



Chemical Constitution, Health Benefits And Side Effects of Aloe Vera

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ABSTRACT

Aloe vera (*Aloe barbadensis miller*) belongs to Asphodelaceae (Liliaceae) family, and is a shrubby or arborescent, perennial, xerophytic, succulent, pea- green color plant. The name Aloe vera derives from the Arabic word "Alloeh" meaning "shining bitter substance," while "vera" in Latin means "true.". The Aloe vera plant has been used for various purposes in dermatology.

Aloe vera is medicinal plant which has anti aging properties; it removes wrinkles of skin and repair the damaged skin. Aloe vera Gel contains many vitamins such as vitamin B12, Vitamin A, Vitamin C, Vitamin E and folic acid. Aloe is a powerful detoxifier, antiseptic, nerve tonic .it improves digestion and has immune-boosting,anti-viral properties.

KEYWORDS

Immune-Boosting, Anti-Viral Properties, Skin Healer.

Aloe Vera is considered to be 'plant of immortality'and is used for its healing properties. Aloe Vera plants belong to the family of Xanthorrhoeaceae, known for its succulent or fleshy leaves. This nontoxic plant stores water in its leaves and survives in low rainfall and arid regions. Aloe Vera leaf looks unique; it doesn't have any stems and the edges of leaves have tiny spikes.

Aloe vera has modified thick fleshy leaf ,it not only has cell wall carbohydrates such as cellulose and hemicellulose but also storage carbohydrates such as acetylated mannans (Ni, Yates, and Tizard,2004) the polysaccharides found in the inner leaf parenchymatous tissue have medicinal importance(Ni & Tizard,2004)and also the biological activities are due to presence of large number of compounds(Dagne et al.,2004).

Anatomy:

The plant has fleshy leaves which are composed of three layers: 1) An inner clear gel that contains 99% water and rest is made of glucomannans, amino acids, lipids, sterols and vitamins. 2) The middle layer of latex contains anthraquinones and glycosides. 3) The outer thick layer called as rind has protective function and synthesizes carbohydrates and proteins.

Chemical Constituents; The aloe parenchyma tissue or pulp has been shown to contain (**Hamman,2008**) proteins, chromones lipids, anthraquinones, amino acids, vitamins, enzymes, inorganic compounds , small organic compounds and different types of carbohydrates.

Anthraquinones/anthrones:Aloe-emodin, aloetic-acid, anthranol, isobarbaloin, emodin, ester of cinnamic acid

Two classes of Aloins are:(1) nataloins, which yield picric and oxalic acids with nitric acid (2) barbaloins, which yield aloetic acid , chrysammic acid , picric and oxalic acids with nitric acid

Chromones:8-C-glucosyl-(2'-O-cinnamoyl)-7-O-methylaloediol A, 8-C-glucosyl-7-O-methylaloediol,8-C-glucosyl-noreugenin, isoaloeresin D, isorabaichromone,neoaloiesin A

Enzymes: certain enzymes present are alkaline phosphatase, amylase, carboxypeptidase, catalase, cyclooxygenase, lipase, cyclooxygenase, oxidase, phosphoenolpyruvate carboxylase, superoxide dismutase, Bradykinase (it helps to reduce excessive inflammation when applied to the skin topically, while others help in the breakdown of sugars and fats).

Inorganic substances :Calcium, chlorine, chromium, copper, iron, magnesium, manganese, potassium, phosphorous, sodium, zinc. They are essential for the proper functioning of var-

ious enzyme systems in different metabolic pathways and few are antioxidants.

Hormones: Auxins and gibberellins that help in wound healing and have anti-inflammatory action.

Organic compounds and lipids: Arachidonic acid, γ -linolenic acid, steroids (campesterol, cholesterol, β -sitosterol), triglycerides, triterpenoid, gibberillin, lignins, potassium sorbate, salicylic acid, uric acid

Carbohydrates Pure mannan, acetylated mannan, galactan, galactogalacturan, pectic substance ,arabinogalactan, , xylan, cellulose,galactoglucoarabinomannan, , acetylated glucomannan,glucogalactomannan are sugars found in aloe vera(Hutter et al.,1996).

Non-essential and essential amino acids: Alanine, arginine, aspartic acid, glutamic acid, glycine, histidine,hydroxyproline, isoleucine, leucine, lysine, methionine, phenylalanine, proline, threonine, tyrosine, valine

Proteins :Lectins, lectin-like substance.

Aloe juice contains about 23 polypeptides which improves immune system The polypeptids plus the anti-tumor agents, Aloe emodin and Aloe lectins, are now also used in treatment of cancer.

Saccharides: Mannose, glucose, aldopentose

Vitamins: A (beta-carotene), C and E ,B1, B2, B6, C, β -carotene, choline, folic acid, α -tocopherol. Vitamins are antioxidant which neutralizes free radicals.

Fatty acids: It provides 4 plant steroids; cholesterol, campesterol, β -sisosterol and lupeol.

Fatty acids present are highly effective in treatment of burns, cuts, scrapes, abrasions, allergic reactions,rheumatoid arthritis, rheumatic fever, acid indigestion, ulcers, plus many inflammatory conditions of the digestive system and other internal organs, including the stomach, small intestine, colon, liver, kidney and pancreas.

Medicinal Properties;

Aloes is beneficial for wounds, burns and skin problems and diseases connected with digestive system, it is an immunity booster and detoxifies the system. It is recommended in adjuvant therapy with antibiotics, NSAIDs (Nonsteroidal Anti-Inflammatory Drugs) and chemotherapy to eliminate drug

induced gastritis and other adverse effects. it is also useful in various diseases such as type II diabetes, arthritis, eye disease, tumor, spleen enlargement, liver complaints, vomiting, bronchitis, asthma, jaundice and ulcers. Relieves constipation, maintains a good gastric pH, helps in inflammatory bowel diseases, non-ulcer dyspepsia, gastric and duodenal ulcers.

It can improve the bioavailability of co-administered vitamins in humans (Vinson et al.,2005). Due to its absorption enhancing effects, A. vera gel may be employed to effectively deliver poorly absorbable drugs through the oral route of drug administration

Health Benefits;

Aloe Vera is considered to be a miracle plant. Since, it contains phytochemicals and other nutrients which are beneficial for hair, health and skin.

Consumption of aloe vera helps digestion, increases energy level, builds immunity, detoxifies and reduces inflammation

Drinking aloe vera juice regularly stimulates the metabolism and helps the body to burn calories more quickly and reduces weight of body.

Aloe vera helps destroying any free radicals in the body that can lead to abnormal growth of cells or tumors in the body

Aloe vera is a great conditioning agent for hair, restoring hair's shine and luster, and leaves the hair silky and smooth.

The alkaline nature of aloe vera juice balances the pH level of the hair, which promotes healthy new growth also brings a refreshing and cooling sensation to the scalp.

Alopecia or male pattern baldness can be reduced by regular usage of aloe vera. This is mainly because it rejuvenates the hair follicles.

Certain enzymes of Aloe vera juice moisturizes an itchy scalp, reduces Dandruff and Dryness and also have anti fungal properties..

It cures skin dermatitis and has a very soothing effect on the skin.

Side Effects;

Antraquinones, such as aloin and barbaloin present in aloe vera may cause allergic reactions,also such substances are laxative, which can cause diarrhea if taken in large amounts. Severe diarrhea can cause pain, cramps and dehydration.

Aloe vera juice may cause adverse reactions when consumed along with few medicines. Aloe vera juice also reacts to herbs like jalap roots, castor oil, rhubarb root and bark root, causing dehydration and diarrhea.

Sometimes use of aloe vera gel may cause redness, burning, stinging sensation and rarely generalized dermatitis in sensitive individuals. Red urine, abdominal cramps, hepatitis, dependency or worsening of constipation are some other side effects associated with the aloe vera. Being a Laxative, prolonged use may lead to low potassium levels and it has been reported to increase the risk of colorectal cancer.

Aloe vera juice, an ingredient has many health risks associated with it. It can aggravate health problems like colitis, Crohn's disease, appendicitis, diverticulosis, intestinal obstruction, hemorrhoid, stomach pains and ulcers. Due to its purgative and irritant qualities aloe vera should not be given to pregnant women, it may lead to uterine contractions, leading to miscarriage and birth defects. Lactating women may lead to diarrhea. It is also considered unsafe for children below 12 years of age.

Persons suffering from heart diseases must not use aloe vera because Consumption of aloe vera juice can lead the body to produce excessive amounts of adrenaline and can cause irregular heartbeats. Prolonged usage can increase the risk of constipation.

CONCLUSION;

Aloe vera has many health benefits but as it has some side effects, so it should not be used in excess and that too for long time.

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