

# Aloe Vera: A Plant with Many Uses

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**Abstract:** -Aloe vera is cactus like plant has been used for its traditional medical purposes for thousands of years. The plant leaves contain numerous vitamins, Minerals, Natural sugars, Enzymes, Amino Acids, and various bioactive compounds with emollient, purgative, antimicrobial, anti-inflammatory, anti-oxidants, anti-helm entice, antifungal, antiseptic and having the cosmetic value for health care. The plant has potential to cure Sunburn, Burns and minor cuts and even the skin cancer. The external using cosmetic primarily act as Skin Healer and also prevent injury of epithelial tissue, cures acne and gives youthful glow to the skin and also act as externally powdered laxative.

**Key Words— Aloe Vera, Antimicrobial, Therapeutic, Medicinal Uses, Skin, Cosmetic Application.**

## I. INTRODUCTION

Bacteria Aloe vera is the Arabic word in which “Alloeh” means Shining bitter substance it’s because of the bitter liquid found in their leaves and another term is “Vera” its means true in Latin.

The Species of aloe vera was firstly described by Scientist named as ‘Carl Linnaeus’ in 1753. Who describes classification of aloe vera plants as follows. Kingdom= Plantae, Genus= Aspergeles, Species= Aloe vera.

Aloe Vera Contain mainly 420 Species out of which only 4 are having the medicinal properties. Aloe Vera plant contains 3 layers in their leaves. Inner one is Gel, another is Yellow sap and the outer thick layer which are having 15-20 cells called as Rind.

The botanical name of aloe vera is Aloe Barbadensis miller belonging to family Liliaceae. The plant having many cosmetics and medicinal purposes which is grown in dry region like Africa, Asia, Egypt and America. In India it is found in Gujrat, Tamil Nadu, Maharashtra and Andhra Pradesh.



Fig.1. The Species of aloe vera

## II. ACTIVE COMPONENTS

Active components are generally classified into four categories:

It Contains 75 potentially active constituents like vitamin, minerals, sugar, lagnin, saponins, salicyclic acid and amino acids.

1. **Vitamins:** It contains vitamins A (beta-carotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline. Antioxidant neutralizes free radicals.
2. **Enzymes:** It contains 8 enzymes: aliase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase. Bradykinase helps to reduce excessive inflammation when applied to the skin topically, while others help in the breakdown of sugars and fats.
3. **Minerals:** It provides calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc. They are essential for the proper functioning of various enzyme systems in different metabolic pathways and few are antioxidants.
4. **Sugars:** It provides monosaccharides (glucose and fructose) and polysaccharides: (glucomannans/polymannose). These are derived from the mucilage layer of the plant and are

known as mucopolysaccharides. The most prominent monosaccharide is mannose-6-phosphate, and the most common polysaccharides are called glucomannans [beta-(1,4)-acetylated mannan]. Acemannan, a prominent glucomannan has also been found. Recently, a glycoprotein with antiallergic properties, called alprogen and novel anti-inflammatory compound, C-glucosyl chromone, has been isolated from Aloe vera gel.

### III. MECHANISM OF ACTION

#### A. Healing properties:

Glucomannan, a mannose-rich polysaccharide, and gibberellin, a growth hormone, interacts with growth factor receptors on the fibroblast, thereby stimulating its activity and proliferation, which in turn significantly increases collagen synthesis after topical and oral Aloe vera.<sup>9</sup> Aloe gel not only increased collagen content of the wound but also changed collagen composition (more type III) and increased the degree of collagen cross linking. Due to this, it accelerated wound contraction and increased the breaking strength of resulting scar tissue. An increased synthesis of hyaluronic acid and dermatan sulphate in the granulation tissue of a healing wound. Aloe vera gel is mostly used in all types of wound healing except psoriasis. There is redness occurs in regular use of gel to the psoriasis patients according to one of the researches in 2010 comparisons of aloe vera gel to 0.1% of triamcinolone acetonide which is steroidal creams use to treat psoriasis. Due to some effects of aloe vera gel like soothing effect there is reduction in inflammation which helps to drying out the skin.

#### B. Effects on skin exposure to UV and gamma radiation:

Aloe vera gel has been reported to have a protective effect against radiation damage to the skin. Exact role is not known, but following the administration of aloe vera gel, an antioxidant protein, metallothionein, is generated in the skin, which scavenges hydroxyl radicals and prevents suppression of superoxide dismutase and glutathione peroxidase in the skin. It reduces the production and release of skin keratinocyte-derived immunosuppressive cytokines such as interleukin-10 (IL-10) and hence prevents UV-induced suppression of delayed type hypersensitivity.

#### C. Laxative effects:

Anthraquinones present in latex are a potent laxative. It increases intestinal water content, stimulates mucus secretion and increases intestinal peristalsis.

#### D. Antiviral and antitumor activity:

These actions may be due to indirect or direct effects. Indirect effect is due to stimulation of the immune system and direct effect is due to anthraquinones. The anthraquinone aloin inactivates various enveloped viruses such as herpes simplex, varicella zoster and influenza. In recent studies, a polysaccharide fraction has shown to inhibit the binding of benzopyrene to primary rat hepatocytes, thereby preventing the formation of potentially cancer-initiating benzopyrene-DNA adducts. An induction of glutathione S-transferase and an inhibition of the tumour-promoting effects of phorbol myristic acetate has also been reported which suggest a possible benefit of using aloe gel in cancer chemoprevention.

#### E. Moisturizing and antiaging:

Mucopolysaccharides help in binding moisture into the skin. Aloe stimulates fibroblast which produces the collagen and elastin fibres making the skin more elastic and less wrinkled. It also has cohesive effects on the superficial flaking epidermal cells by sticking them together, which softens the skin. The amino acids also soften hardened skin cells and zinc acts as an astringent to tighten pores. Its moisturizing effects has also been studied in treatment of dry skin associated with occupational exposure where aloe vera gel gloves improved the skin integrity, decreases appearance of fine wrinkle and decreases erythema. It also has anti-acne effect.

#### F. Antiseptic effect:

Aloe vera contains 6 antiseptic agents: Lupeol, salicylic acid, urea nitrogen, cinnamonic acid, phenols and sulphur. They all have inhibitory action on fungi, bacteria and viruses.



Fig.2. Aloe vera Gel

#### IV. CONCLUSION

Aloe vera Contains several active ingredients in its succulent leaves which having power to soothe human life and health in myriad ways. Aloe vera as the wonder plant are multiple from being an antiseptic, anti-inflammatory agent. Which helps in relieving the cancer and diabetes and being a cosmetics field. Aloe vera undoubtedly the natures gifts humanity for cosmetic medicinal application in burn and it remains for us to introduce it to ourselves and that the natures for its never-ending gift.

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