



Review Article

Role of diet in management of acne

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ABSTRACT

Acne is another name acne vulgaris. Acne is a common problem skin. This problem developed when your pores get blocked by oil and dead skin debris. This results from pimples. According to the GBD study, 85% of young people affect this disease or age is 12–25 years. According to the study, young person are affected by this disease in which countries such as the UK, France, and the USA. Its main role in the diet means diets are intake the less glycemic index food shows that the effect of acne is less but glycemic index food intake high shows the acne effect. Sometimes, some factors depend on diet and show the acne effect such as chocolate, oily food, or dietary product. The main role is in medicine such as oral medicine as highly effective as compared to topical medications. The main medicine benzoyl peroxide protects against resistance by eliminated resistance bacteria and any other therapies, for example, combined therapy is used in the treatment of acne. Some natural products are used in the treatment of acne such as *Aloe vera* gel, tea tree oil, Vitamin A, *Rosa Damascena*, bananas peel, and other natural products. *A. vera* is the main component, used as antibacterial property. They are reducing redness or inflammation on the skin.

Keywords: Acne, causes, diet, preventions, treatment

INTRODUCTION

Acne is a common skin problem that develops when your pores get block by oil and dead skin debris. This results in pimples, blackheads, especially on the face, neck, chest, back, and upper arms.^[1] According to the Global Burden of Disease study, acne vulgaris affects 85% of young adults age 12–25 years.^[2] Acne shows the top three most general skin conditions in the general population, as found in the largest studies within the UK, France, and the USA.^[3-5] Similar numbers are reported for young adults in many countries throughout the world.^[6]

DIET

- Diet or nutrition is usably interchangeable
- The main way of nutrition is by having a proper diet
- Poor diet – poor metabolic effect – nutrient deficiency or unbalance nutritional condition.

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Diet means orally intake food or other substances that provide nourishment.^[7]

COMPONENT OF DIET

Major components:

1. Carbohydrate – 65–80%
2. Proteins – 7–15%
3. Fats – 10–30%.

Micronutrients:

1. Vitamins
2. Minerals.

Modern diet

Basic nutrients, such as carbohydrates, fats, and proteins, are the basis of all life activities. The main aim of nutrients is to prevent and treat nutrients of deficiency. Modern diet related to junk food that's mean this food is empty calorie. This food does not contain any nutrients that your body needs to stay healthy. It means that the food has poor nourishment values consider unhealthy and may be called as junk food.^[8]

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DIAGRAMMATICALLY SHOW ACNE IN FACE, NECK, OR UPPER SHOULDER

Figure 1 Showing acnes caused by *propionibacterium acnes* in neck, cheeks, and back. Figure 2 Pathogenesis of acne vulgaris.



Figure 1: Acnes caused by *propionibacterium acnes* in neck, cheeks, and back

PATHOGENESIS OF ACNE

There are three major factors thought to be important in the pathogenesis of acne vulgaris:

"Over-production" of sebum.

- Sebum is lipid produced by sebaceous glands and is liquid at room temperature.
- It consists almost entirely of triglyceride and hydrolysis products of triglyceride, wax esters (esters of long chain fatty acids and long chain fatty alcohols) and squalene (a long chain hydrocarbon precursor of cholesterol).
- The role of this lipid in normal physiology and in the pathogenesis of acne vulgaris is not clear, but it is known that acne patients, as a group, produce more sebum than controls.

Abnormal follicular keratinization

- The upper part of the follicle produces a stratum corneum, similar to that found on normal skin, which must "desquamate" (that is, lose cell to cell cohesion) in an orderly way.

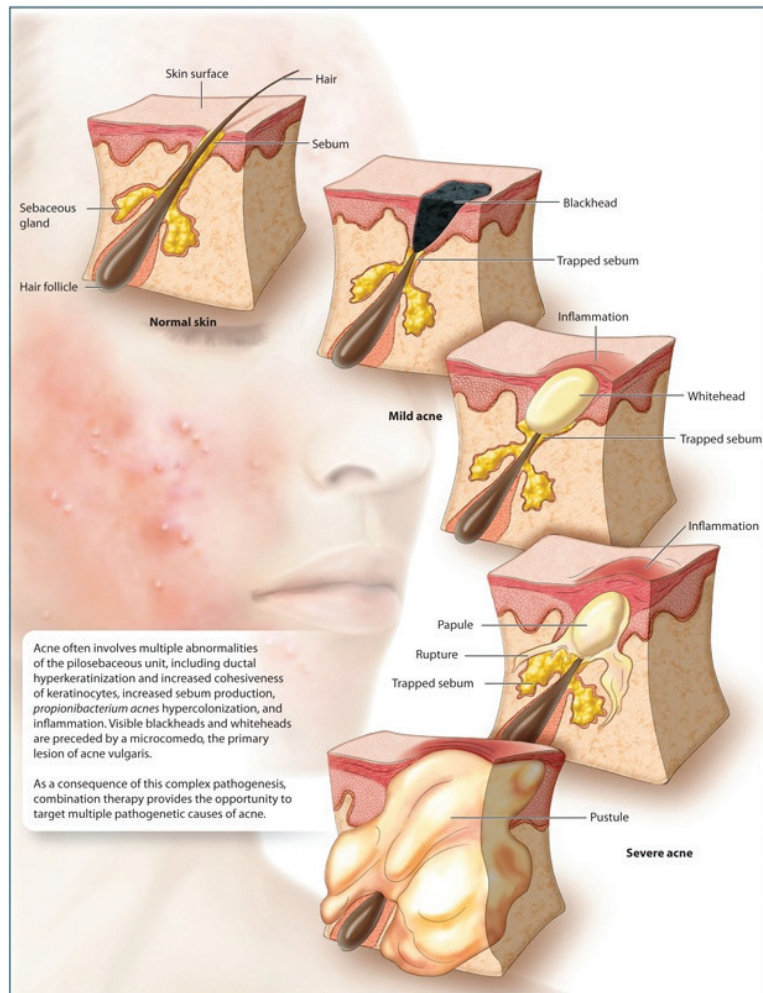
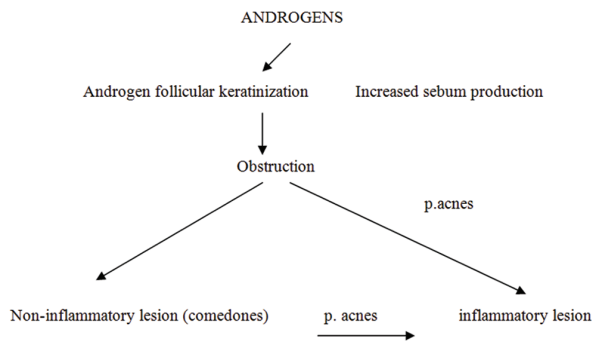


Figure 2: Pathogenesis of acne vulgaris

- This seems to not occur in acne patients and leads, at least in part, to the formation of the follicular plug. This is the sine qua non of acne vulgaris.

Presence of follicular bacteria, specifically *Propionibacterium acnes*

- This is a normal colonizer of human follicles but seems to be present in excessive numbers in patients with acne and plays a role in the induction of inflammation in association with the follicular plugs.
- The relation and importance of the above three factors has not been worked out. There is still hot debate over the role sebum may play in the formation of comedones or inflammation, and it is known that reduction in sebum will be associated with improvement in acne.
- On the other hand, improvement in acne can be seen from topical treatments that do not alter sebum production but do alter follicular keratinization.^[9]



CAUSE OF ACNE

- Acne is an inflammatory disease of the pilosebaceous duct that results from four primary pathophysiologic processes
- Proliferation of *Propionibacterium acnes*
- Inflammation^[10]
- Increased androgen production causes abnormal epithelial desquamation means (skin peeling) and follicular blockage, which lead to primary lesion in acne – microcomedone
- Microcomedone means that they are pathological structure not seen in the naked eye that evolve into visible lesion^[11]
- Acne appear earlier in girls, but more boys are effected during the mid-teenage year^[12]
- Hormone changed caused by puberty.

CAUSES OF ACNE DIET

Chocolate

Chocolate has always been considered as a factor that may contribute to a deep form of acne, but there is a very limited amount of evidence supporting its negative impact on the skin. Dermatologists often observe that patients have shown

new pimples a few days after ingestion of products containing chocolate.

Glycemic index

If you trust that glycemic load and glycemic index of the whole diet may participate in the pathogenesis of acne vulgaris. The most vulnerable is the consumption of products based on their high values. Diet based on products with a high glycemic index leads to hyperinsulinemia. The insulin highly stimulates the secretion of androgens and causes increased production of sebum, which plays an important role in the pathogenesis of acne vulgaris.

Milk and dietary product

Higher frequency of milk and ice cream intake were positively associated with acne vulgaris occurrence. Consumption of milk \geq once a week increased the risk of acne vulgaris occurrence by 4 times. Consumption of ice cream \geq once a week also increased the risk of having acne by 4 times compared to those who did not take ice cream. The majority of cases (86.4%) drank milk more frequently (\geq once a week) compared to 61.4% of the control subjects ($P < 0.01$). In addition, more cases (56.8%) also consumed a higher frequency of ice cream, (\geq once a week) than their counterparts in the control group (22.7%) ($P < 0.01$).^[13]

SYMPTOMS

Blemishes are the main symptom of acne, and you can easily to see or feel them on your skin. Most people have blemishes are present on both combination of non-inflamed and inflamed blemishes.^[14]

It is dependent on two types:

1. Non-inflamed acne
2. Inflamed acne.
 - a. Non-inflamed acne: Non-inflamed acne break out included^[15]
 - Blackheads (open comedones)
 - Milia (non-inflamed whiteheads).
 - b. Inflamed acne: Inflammation acne commonly break out included
 - Papules (red, raised bumps that may be small or large)
 - Pimple (red, inflamed, with a white head).

TREATMENT

Most dermatologists agree that the choice of agents used to treat acne involves the integration of multiple factors such as the severity of injury present, duration of disease, past and present response to therapy, and the tendency for damage and post-inflammatory pigmentation. Therapy is, therefore, tailored to the individual patient depending on the nature and severity of their acne.^[16]

Also important is a proper inspection of skin abnormalities; acne with predominantly comedones should be treated with comedolytic therapy, while inflammatory acne should be treated with anti-inflammatory/antibiotic medicine.

Systemic treatment

Oral antibiotics are highly effective for inflammatory acne and widely used in clinical practice. Oral retinoids are used in case of severe acne or for patient inflammatory.

Oral antibiotic

Oral antibiotics prescribed for acne include the tetracyclines (tetracycline, minocycline, doxycycline, and lymecycline), erythromycin, clindamycin, and cotrimoxazole, all of which target “*Propionibacterium acnes*.” In addition to their antimicrobial actions, tetracycline and erythromycin also possess some inherent anti-inflammatory activity. These oral antibiotics are well established, effective agents in the manager of moderate-to-severe acne.^[17]

Oral retinoids

The developments of retinoid therapy for acne launch with systemic therapy with oral Vitamin A (retinol). This was report significantly reduce no. of acne wounds over a 3–4 months treatment period.^[18] Its therapy is extremely effective in treating severe acne, the main only agent that affects all areas of acne pathophysiology. If there were no significant side effects show, this agent would be the ideal treatment for acne.

Topical treatments

Topical agents when used combination effectively treat mild acne consisting of open and close come done with a few inflammatory lesions.^[19]The many treatment options offer different modes of action. Topical antibiotics are mainly combined with other products such as topical retinoids are difficult to reach. Topical antibiotics are included clindamycin, erythromycin, and tetracycline. Topical antibiotics are also present in the combination with benzoyl peroxide and zinc acetate. Alcohol-based preparations are highly drying and therefore more suitable for oilier skins.

Topical antibiotic

Topical antibiotics are improving acne and have not been clearly defining, but they seem to act directly on *P. acnes* and reduce inflammation. Patients with back acne might respond better to oral antibiotic therapy because of the difficulties of applying treatments to large areas that are clearance rather than a reduction in lesion counts. There is no evidence that means higher doses are more effective other than lower doses or that controlled-release preparations are necessary.^[20] The choice of antibiotic should be based on the patient preference, dependent on the side effect profile and cost. The tetracyclines (tetracycline, oxytetracycline, doxycycline, or lymecycline) are the preferred options; minocycline has significant adverse effects.^[21] Cotrimoxazole should be avoided because the sulfamethoxazole component has showed side effects. Benzoyl peroxide protects against resistance by eliminated resistance bacteria. Benzoyl oxide used a minimum 5–7 day b/w antibiotic course to reduce resistant organisms from skin.

Topical retinoids

Retinoids are the most effectively comedolytic agents for the treatment of acne. The topical retinoids were primarily used in patients with

comedonal acne means (non-inflame) lesion.^[17]The topical retinoid is treatment with tretinoin, adapalene, and isotretinoin requires medical prescription. Tazarotene is not licensed in the UK for acne. All topical retinoids induce local reaction and should be discounted if severe. They do not cause a temporary worsening of acne injury. However, they can increase the sensitivity of the skin to ultraviolet light.

NATURAL PRODUCT USEFUL FOR ACNE TREATMENT

Raw papaya fruit

It is a natural acne treatment for the removal of dead skin cells as well as excess lipids from skin surface keeping it soft. Papaya is an also enzyme papain, which reduces inflammation and helps to stop pus formation. One fresh papaya is needed.

Cinnamon honey

It is antimicrobial properties, so it can help to stop bacteria from acne the honey is a natural antibacterial property to draw out buggers from the skin. Two tablespoons of honey and one teaspoon of cinnamon mixed together until they are thoroughly blending and have formed a paste before applying to acne. Honey and cinnamon act as a killing agent when it applies to the acne area.

Bananas peel

It contains some substance known as lutein, one of the powerful antioxidants which will decrease the swelling and inflammation, and helps to grow the on the skin or one banana peel is required.

Dietary fiber

There are no clinical studies that clearly represent the effect of dietary intake on the course of acne vulgar. After the study, the person are intake low glycemic load diet and improvement in the skin condition was noticed. Researchers suggest that it could be an effect of large amounts of dietary fiber in this kind of diet.^[22]

Rosa Damascena

Its rose water and essential oils produced from the damask rose plants in hydrodistillation industries.^[23] Rosewater used for numerous skin problems and due to its pleasing fragrance and beneficial properties, some person suggests *Rosa Damascena* used the treatment of skin disorders such as acne. Rose oil can be utilized as an astringent form and clean the skin.

Vitamin A

Vitamin A helps to reduce the oil of your skin products. The best sources are carrots, sweet potato, and a dark green vegetable.

Tea tree oil

Tea tree oil was obtained from Australian Melaleuca and has been shown to have some antimicrobial activity.^[24] Tea tree oil product

is commonly used by patient self-treating their acne. After a study showed that tree tea oil product is decreased injured numbering is patient with mild-to-moderate acne.

Aloe vera gel

A. vera gel is an antibacterial property and soothing substance that works as an anti-inflammatory or reducing redness and swelling of acne. *A. vera* gel to be applied duly covering the acne affected area.

CONCLUSION

Acne is a common problem that occurs due to the blocking of skin pores with oil. In this article, we have discussed various factors associated with acne. In this old and newer treatment of acne, problems are discussed. This article tells about the updation of acne problems, treatment, pathogenesis, and pharmacological factor was discussed.

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