extract a juice that, when mixed with water, is helpful in earaches and to clear the sinuses through nasal application. The astringent qualities of turmeric are also useful in cases of consumption, tuberculosis, bronchitis, colds and asthma, the root being lightly cooked and eaten. The active constituent of turmeric is curcumin, which has been shown to have a wide range of therapeutic effects.

**10.2.9. Uses in folk medicine:** In Ayurvedic practices, turmeric has many medicinal properties and many in South Asia use it as a readily available antiseptic for cuts, burns and bruises. It is also used as an antibacterial agent. It is taken in some Asian countries as a dietary supplement, which allegedly helps with stomach problems and other ailments. It is popular as a tea in Okinawa, Japan. Indians also use it as an anti-inflammatory agent, and remedy for gastrointestinal discomfort associated with irritable bowel syndrome, and other digestive disorders. In Afghanistan and northwest Pakistan, turmeric is applied to a piece of burnt cloth, and placed over a wound to cleanse and stimulate recovery. Indians, in addition to its Ayurvedic properties, use turmeric in a wide variety of skin creams that are also exported to neighboring countries.

**10.2.10. Preliminary medical research:** Turmeric is currently being investigated for possible benefits in Alzheimer's disease, cancer, arthritis, and other clinical disorders.



Fig. 14. Turmeric rhizome

In the latter half of the 20th century, curcumin was identified as responsible for most of the biological effects of turmeric. According to a 2005 article in the Wall Street Journal, research activity into curcumin and turmeric is increasing, with supplement sales increased 35% from 2004. The U.S. National Institutes of Health currently has registered 19 clinical trials underway to study use of dietary turmeric and curcumin for a variety of clinical disorders (dated February 2010).

**10.2.11. Cosmetics:** Turmeric paste is traditionally used by Indian women to keep them free of superfluous hair and as an antimicrobial. Turmeric paste, as part of both home remedies and Ayurveda, is also said to improve the skin and is touted as

an anti-aging agent. Turmeric figures prominently in the bridal beautification ceremonies of India, Bangladesh, and Pakistan. Staining oneself with turmeric is believed to improve the skin tone and tan. Turmeric is currently used in the formulation of some sunscreens. The government of Thailand is funding a project to extract and isolate tetrahydrocurcuminoids (THC) from turmeric. THCs are colorless compounds that might have antioxidant and skin-lightening properties, and might be used to treat skin inflammations, making these compounds useful in cosmetics formulations. Turmeric makes a poor fabric dye, as it is not very light fast (it fades with exposure to sunlight). However, turmeric is commonly used in Indian clothing, such as saris.

**10.2.12. Gardening:** Turmeric can also be used to deter ants. The exact reasons why turmeric repels ants is unknown, but anecdotal evidence suggests it works.

**10.2.13. Ceremonial uses:** Turmeric is considered highly auspicious in India and is used extensively in various Indian ceremonies for millennia. Even today it is used in every part of India during wedding ceremonies and religious ceremonies. It is used in Pujas to make a form of Hindu god Vinayagar. Lord Vinayagar, the remover of obstacles, is invoked at the beginning of almost any ceremony and a form of Ganesh for this purpose is made by mixing turmeric with water and forming it into a cone-like shape. During the south Indian festival Pongal, a whole turmeric plant with fresh rhizomes is offered as a thanksgiving offering to Suryan, the Sun god. Also, the fresh plant sometimes is tied around the sacred Pongal pot in which an offering of pongal is prepared.

In southern India, as a part of the marriage ritual, dried turmeric tuber tied with string is used to replace the Thali necklace temporarily or permanently. The Hindu Marriage act recognizes this custom. Thali necklace is the equivalent of marriage rings of west.

Modern Neopagans list it with the quality of fire, and it is used for power and purification rites. Friedrich Ratzel in "The History of Mankind" reported in 1896 that in Micronesia the preparation of turmeric powder for embellishment of body, clothing and utensils had a highly ceremonial character. He quotes an example of the roots being ground by four to six women in special public buildings and then allowed to stand in water. The following morning, three young coconuts and three old soma nuts are offered by a priestess with prayer, after which the dye which has settled down in the water is collected, baked into cakes in coconut moulds, wrapped in banana leaves, and hung up in the huts till required for use.

**10.2.14. Composition:** Turmeric contains up to 5% essential oils and up to 5% curcumin, a polyphenol. Curcumin is the active substance of turmeric and curcumin is known as C.I. 75300, or Natural Yellow 3. The systematic chemical name is (1E, 6E)-1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione. It can exist at least in two tautomeric forms, keto and enol. The keto form is preferred in solid phase and the enol form in solution. Curcumin is a pH indicator. In acidic solutions (pH < 7.4) it turns yellow, whereas in basic (pH > 8.6) solutions it turns bright red [9,10,11].

### 10.3 Tulsi



Fig. 15. Tulsi twig

*Ocimum tenuiflorum* (also tulsi, tulasī, or Holy Basil) is an aromatic plant in the family Lamiaceae which is native throughout the Old World tropics and widespread as a cultivated plant and an escaped weed. It is an erect, much branched subshrub 30–60 cm tall with hairy stems and simple opposite green leaves that are strongly scented. Leaves have petioles, and are ovate, up to 5 cm long, usually slightly toothed. Flowers are purplish in elongate racemes in close whorls. There are two main morphotypes cultivated in India—green-leaved (Sri or Lakshmi tulsi) and purple-leaved (Krishna tulsi).

Tulsi is cultivated for religious and medicinal purposes, and for its essential oil. It is widely known across South Asia as a medicinal plant and an herbal tea, commonly used in Ayurveda, and has an important role within the Vaishnavite tradition of Hinduism, in which devotees perform worship involving Tulsi plants or leaves. There is also a variety of *Ocimum tenuiflorum* which is used in Thai cuisine, and is referred to as Thai holy basil, or kraphao.

Medical uses: Recent studies suggest that Tulsi may be a COX-2 inhibitor, like many modern painkillers, due to its high concentration of eugenol (1-hydroxy-2-methoxy-4-allylbenzene). It is also used for women who are suffering from periods. One study showed Tulsi to be an effective treatment for diabetes by reducing blood glucose levels. The same study showed significant reduction in total cholesterol levels with Tulsi. Another study showed that Tulsi's beneficial effect on blood glucose levels is due to its antioxidant properties. Tulsi also shows some promise for protection from radiation poisoning and cataracts. Some of the main chemical constituents of Tulsi are: Oleanolic acid, Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, Linalool, and  $\beta$ -caryophyllene.

**10.3.1. In Ayurveda:** Tulsi has been used for thousands of years in Ayurveda for its diverse healing properties. It is mentioned by Charaka in the Charaka Samhita, an ancient Ayurvedic text. Tulsi is considered to be an adaptogen, balancing different processes in the body, and helpful for adapting to stress. Marked by its strong aroma and astringent taste, it is regarded in Ayurveda as a kind of “elixir of life” and believed to promote longevity.

Tulsi's extracts are used in ayurvedic remedies for common colds, headaches, stomach disorders, inflammation, heart disease, various forms of poisoning, and malaria. Traditionally, tulsi is taken in many forms: as herbal tea, dried powder, fresh leaf, or mixed with ghee. Essential oil extracted from Karpoora Tulsi

is mostly used for medicinal purposes and in herbal cosmetics, and is widely used in skin preparations due to its anti-bacterial activity. For centuries, the dried leaves of Tulsi have been mixed with stored grains to repel insects.



Fig. 16. Tulsi leaves

The leaves of holy basil, known as kraphao in the Thai language, are commonly used in Thai food. Thai holy basil should not be confused with horapha which is normally known as or with Thai lemon basil. The best-known dish made with this herb is Phat kraphao beef, pork or chicken stir fried with Thai holy basil.

**10.3.2. Occurrence of Tulsi (Holy Basil):** “The Queen of Herbs” – is the most sacred herb of India. Tulsi (*Ocimum sanctum*), although also known as Holy Basil, is a different plant from the pesto variety of Basil (*Ocimum basilicum*). Tulsi has been revered in India for over five thousand years, as a healing balm for body, mind and spirit, and is known to bestow an amazing number of health benefits. Organic india is pleased to offer organic tulsi, for the first time, as a stress-relieving, energizing and delicious tea. For our organic india Tulsi Tea Collection we utilize a proprietary combination of 3 varieties of Tulsi: Rama Tulsi (*Ocimum sanctum*), Krishna Tulsi (*Ocimum sanctum*) and Vana Tulsi (*Ocimum gratissimum*). Each variety lends its own distinct and characteristic taste that contributes to the delicious flavor and aroma of our blend.

**10.3.3. Health benefits of Tulsi:** Tulsi is rich in antioxidant and renowned for its restorative powers, Tulsi has several benefits:

- Relieves stress / adaptogen.
- Bolsters immunity.
- Enhances stamina.
- Provides support during cold season.
- Promotes healthy metabolism.
- A natural immuno-modulator.

Modern scientific research offers impressive evidence that Tulsi reduces stress, enhances stamina, relieves inflammation, lowers cholesterol, eliminates toxins, protects against radiation, prevents gastric ulcers, lowers fevers, improves digestion and provides a rich supply of antioxidants and other nutrients. Tulsi is especially effective in supporting the heart, blood vessels, liver and lungs and also regulates blood pressure and blood sugar.” Dr. Ralph Miller, former Director of Research for the Canadian Dept. of Health and Welfare.

**10.3.4. Tulsi offer so many health benefits:** The unique chemistry of Tulsi is highly complex. Tulsi contains hundreds

of beneficial compounds known as phyto-chemicals. Working together, these compounds possess strong antioxidant, antibacterial, antiviral, adaptogenic, and immune-enhancing properties that promote general health and support the body's natural defense against stress and diseases. The essential oils in the leaves of Tulsi that contribute to the fragrance and refreshing flavor of Tulsi Tea, are a particularly rich source of valuable phyto-chemicals.

**10.3.5. Tulsi is an adaptogen:** An adaptogen is an agent that helps the body adapt more efficiently to stress. Adaptogens reduce the intensity and negative impact of the stress caused by mental tension, emotional difficulties, poor lifestyle habits, disease and infection, pollution and other factors. Tulsi is one of the most effective adaptogens known.

**10.3.6. Tulsi are antioxidants:** Antioxidants slow down the process of excess oxidation and protect cells from the damage caused by free radicals. When cells are attacked by free radicals, excess oxidation occurs which damage and destroy cells. Antioxidants stop this process. The cellular damage caused by free radicals can be responsible for causing and/or accelerating many diseases. Tulsi is rich in antioxidants and is recommended to guard against free radicals and protect from damaging excess oxidation.

**10.3.7. Tulsi is an immuno-modulator:** An immuno-modulator is an agent that balances and improves the immune response of the body in fighting antigens (disease causing agents such as bacteria, viruses, microbes, allergens etc.) and maintaining health [12, 13, 14].

## 11. CONCLUSION

Available evidence suggests that many herbal medicines may have the potential for adverse effects in people with pimples disease. A combination of factors can compound this issue, including the popularity and widespread use of herbal medicines by laypersons, the reluctance of many patients to discuss their use of herbal medicines with their physicians, and a lack of knowledge about the safety and efficacy of many herbal medicines among both patients and health care providers.

Many herbal medicines are sold over-the-counter as dietary supplements, as long as they do not advertise specific claims about treatment of a disease or condition, such as obesity. They must have a basic level of safety for the Food and Drug Administration to allow their sale. However, an herbal medicine that may be relatively safe in the general population may also

interact adversely with the symptomatic expression of medical conditions, such as pimples, and their treatments. Arguably, the same potential risk exists for pharmaceutical over-the-counter medications. Thus, both patients and health care providers must educate themselves on the contraindications of herbal medicines, as well as pharmaceutical medications, to avoid improper use or harmful effects. Further research is needed to establish the safety and efficacy of many herbal medicines in patients with pimples.

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