

**A REVIEW ARTICLE ON MEDICINAL PLANT (ALOE VERA)****Raichurkar Amruta M.\*, Tolsarwad Ganesh S. and Patil Vishnu N.**

Assistant Professor, Department of Pharmacology, Swami Vivekanand College of Pharmacy,  
Udgir Tq. Udgir Dist. Latur.

Article Received on  
09 January 2022,

Revised on 29 January 2022,  
Accepted on 19 Feb. 2022

DOI: 10.20959/wjpr20223-23352

**\*Corresponding Author****Raichurkar Amruta M.**

Assistant Professor,  
Department of  
Pharmacology, Swami  
Vivekanand College of  
Pharmacy, Udgir Tq. Udgir  
Dist. Latur.

**ABSTRACT**

Aloe vera has the more medicinal properties. It is well Known and Succulent Plant and the plant species is Considered an Invasive species in many world regions. It is most Natural product Maximum Number of the peoples are using in cosmetic's. The genus Aloe has more than 360 species and most of them are found in South Africa and West Indies. And Aloe Barbadensis is a native of Northern Africa but it is planted in Indian gardens and many Tropical countries. And the other Aloes such as Aloe Ferox, Aloe vera and its Hybrids Aloe, Aloe Socotrina and Aloe arborescens, are all over the world used for Merchandising. The more Exploration/ Disquisition studies Antiquated consolidation in pharmacological, Biological activity or Pharmacological activity Describes the of various Beneficial effects of

the drugs having the Anti-Bacterial, Anti-oxidants, Anti-inflammatory, Anti-Helmenthic, Antiseptic, Aphrodisiac and antimicrobial activities of the aloe and Cosmetic values of the Health care.

**KEYWORDS:** Aloe Vera, Fitness and Health and Beauteous skin, Mode of action, Pharmacological action.

**INTRODUCTION**

The Binomial Name of the plant Aloe vera is Aloe Barbados Mill (A.Vera.L), A.ferox Mill and A. africana Mill or their hybrids. It belongs to the Family Liliaceae.<sup>[1]</sup> It Posses many Medicinal properties which is useful for Health, Beauty (Glowing of skin), Medicinal, Skin care (Pimples, dark spots pigmentations) Properties. It has Concerning some nearly 500 species. Aloe Barbados plant is the Typical Xerophyte Herb plant, it looks like a Cactus with thorn spines on the edges of the leaf which Flourish/Cultivate in Arid Zones and Lack of rain

Because of more and maximum Challenge and Cultivated in large Quantities.<sup>[2,3]</sup> Indian Alces/Aloe vera are the Fleshy, moist, Juicy plant. The Luscious are adapted in Physiologically dry Habitat, which has been Cultivated in the living Sector having Lack of rain ,water shortage and dry weather by Acquiring and Maintaining aquiferous parenchyma that is modified to store water. The Inherent Features, Qualities of the Aloe vera plant is it Accommodate and maintain the fresh puply juice tissue, fluctuate/Stretch from 98.5. The Denomination Aloe vera Originated out of the Word Arabic “Alloeh” Denotation “Glistening sour/ bitter substance,” and the word “vera” means Latin word “Faithful to life” 2000 many yonks back, the Greek researchers Considers Aloe vera as the ubiquitous.<sup>[4]</sup>

### History

The Aloe vera should applied for medicinal Determination for Multitudinous civilization for paradise to golden age: Greece, India, Egypt, Japan, China and Mexico.<sup>[4]</sup> Before the ultimately the first decade of the 19<sup>th</sup> Century 1800s, Aloe vera exist in the Application even as a purgative and Evacuant property in the Land of Liberty and new world, still by the middle of the 1930s. The Culmination and the Critical point has been Observed it was auspiciously employed to use and tend Continues and severe Eczema and Radio dermatitis radiation.<sup>[5]</sup>

### Plant

The Taxonomic denomination of Aloe vera is *Aloe Barbados mill.* It allied to the family Liliaceae Asphodelaceae family, The aloe vera are infinity Consisting of or Abounding in shrubs and Fresh pulpy to modified with parenchyma and xerophytes, Absinth - green colour shrubby plant. It is Cultivated and breded mainly in the lack of rain, Hot, dry and absence of rain in the Zone and sector of America, Europe, Africa and Asia. In ou country India. It is Cultivated and breded in the states of Tamil nadu, Gujarat, Rajasthan, Andhra Pradesh, Maharashtra.<sup>[6]</sup> It is a having a group of shrubs having infinity in numbers, absence of stems very small teeny-weeny stemless plant Expanding, spreading, growing to 90-100 cm tall with high fresh pulp. Amplifying by cluster and clump offsets and root Germinating and sprouts vegetate. The leaflets are narrow long oval shape tapering to a point at the each end, Thickset, and Fleshy juicy pulp.<sup>[7]</sup>

### Description

The aloe vera plants are steam less and narrow very short-emanate plant planting with near about 80-100cm long, Bunching clusters Impart by counterbalance and vegetative cultures.

The leaves are narrow oval in structure with the narrow point at the end of leaf, Fat and freshy juicy, green to pea-green, zig zag in margin at the edges of the leaves. The Blossom of flowers are Obtained on the stick upto 90cm high, Each and every Blossoms flower Dangling, with yellowish tubule of deep crimson with 2-3cm l length. The vacular material in the interior portion of the aloe vera leaves mainly consists of a juicy fresh gel which can known as Aloe Vera gel.<sup>[7]</sup>

### **Plant description with their parts**

The Aloe vera shrubby plant Find trilateral, fleshy juicy pulp leaves along the zig zag edges, yellow greenish round blossom flowers and Bear fruits that accommodate many number of seeds. Every leaves are consists of mainly three parts:

1. An Interior part of the gel mainly consists of 99% Moisture contents mainly water and other components are amino acids, sterols, Vitamins, lipids, and glucomannans.
2. The Central part of the leaf consists of Cosmetic latex that is in yellow greenish liquid sap and mainly contains glycosides & anthraquinones.
3. The External surface of the leaf known as shuck That protects the function from synthesizes the carbohydrates and proteins .Interior portion of the shuck are having the Specialized tissues bundles having functions for the Passages of the Materials and substances like starch, Xylem and Pholem.<sup>[8]</sup>

### **Features of aloe vera**

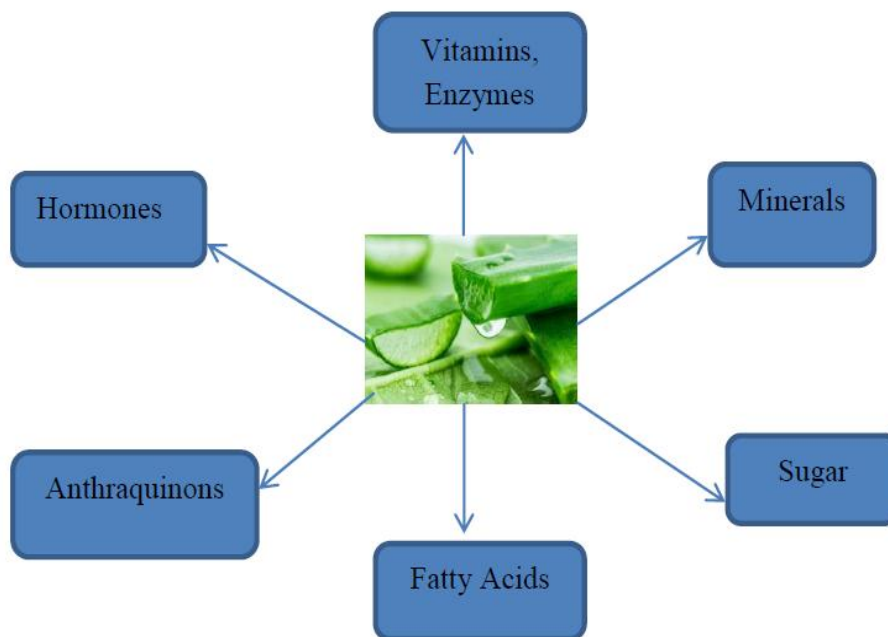
Family: - Genus Xerophyllum Liliaceae

Taxonomic name / Botanical Name : Aloe arborescens Miller, AloeBarbadensis, Aloe Capensis, Aloe Latex, Aloe perryi baker, Aloe vera, Aloe Vulgaris, Aloe Flava, Aloe Perfoliata, Aloe elongate, Aloe spicata.

Popular Name: Aloe Natalenis, Aloe Saponaria, Aloe spicata, Aloe Mucilage.<sup>[9]</sup>

### **Chief constituents with their properties**

The Aloe mainly consists of 75 probable Chief chemical constituents: saponins, Enzymes (yeast), vitamins, Minerals, sugars, lignin, salicylic acids, and amino acids.<sup>[6]</sup>



**Vitamins:** The aloe vera mainly consists of vitamins i.e Beta carotene it is also called as vitamin A, and the other vitamins are Vit C and Vit E, and the other constituents like are Phytochemicals, rutin, Flavnoids. It contains Cyanacobalamine (Vit B12), Pteroylglutamic acid (Vit B9), choline (Vit J). The Phytochemicals, Fruits, Flavonoids neutrals the free radicals.

**Enzymes:** It mainly consists of 8 enzymes (yeast): aliiase, alkaline or basic phosphatase, the enzyme allow body to change into simple sugars. (Amylase), bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase. Bradykinin mainly helps to prevent and decrease the inflammation when application is done external topically to the skin to the, and while the others helps in the cleavages of the fats and sugars.

**Minerals:** It mainly consists of calcium, Cadmium, copper, sodium, selenium, magnesium, zinc, potassium, and manganese. These play an important role for the convenient and maintaining of different enzyme systems various metabolic passages and some are phytochemicals and flavonoids.

**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 anti-allergic properties, called alprogen and novel anti-inflammatory compound, C-glucosylchromone, has been isolated from Aloe vera gel.

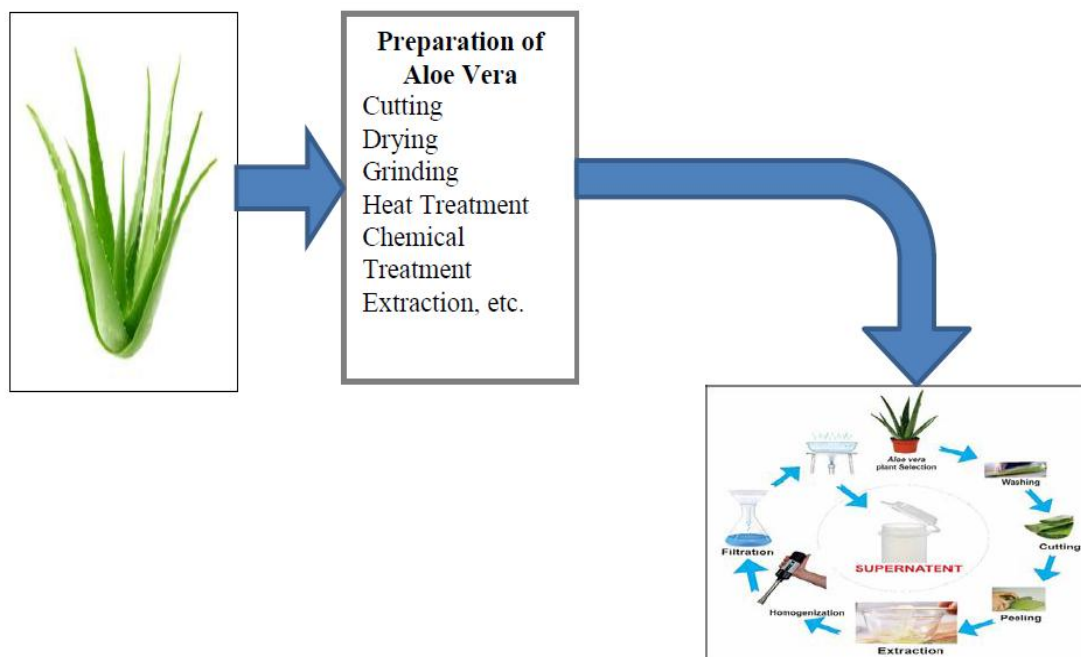
**Anthraquinones:** It provides 12 anthraquinones, which are phenolic compounds traditionally known as laxatives. Aloin and emodin act as analgesics, antibacterials and antivirals.

**Fatty acids:** It mainly provides 4 plant steroids; cholesterol, phytosterol,  $\beta$ -sitosterol and lupeol. All these have anti-inflammatory action and lupeol also possesses antiseptic and analgesic properties.

**Hormones:** The plant hormones like Auxins and gibberellins they prevent in wound healing and have NSAID action.

**Others:** It provides 20 of the 22 human required *amino acids* and 7 of the 8 essential amino acids. It also consists of salicylic acid which possesses anti-inflammatory action and antibacterial properties. Lignin, inert contents, when incorporated in topical preparations, which increases the penetrative power of the other ingredients into the skin. Saponins that are the soapy substances form about 3% of the gel and have cleansing and antiseptic effect.

- **Collection of aloe vera gel extract**



**Mechanism of action**

**Ameliorate/Healing properties:** The Polymannos and Glucomannan, which contains more amount of Polysaccharides (Many sugar molecule) and gibberellin which is a Growth Hormone which responsible for Growth factor Receptor which acts on the Fibroblast by Activating and Proliferation which Converts into collagen secretion on the application on the skin topically and orally.<sup>[9]</sup> The gel is not only responsible for secretion of collagen content but it also changes the composition level of collagen fibres (Maximum type III).<sup>[10]</sup>

**Antiviral and antitumor activity:** The aloe vera produces the two types of effects it may be Direct effect and indirect effect, The Indirect effect is occurs due to the stimulations of immune system where as another effect is direct effect is occur due to the main chief chemical constituents of aloe vera is anthraquinones due to this chemical substances the direct effect is occurred due to anthraquinones. The anthraquinone deactivates different viruses such as herpes virus, Influenza virus.<sup>[11]</sup> The inducing of Glutathione S-transferase and the Inhibition of the Tumor cells Which Promotes the effects of phorbol myristic acetate so therefore it has been observed that it is clinically used in the treatment of cancer chemotherapy.<sup>[12,13]</sup>

**Anti-Aging Effect and Emollient effect:** Aloe helps in maintain the moisture into the skin with the helps of Mucopolysacchrides. It also produces smoothing and cohesive effect with the help of superficial epidermal cells by Binding with each other. And the amino acids which helps in promoting soften hardened cells and act as astringent effect to the strong fitted pores. It is observed that it helps in the treatment in moisturizing effect on the dry skin and removing of dark spots and acening effect on skin.<sup>[14]</sup>

**Anti-inflammatory action:** Aloe mainly prevents the Cyclooxygenase pathway, Decreases the PG (E2) offering from the Archidonic acid. New launched inflammation preventing agent called as C –Glucosyl chromone which is obtained from the aloe vera gel.<sup>[15]</sup>

**Purgative effects:** The main chemical constituents in aloe vera are anthraquinones, these are available in the latex are strong pugative. This increases the GI motility and intestinal moisture Content which is useful for stimulation of mucus secretion and contraction and relaxation of the intestine.<sup>[16]</sup>

**Effects of UV and gamma radiation on the skin:** The *Aloe vera* gel was found that it has a protects the skin against the damaging to the skin.<sup>[17,18]</sup> The main action of aloe vera gel is not decertified but on the application of gel on the skin externally the Antioxidants proteins and Metallothionein is developed on the skin which prevents and suppress on the skin and inhibits the allergic reactions / Hypersensitivity reactions which is exposure to the UV and Gamma radiation on the skin.<sup>[19]</sup>

**Antiseptic effect:** The Aloe vera Mainly consists of 6 antiseptic Functions, Salicylic acid, Lupeol sulfur, Cinnamonic acid, Nitrogen, Phenols, Urea. These all contents prevent the action of fungi, Viruses, Bacteria.<sup>[20]</sup>

**Role of Vitamins and Others:** Aloe vera mainly consists of various substances like vitamins, amino acids which play important role in different disorders like vitamin C is responsible for increase in production of collagen fibers, whereas Vitamin E is act as antioxidant and plays an important role in wound healing with showing different effects like antimicrobial effect, antibacterial effect, anti-inflammatory effect, antiviral effect etc.<sup>[21]</sup>

**Contraindication:-** It is contraindicated in the pregnancy due to the uterine contraction and in the breastfeeding mothers which may be toxicity for the infants.<sup>[22]</sup>

#### **Side effects/Adverse effects**

**Topical:** - The side effects of aloe vera are burning, itching, Redness, the allergic reactions occur due to the main chemical constituents of aloe vera is anthraquinone, so before application on the skin the small portion is applied on the skin for the examination.<sup>[22]</sup>

**Oral:** - The purgative effect may can cause loss of electrolytes imbalance, Hepatitis, Abdominal cramps, red urine, diarrhea But on the repetition of drug for prolonged use it is detected that it is harmful and dangerous for body and produces colorectal cancer.

**Interactions:** - When aloe vera is applied externally on the skin it increases the absorption of the steroids creams like flucinolone acetonide, Fluticasone propionate, which may reduce the effectiveness and extension of the harmful effect of digoxin and digitoxin because of hypokalemia.<sup>[23]</sup>

#### **REFERENCE**

1. Shah B N., Seth A.K., The textbook of Pharmacognosy and Phytochemistry; Published by Elsevier; First Edition, 2010.

2. Sahu P K, Giri D D, Singh R, Priyanka P, Gupta S, Kumar A S, Kumar A, Pandey K D, Therapeutic and Medicinal uses of Aloe vera :A Review. *Scientific Research Pharmacology and Pharmacy*, 2013; 4: 1-12.
3. Marshall JM. Aloe vera gel: What is the evidence? *Pharma Jr.*, 1990; 24: 360–2.
4. Davis RH. *Aloe vera: A scientific approach*. New York: Vantage Press, 2010; 11-17.
5. Shail B S, Aloe vera. A Medicinal herb. *International Journal of Research Granthalaych*. 2015; 3(11): 32-34.
6. Suseela L., A Review On Aloe Vera-The Wonder Medicinal Plant. *Journal of Drug Delivery and Therapeutics*, 2018; 8(5-s): 94-99.
7. Amar S, Resham V, and Saple D G, Aloe vera shot Review. *Indian Journal Dermatology*, 2008; 53(4).
8. Rajeswaril R., Umadevil M, Sharmila R C, Pushpal R, Selvavenkadesh S, Sampath K, Debjit B., Aloe vera: The Miracle plant its Medicinal and Traditional Uses in India. *Journal of Pharmacognosy and Phytochemistry*, 2012; 1940: 118-124.
9. Sampath K.P., Debjit B, Chiranji B, Biswajit. Aloe vera: A Potential Herb and its Medicinal Importance. *J.Chem. Pharm.Res*, 2010; 2(1): 21-29.
10. Chithra R Sajithlal GB, Chandrakasan G. Influence of aloe vera on collagen characteristics in healingdermal wounds in rats. *Mol Cell Bioche*, 1998; 181: 71–6.
11. Hegggers J, Kucukcelebi A, Listengarten D, Stabenau J, Ko F, Broemeling LD, Beneficial effect of aloe on wound healing in an excisional wound model. *J Altern Complement Med*, 1996; 2: 271–7.
12. Sydiskis RJ, Owen DG, Lohr JL, Rosler KH, Blomster RN. Inactivation of enveloped viruses byanthraquinones extracted from plants. *Antimicrob Agents Chemother*, 1991; 35: 2463–6.
13. Kim HS, Kacew S, Lee BM. In vitro chemopreventive effects of plant polysaccharides (Aloebarbadensis Miller, Lentinus edodes, Ganoderma lucidum, and Coriolus vesicolor) *Carcinogenesis*, 1999; 20: 1637–40.
14. West DP, Zhu YF. Evaluation of aloe vera gel gloves in the treatment of dry skin associated with occupational exposure. *Am J Infect Control*, 2003; 31: 40–2.
15. Hutter JA, Salmon M, Stavinoha WB, Satsangi N, Williams RF, Streeper RT, et al. Anti-inflammatoryC-glucosyl chromone from Aloe barbadensis. *J Nat Prod*, 1996; 59: 541–3.
16. Ishii Y, Tanizawa H, Takino Y. Studies of aloe. V: Mechanism of cathartic effect. *Biol Pharm Bull*, 1994; 17: 651–3.



17. Roberts DB, Travis EL. Acemannan-containing wound dressing gel reduces radiation-induced skin reactions in C3H mice. *Int J Radiat Oncol Biol Phys*, 1995; 32: 1047–52.
18. Sato Y, Ohta S, Shinoda M. Studies on chemical protectors against radiation XXXI: Protective effects of *Aloe arborescens* on skin injury induced by x-irradiation. *Yakugaku Zasshi*, 1990; 110: 876–84.
19. Byeon S, Pelley R, Ullrich SE, Waller TA, Bucana CD, Strickland FM. *Aloe barbadensis* extracts reduce the production of interleukin-10 after exposure to ultraviolet radiation. *J Invest Dermatol*, 1988; 110: 811–7.
20. Urvashi N and Raju L B. *Aloe vera* for human nutrition, Health and Cosmetic use – A REVIEW. *International Research Journal of Plant Science* (ISSN: 2141-5447) Volume, 2012; 3(3): 038-046.
21. Seyyed A H, Seyyed A M, Saied A, *Review Article* The Review on Properties of *Aloe Vera* in Healing of Cutaneous Wounds, Hindawi Publishing Corporation, BioMed Research International, 2015, Article ID 714216, 6 pages.
22. Jadhav A S, Patil O A., Kadam S V, Dr. Bhutkar M A, Review on *Aloe Vera* is used in Medicinal Plant, *Asian Journal of Research in Pharmaceutical Sciences*, 2020; 10: 01.
23. Malik Itrat Zamigar. *Aloe vera*: A review of its Clinical Effectiveness. *International Research Journal of Pharmacy*, 2013; 4(8): 75-79.