

## GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES MEDICINAL IMPORTANCE OF ALOE VERA

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### ABSTRACT

*Aloe vera* plant is used in different medicinal system such as Ayurvedic, Homeopathic and Allopathic. Tribal community people used as food. Plant consists of two different parts i.e. parenchymal tissue and pericyclic tubules. Both these part contains numerous vitamins, minerals, enzymes, amino acids, natural sugars, bioactive compounds with purgative, antimicrobial, antifungal, antiseptic, anti-inflammatory and cosmetic values for health care. This plant has potential to cure burns, minor cuts and skin cancer. This review article focus the importance of plant in everyday life. The active ingredients in its succulent leaves have the power to soothe human life.

**Keywords:** *Aloe vera, medicinal uses, cosmetic application, anti-diabetic.*

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### I. INTRODUCTION

Across the entire Himalayan Region, folk healers have a remarkable knowledge of herbs. Traditional wisdom of Himalayan communities is passed thorough proverbs, folklores, legends, customs and myths. Indigenous Health Care Traditions in the Himalayan region have two treatment methods – natural and supernatural. The natural method is indicative whereas the supernatural method is etiological. The use of natural products in the prevention and treatment of oral conditions has increased recently and could be benefit to urban and rural communities. The name *Aloe vera* is derived from Arabic word “**Alloeh**” meaning “shining bitter substance” while vera in Latin means “true”. The genus Aloe belonging to family Alliaceae is a succulent herb of 80 – 100 cm in height which mature in 4 – 6 years and survives for nearly 50 years under favourable conditions. The plant is native to southern and eastern Africa along the upper Nile in the Sudan, and it was subsequently introduced into northern Africa and naturalized in the Mediterranean region and other countries across the globe. The plant is commercially cultivated in Aruba, Bonaive, Haiti, India, South Africa, United States of America and Venezuela, while the finest quality of Aloe is grown in desert of Southern California. The plant can survive in hot temperatures of 104° F and with stand in below freezing temperature until root is not damaged.

### II. PLANT DISCRPTION

There are over 250 species of Aloe grown around the world. Over the years, this plant has been known by number of names such as “the wand of heaven,” ”heavens blessing,” and the silent healer”. This succulent perennial herbs as triangular, sessile stem, shallow root system, fleshy serrated leaves arranged in rosette having 30 – 50 cm length and 10 cm breadth at the base ; colour pea – green. The bright yellow tubular flowers, length 25 – 35 cm, axillary spike and stamens and frequently projected beyond the perianth tube and fruits contain many seeds.

The *Aloe vera* plant consists of two different parts, each of which produces substances with completely different compositions and therapeutic properties. The parenchymal tissue makes up the inner portion of the aloe leaves and produces the *Aloe vera* gel, a clear, thin, tasteless, jelly-like material. This tissue is recovered from the leaf by separating the gel from the inner cellular debris. The other part of the plant is known as pericyclic tubules, which occur just beneath the outer green ring of the leaf. These cells produces an exudate that consist of bitter yellow latex with powerful laxative – like action.

### III. ACTIVE INGREDIENT OF ALOE VERA

Leaves have three layers. The outermost layer consist of 15 – 20 cells thick protective layer synthesizing carbohydrates and proteins. The active components of *Aloe vera* include anthraquinones, chromones, polysaccharides, and enzymes. The anthraquinones and chromones are responsible for the anticancer activity, anti-inflammatory and evacuating. The elements Al, B, Ba, Ca, Fe, Mg, Na, P, Si, etc. has also been reported to be present in *Aloe vera* gel.

The other potentially active ingredients include vitamins, minerals, enzymes, lignins, saponins, salicylic acids and amino acids. Table 1 representing the chemical composition and properties and activity of *Aloe vera*.

*Table 1. Chemical composition and properties of Aloe vera*

Constituents	Number and identification	Properties and activity
Amino acids	Provides 20 of the 22 required amino and 7 of the 8 essential ones	Basic building blocks of proteins in the body and muscle tissues
Anthraquinones	Provided Aloe emodin, Aloetic acid, alovin, anthracine	Analgesic, antibacteril
Enzymes	Anthranol, barbaloin, chrysophanic acid, smodin, ethereal oil, ester of cinnamonic acid, isobarbaloin, resistannol	Antifungal and antiviral activity but toxic at high concentrations
Hormones	Auxins and gibberellins	Wound healing and anti-inflammatory
Minerals	Calcium, chromium, copper, iron, manganese, potassium, sodium and zinc	Essential for good health
Salicylic acid	Aspirin like compounds	Analgesic
Saponins	Glycosides	Cleansing and antiseptic
Steroids	Cholesterol, campesterol, lupeol, sistosterol	Anti- inflammatory agents, lupeol has Antiseptic and analgesic properties
Sugars	Monosaccharides: Glucose and Fructose Polysaccharides: Glucomannans/polymannose	Anti-viral, immune modulating activity of acemannan
Vitamins	A, B, C, E, choline, B12, folic acid	Antioxidant (A, C, E), neutralises free radicals

### IV. MEDICINAL USES

*Aloe vera* is anthelmintic, aperients, carminative, deobstruent, diuretic, stomachic. Juice is used in skin care medicine, burns, colic, hepatopathy, splenopathy, constipation, abdominal tumors. Traditionally *Aloe vera* gel is used both, topically (treatment of wounds, minor burns) and internally to treat constipations, cough, ulcers, diabetes, headaches, immune-system deficiencies. *Aloe vera* also extensively used in treating urine related problems, pimples and ulcers etc. the bioactive compounds are used as astringent, haemostatic, antidiabetic, antiseptic, anticancer, antioxidant agent also effective in treating stomach ailments, treatment of skin diseases as represented in Figure 1.

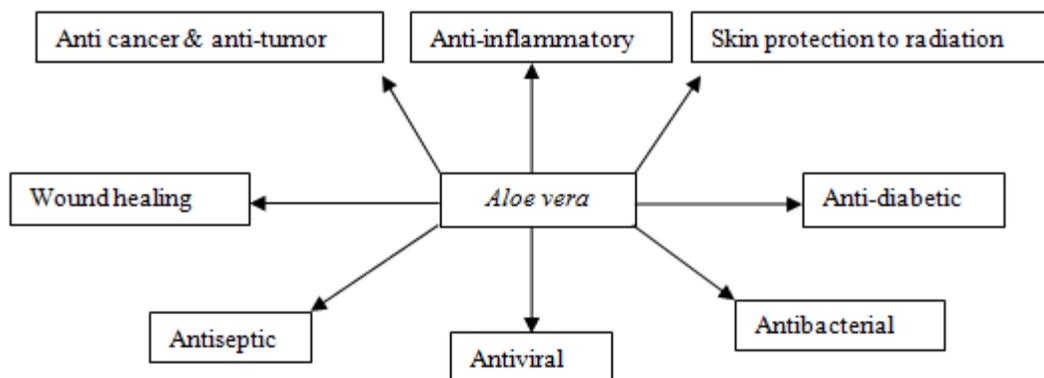


Figure 1. Representing the medicinal utilities of *Aloe vera*

It is used in Ayurvedic formulations as appetite, stimulant, purgative and antihelminthic, for treating cough, cold, piles, asthma and jaundice.

#### 4.1 Skin care and Cosmetic

*Aloe vera* is used for soothing the skin, and keeping the skin moist to help avoid scalp and skin in harsh and dry weather. Due to soothing and cooling qualities, Maharsihi Ayurveda recommends *Aloe vera* for a number of skin problems. *Aloe vera* extracts have antibacterial and antifungal activities, which may help in the treatment of minor skin infections, such as boils and benign skin cysts. *Aloe vera* gel has been reported to have a protective effect against radiation damage to the skin.

#### 4.2 Anti Diabetic

*Aloe vera* contains polysaccharides which increase the insulin level and show hypoglycemic properties. Arun kumar reviewed the beneficial effects of selective medicinal plants such as *Allium cepa*, *Allium sativum*, *Azadirachta indica*, *Gymnema sylvestre* and emphasize on the role of active ingredients which possess anti-diabetic activity.

#### 4.3 Antiseptic

Due to the presence of antiseptic agents such as salicylic acid, lupeol, urea, nitrogen, phenols, sulphur *Aloe vera* have antiseptic property. These compounds inhibit the action on fungi, bacteria, viruses.

#### 4.4 Stress

*Aloe vera* juice is helpful in smooth functioning of the body. It reduces cell damaging process during stress condition and reduces biochemical and physiological changes in the body. Oxidative stress refers to chemical reactions in which compounds have their oxidative state changed. Apart from these it also contains vitamins – A, C and E. *Aloe vera* is an excellent example of a functional food that plays a significant role in protection from oxidative stress.

#### 4.5 Anticancer Properties

The two fractions from *Aloe* that are claimed to have anticancer effects include glycoproteins and polysaccharides. *Aloe vera* juice enables the body to heal itself from cancer and also from the damage caused by radio and chemotherapy that destroys the healthy immune cells crucial for the recovery. *Aloe vera* emodin, an anthraquinone, has the ability to suppress or inhibit the growth of malignant cancer cells.

#### 4.6 Wound Healing

Wound healing is a dynamic process, occurring in 3 phases. The first phase is inflammation, hyperaemia and leucocyte infiltration. The second phase consists of removal of dead tissue. The third phase of proliferation consisting of epithelial regeneration and formation of fibrous tissue. The main functional component of *Aloe vera* is Acemannan, which is long chain acetylated mannose. This complex accelerates wound healing.

#### 4.7 Antiviral Properties

Several ingredients of *Aloe vera* gel have been shown to be effective antiviral agent. A purified sample of aloe emodin was effective against infectivity of herpes simplex virus Type. I and Type II and it was capable of inactivating all of the viruses.

#### 4.8 Antibacterial Property

The activity of *Aloe vera* inner gel against both Gram-positive and Gram-negative bacteria has been reported by several Chemists. *Streptococcus pyogenes* and *Streptococcus faecalis* are two micro organisms that have been inhibited by *Aloe vera* gel.

### V. CONCLUSION

The active ingredients present in succulent leaves have the power to soothe human life. The plant has importance in everyday life to soothe a variety of skin ailments, anti ageing digestive tract health, blood and lymphatic circulations, functioning of kidney, liver and gall bladder makes it a boon to human kind. *Aloe vera* as the “wonder plant” is multiple from being an antiseptic, anti-inflammatory agent, and in cosmetic field. No doubt that *Aloe vera* is nature’s gift to humanity.

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