

# REVIEW ON “ALOE VERA- MEDICINAL PLANT”

DIVYA PATHAK\*, RAJESH SHARMA

<sup>1</sup>Assistant Professor, Dept. of Pharmacology, Teerthanker Mahaveer College of Pharmacy, TMU, Moradabad, U.P, India

<sup>2</sup>Assistant Professor, Dept. of Pharmacognosy, Teerthanker Mahaveer College of Pharmacy, TMU, Moradabad, U.P, India

## Abstract

*Aloe Vera is a very important and effective plant with so many health application and stuperying that scarcely any part of human body remain uninfluenced by its healing medicinal use. It acts as a natural fighter against all classes of infection, an important effective anti-oxidant, helps in treating all digestion related problems, heartburns, arthritis, stress, kidney-stone, skins-burns, diabetes, rheumatism, pain, asthma, cancer, AIDS, It also acts as a laxative beauty enhancer and produced that effect on lowering blood sugar level in diabetics and maintain the blood sugar. It is commonly known as Barbados or Curaçao Aloe, is an herbal medicine with a long traditional use in different cultures. The main limitation of the current clinical knowledge about aloe vera gel is small clinical studies that often lack rigorous methodology. Several clinical trials are being conducted to further evaluate the use of aloe vera gel for a variety of disorders, as well as to further confirm traditional uses of the plant extract.*

**Key words-** *Aloe Vera, cancer, diabetes, skin burn etc.*

## INTRODUCTION

Aloe vera is a very effective and important herbal plant in many other plants, it gives so many medicinal activities and pharmacological effects for human beings and animal. Aloe vera also be used for medicinal application in different system of our cultures. Aloe vera acts as an antimicrobial agent that removes or inhibit the growth and development of microorganism such as microorganism (bacteria), fungi, protozoan etc. The Antimicrobial drugs are removes and suppressed the microbes or protect the growth and development of bacteria (micro-biostatic). Various parts of this plant were useful in curing a wide range of health related issue. This plant synthesizes a vast array of secondary metabolites that are

important for medicines. Clinical efficacy of many synthetic antibiotics is questioned now days with the emergence of multidrug resistance pathogens. The increasing failures of chemotherapeutics and antibiotics exhibited by pathogenic microbial infection have led to the screening of several medicinal plants for potent microbial activity. Aloe Vera is one of the medicinal plants looking like a cactus with green, its shape like sharp knife ,leaves that are flesh, narrowing, spinous, emarginated & filled up from a clear white viscous gummy gel <sup>[1]</sup>.Aloe vera is a hardy, perennial, tropical, drought-resistant, succulent plant .The aloe vera has produced the immense traditional role in endemic system of rules of medicine such as the Siddha, Unani, Ayurveda and Homeopathy.<sup>[2]</sup>The Aloe vera leaf contain more than 75 food (nutrients), 200 chemical active compounds including 20 minerals, 18 amino acid & 12 vitamins, controls then ageing process of skin. The cleaning of eyes with aloe vera protects eyes from UV rays when coming in the sunlight. Now days it is commonly used in medicines, in juices, drinks & cosmetics products. The leaves of Coriander were also used in antimicrobial analysis. Food preservative is an old topic & people have been using high salted, high molasses system acid, alcohol, smoking, under water, underground storage & so on to extend food shelf life. With the industrial development chemical preservative are widely used in the food processing industry. However, with the development of food industry as well as great attention of peoples to food safety & have higher demand to food preservative method & try to food more secure & efficient preservatives. Coriander has been widely studied & reported about its fruit its fruit in domestic & foreign. There essential oil is mainly extracted from its fruits & there are relatively few research reports about physiological functions of stems & leaves including antiseptic efficiency. It has a good prospect of application as a natural food preservative <sup>[3]</sup>. The Complex sugar polymer is the more powerful vital dynamic compound in charge of the invulnerable empowering action present in

the Aloe vera gel. [5] Aloe vera is a customary, dry spell dispute, sticky plant. The aloe name is originates from the Arabic "Alloeh" or Hebrew "Halal" means intensely Shiny specialist. It has delivered a substantial conventional part in indigenous arrangement of pharmaceutical framework like ayurveda, Siddha, Unani and Homoeopathy.[6] Aloe barbadensis mill operator is a semi tropical plant is one of the 250 types of Aloe vera. "Ghee kunwar" is most normal for its powerful therapeutic properties, aloe vera its Sanskrit name is an individual from Lilly family. The plant found in spear molded, and sharp pointed, and rugged and edged leaves [7]. Aloe vera is found as the world wild herbs along the shoreline of India. It's development and gathering is done on a substantial scale in numerous territories of India and different places, for example, Tamil Nadu, Gujarat, Maharashtra, Bihar Nepal, China, Australia, America, Pakistan Himalaya slopes etc.[8] Aloe vera is most regular most established restorative plant ever known as the most helpful therapeutic plant in all over world.[9] About more than 200 mixes are found in Aloe barbadensis and around 75 have natural action and pharmacological exercises are contain in the aloe vera clear out. It contains different mixes including, for example, sugars, proteins, glycoproteins, amino acids natural acids, anthraquinones (e.g. aloe-emodin), anthrones and their glycosides anhydroglucosyl) - aloemodin-9-anthrone, otherwise called aloin An and B), chromones, , lipids sugars, vitamins and minerals [10, 11, 12,]. Aloe vera contains various utilizations and for the most part they are utilized as a nourishment additive and solution preparation and natural medications definition. Aloe vera additionally utilized as a part of pills, splashes, balms moisturizers, fluids, drinks, jams, gels, suspension, and corrective creams[13]. Many diverse aloe vera species are found around on the planet are utilized for conditions treats the cancer.[14] such a large number of medical advantages are appropriated in aloe vera have been allotted to the polysaccharides contains in the gel of the aloe vera clears out. This plant otherwise called "the mending plant". Aloe vera utilized for customary restorative application as a part of a few framework for millennia.[15],[16],[17],[18] It has been set up that Aloe vera has development advancing exercises of hostile to contagious properties of aloe vera leave are dictated by Casian. The concentrates or parts of Aloe vera animate the multiplication of various cell sorts. In Many studies are demonstrated that treatment with Aloe vera gel, removes delivered the outcome in quicker mending of wounds.[19],[20],[21],[22],[23] Many reports of Aloe vera gel has a gainful action on the injury recuperating in both typical and diabetic rats. The most common wide use of Aloe vera as a remedy to enhance the activity of wound healing and other medicinal activities. Its mechanism in healing of wounds has not been studied in detail. The Aloe vera is most important and useful plant in the herbal drugs manufacturing and other formulation its gives useful and valuable compounds.

### Taxonomy

Kingdom- Plantae  
 Order- Asparagales  
 Division- Spermatophyte  
 Subdivision- Angiospermae  
 Class- Monocotyledoneae  
 Genus- Aloe  
 Species- Barbadensis Mill<sup>[24]</sup>

**Synonyms:** Aloe, Musabbar, Kumari

### Biological source <sup>[26]</sup>

Aloe Vera is consisting of the fresh juice collected by incision, from the bases of the leaves of different species of aloe. Aloe perryi, or *Aloe Barbadensis* Mil and *Aloe ferox*.

**Family:** It's belonging to the Liliaceae family.

Aloe perryi Baker is found in Socotra and Zanzibar islands and in there neighbouring areas and so the aloes get from this species is known as Socotrine or Zanzibar aloe. Aloe vera Linn is otherwise called Aloe vulgarise Lamarek, or *Aloe barbadensis* Mil. *Aloe officinalis* Forskal. It was once delivered on the Island of Barbados. It is now almost completely made on the Dutch Island of Curacao, Aruba and Bonaire. The aloes obtained from this species is known as Curacao or Barbados aloe. *Aloe ferox* Miller and hybrid of this species with *Aloe ofricana* and *Aloe spicata*, *A. platylepia* and other species of Aloe grows in Cape Colony and so is known as Cape aloe.

### Microscopical Description

The Plant is a common looking perpetual with small, thick to some degree isolated stem 30-60 cm high The leaves are opaque green stalkless ,gloat, lanceolate, erect spreading instead of inward, sharp toothed at edge, around 30-60 cm long 10 cm board and 1.8 cm thick with of juice. The flower stalk is longer than leaves and is layered and extended. The plant achieves adulteration after four year and has leaves with a length averaging between two and three feet and a base width from three to five inches. Each leaf weighing from two to four pounds. The plant's complete life cycle is twelve years. It produces an average of twelve to thirty leaves. The odour is characteristic while the taste is nauseous and bitter.<sup>[28]</sup>

### Geographical Source

Aloe vera are indigenous to East and South Africa, yet have been brought into the West Indies and into topical nations, and will even thrive in the nations verging on the Mediterranean. In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra, UK, Himachal Pradesh, and Tamil Nadu, It is economically developed in Aruba, Bonaire, Haiti, India, South Africa, the United of America and Venezuela .It has turned into a typical family solution for assortment of uses<sup>[29]</sup>

### Morphology

**Taste** :- Bitter

**Odour** :- None

**Size & Shape** :- Plant growing to 60-100cm in lance-shaped with elongated strands

**Colour** :- Leaves are green to grey- green flower

**Flower** :- Yellow tubular in 25-35cm in a slender loose stamens

**Root** :- Root fibers that can reach 30-40 cm in length<sup>[30]</sup>

### Cultivation and Collection

There are more than 250 species of aloe mature around the over in world. Be that as it may, just two species are developed today industrially, with Aloe barbadensis Miller and Aloe aborescens being the most prevalent. The Aloe vera plant is grown in warm tropical territories and cannot survive solidifying temperatures. It is an evergreen perpetual developing to 0.8 m by 1 m at a slow rate. The plants incline toward light (sandy) and medium (loamy) soil requires all around depleted soil can develop in healthfully poor soil. The plant inclines toward corrosive, nonpartisan and essential (basic) soil. It can't develop in shade. It requires dry or clammy soil and can endure dry spell. They are xerophytic plant. It can be proliferated by seed. Seed are sown in the spring in a warm green house. The seed as a rule sprouts in 1-6 months at 16oC. The seedlings are exchanged to the pots containing very much depleted soil. They are permitted to develop in sunny part for in any event there initial two winters. The counterbalance will be accessible, for the most part in spring. The plants produce balance uninhibitedly and they can be isolated whenever of the year the length of it warms enough to urge new attach development to permit restoration of the plant. Young equalization are planted in the earth after the swirling season in lines organized at a detachment of 60m. In the second year leaves are accumulated by local people by guaranteeing their hands in light of the thorny method for takes off. The leaves are cut close to the base, kept within lamp fuel tins and taken them to a focal spot for the arrangement of aloe. Juice of aloe is available in parenchymatous cells of pericycle that are adhesive cell. In a solitary entry point adhesive cells apply.<sup>[31]</sup>

### Preparation of Aloe vera

#### Curacao or Barbados aloe

In West Indies the cut leaves are arranged with their cut surface on the inner side, on the side of V shaped vessel of about 1-2 m long and the flowering juice is collected in a tin vessel that is placed below the V- shaped vessel. This

juice in this manner gathered is focused either by unconstrained vanishing, or all the for the most part by bubbling until it happens to the consistency of thick honey. These conditions favours the crystallization of barbaloin and this aloe contain crystals of barbaloin because of the presence of which it becomes opaque and so also known as hepatic or livery aloe. On cooling, it is than filled, ground, boxes, or other helpful containers and solidifies.<sup>[32]</sup>

### Socortrine Aloe

When it is readied, it is usually filled goat skins, and spontaneous evaporation is allow for about a month when it becomes viscous pasty mass which are than packed into cases. In European countries it is dried in wooden pans with hot air till moisture is about 10%.<sup>[33]</sup>

### Zanzibar Aloe

This aloe is prepared similar to Socortrine aloe. It is packed in skin, of carnivorous animals. This aloe is also known as monkey skin aloe.<sup>[34]</sup>

### Cape Aloe

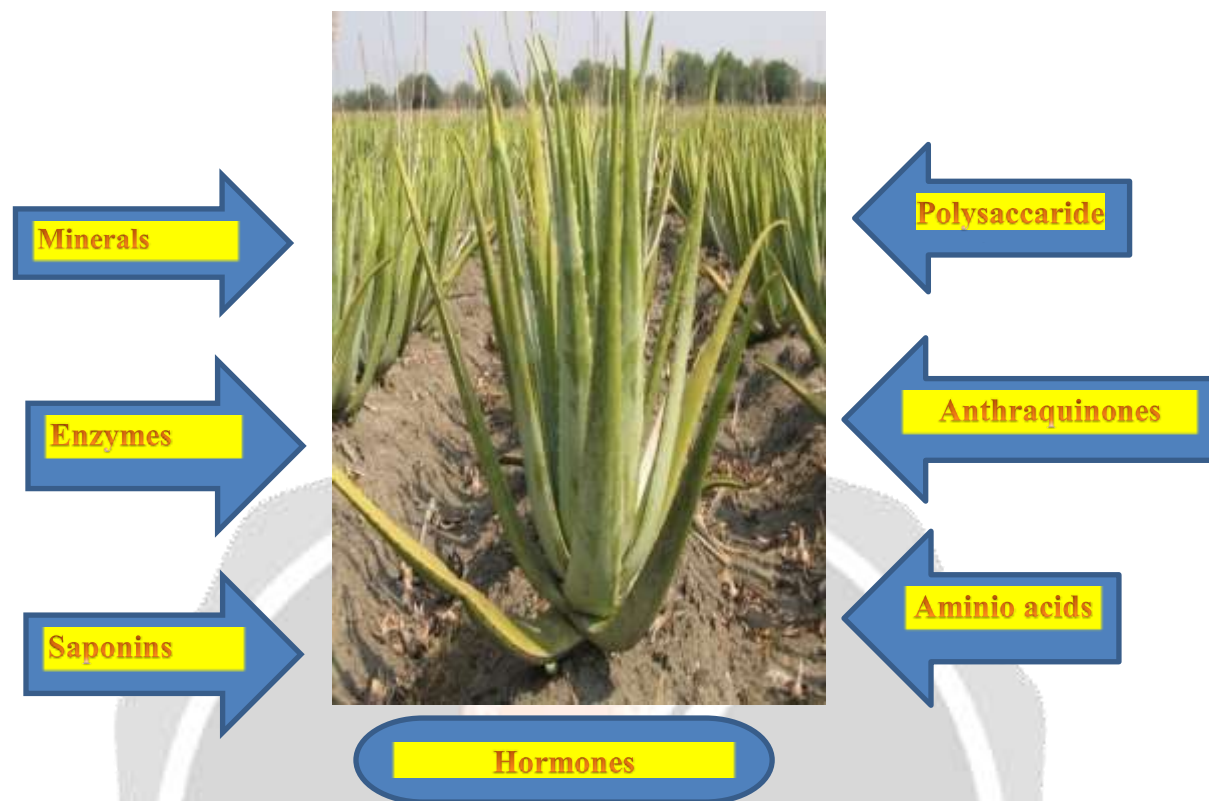
The leaves of the plants from which Cape aloe is gotten air slice off near the stem composed around a hole in the ground, in which a sheep skin is spread, with smooth side upwards. Exactly when a sufficient measure of juice has drained from the forsakes it is moved by warmth in iron cauldrons and in this way filled boxes or skin in which it solidifies on cooling. Broad measures of the prescription are exchanged Cape Town and Mossel Bay.<sup>[35]</sup>

### Chemical Constituents

The most critical dynamic boss constituents of Aloe vera are the three isomeric of Aloins, Barboloin and Isobarbaloin, which constitute the purported crystalline Aalin, present in the medication at from 10 to 30% constituent are shapeless Aaloin, sap, emodin and Aloe-emodin. Barboloin is available in all the varities of aloe vera. It is marginally yellow shaded, severe, water dissolvable, crystalline substance, present in Curacao aloe and in follow sum in Cape aloe and present in Socortrine and Zanzibar aloe. The central constituents of Socortrine and Zanzibarn aloe are Barbaloin. Aloe is comprised of an immeasurable scope of mixes which can be separated into three extensive gatherings. The principal bunch, complex sugars (among which acemannan emerges) are inside the leaves gel and have an insusceptible empowering activity. next are the anthraquinoes, contained in the peripheral part of the skin, with a solid purgative activity . lastly are a few substances with a wide cluster of activities, for example, minerals, vitamins, crucial , superfluous and semi-vital amino acids, natural acids, phospholipids, proteins, lignin and saponins<sup>[40]</sup>.

**Fig: 1. Active Constituents of Aloe Vera plant**





### Phyto-Chemical Properties of Aloe Vera

The Aloe vera plant contains flavonoids, terpenoids, lectins, unsaturated fats, cholesterol, anthraquinones, chromones mono and polysaccharides, tannins, sterols, salicylic corrosive, destructive regular acids, proteins, saponins, vitamins, minerals, aloin, anthrone, aloe emodin, aloetic corrosive, choline and salicylate, complex mucopolysaccharides like hyaluronic corrosive, sapogenins and chemical, for example, catalase, cellulase and alliinase<sup>[39]</sup>

### Substituent and Adulterants

Candelsbmm (Natal aloes) is dull greenish black to dull brown in colour, opaque. When scraped it gives a pale greyish green or a yellow powder. It can be distinguished as it gives negative test to borax test and produces a peep blue colour. Jafferabad aloes and the Mocha aloes are the other two types of aloe which is used as an adulterant.<sup>[41]</sup>

### Pharmacological Activity of Aloe Vera

The therapeutic cases made about Aloe vera, as with various herbs and plants, are perpetual.

#### Teeth and Gums

Commonly Dentistry reported that Aloe vera in to a great degree effective tooth gels is as reasonable as toothpaste in fighting to the cavities. The examiners took a gander at the germ-doing combating limit of an Aloe vera tooth gel with two understood toothpastes and found that the gel was practically as convincing, and now and again far superior than the business brand toothpastes at controlling pit bringing on oral bacteria<sup>[43]</sup>

#### Wound Healing

Wound recuperating Property of Aloe vera gel has been credited to Mannose-6-phosphate. actually, glucomannan and plant development hormone gibberellins connects with development variable receptor of fibroblast and

invigorate its action and proliferation for expansion collagen blend its topical and oral organization of aloe as indicated by Hayes<sup>[44]</sup>

### **Anti-Diabetic**

The five Phytosterols of Aloe vera, lophenol, 24-methyl-lophenol, 24-ethyl-lophenol, cycloartanol and 24-methylenecycloartanol demonstrated hostile to diabetic impacts in sort 2 diabetic mice. Aloe vera contain polysaccharides which expand the insulin level and show hypoglycaemia Properties<sup>[45]</sup>

### **Anti-Inflammatory Action**

The Anti-inflammatory activity of aloe vera gel has been uncovered by various in vitro and in vivo contemplates bradykinase movements of body. The peptidase bradykinase was isolated from aloe and shown to break down the bradykinin, an inflammatory substance that induces pain<sup>[46]</sup>

### **Anti-Tumor Activity**

Different glycoproteins are available in Aloe vera. The counter tumor and antiulcer affects and to build expansion of ordinary human dermal cells .[47]In late studies, a polysaccharide division has appeared to repress the authoritative of benzopyrene to essential rodent hepatocytes, in this manner keeping the arrangement of possibly disease starting benzopyrene-DNA adducts In the provoking of glutathione s-transferase and an impediment of the tumor-promoting effects of phorbol myristic acidic corrosive deduction has in like manner been represented which proposes possible favorable circumstances of using aloe gel as a piece of cancer<sup>[47]</sup>

### **Effects on the Immune system**

Alprogen stifled calcium immersion into pole cells, in this way smothering the antigen-antibody-interceded arrival of histamine amine and leukotriene from pole cells. In a study on mice that had beforehand been embedded with murine sarcoma cells acemannan animates the blend and arrival of interleukin-1 (IL-1) and tumor festering variable from macrophages in mice, which consequently began a resistant strike that achieved defilement and backslide of the damaging cells<sup>[48]</sup>

### **Medicinal Uses**

Aloe vera is anthelmintic, cathartic, carminative, deobstuent, depurative, diuretic, stomachic, and emmenagogue. Juice is utilized as a part of healthy skin prescription, dyspepsia, amenorrhea, smolders, colic, hyperdenosis, hepatopathy, splenopathy, obstruction, range, menorrhoea, stomach, tumors, dropsy carbunles, sciatica, lumbago and flatulence. Aloe vera gel is very useful in ulcerative colitis and pressure ulcers.<sup>[49]</sup>

### **1. Anti-Cancer Properties**

The Aloe vera produced an important role in cancer-causing nature has not been assessed well. The constant misuse of anthranoid-containing intestinal medicines has been speculated to assume a part in colorectal tumor, be that as it may, no causal social between anthranoid diuretic misuse and colorectal malignancy has been exhibited and have Aloe vera juice enables the body to recover itself from moreover the mischief brought on by radio and chemotherapy that obliterate strong sound safe invulnerable cells basic for the recovery. aloe vera emodin, an anthraquinone, can smother or control the advancement of undermining or repress and suppressed the development of threatening growth bringing about cells making it to have hostile to anti-neoplastic properties.<sup>[50]</sup>

### **2. Anti-Ulcer Activity**

This study was performed to choose the effects of Aloe vera on indomethacin actuated ulcers in rats. Aloe vera demonstrated verifiably basic unfriendly to ulcer activity commensurate to standard medicine omeprazole. The mean ulcer records of two medicines are molded to be statically basic. Thusly, the results were suggestive of threatening to ulcerogenic development of aloe vera. however, the cell frameworks for these activity stay to be established<sup>[51]</sup>

### **3. Antiseptic**

The sterile property of Aloe Vera is a result of proximity of six clean experts particularly lupeol, salicylic destructive, urea nitrogen, cinnamonic destructive, phenols and sulfur. These blends have inhibitory action on parasites, organisms and diseases. Despite the way that an extensive part of these usages are captivating controlled trials are critical to choose its practicality in all diseases<sup>[52]</sup>

### **4. Anti-Inflammatory**

The aloe vera is effective active medicinal plant of herbal drugs formulation. It suppressed the cyclooxygenase decreases prostaglandin E2 generation from arachidonic corrosive as of late, the novel calming compound called C-glucosyl chromone was disengaged from gel extracts. It very useful plant in treatment in anti-inflammation activity of aloe vera<sup>[53]</sup>

### 5. Anti-bacterial Activity

Aloe vera gel was bactericidal against pseudomonas aeruginosa and acemannan kept it from holding fast to human lungs epithelial cells in a monolayer society. A took care of Aloe vera gel preparation ruined the improvement of development Candida albicans. The gel contains 99.3% of water, the staying 0.7% is made up of solid with starches constituting for a sweeping parts. concentrated concentrates of Aloe leaves are used as diuretic and as a haemorrhoid treatment. Aloe gel can fortify the body's resistant framework Glucomannan and acemannan have been exhibited to revive wound recuperating, actuating macrophages. ,bracing safe structure additionally antibacterial and antiviral effects. The preliminary phytochemistry revealed closeness of terpenoids ,flavonoids and tannins . Aloe secundiflora could be a rich wellspring of antimicrobial agenstsand its utilization by the neighborhood individuals of need victroria district of Kenyas<sup>[53]</sup>

### 6. Anti-fungal Activity

A refined aloe vera gel preparation reported suppressed the growth of fungus albicans. The purified aloe proteins has been found to exhibit potent antifungal activity against candida paraprtilosis ,candida krusei and candida albicans.<sup>[51]</sup>

### 7. Chronotropic Activity

Trough Chronotropic (Heart Rate) impacts, the heart rate is moderated so the diastolic period (the time between real solid compressions [the systolic period]) is longer. It is amid the diastolic period that the heart chambers are loaded with blood, prepared for the following beat. Be that as it may, generally as essential, this is the time when the heart unwinds and gets its own sustenance. In the event that the heart rate is too quick, the diastolic cardiovascular support time frame is too short. This makes the heart less proficient in pumping and coursing blood<sup>[54]</sup>

### 8. Anti-diabetic Activity

The primary restriction of the current clinical information about aloe vera gel is little clinical studies that regularly need thorough approach. A few clinical trials are being directed to promote assess the utilization of aloe vera gel for an assortment of clutters, and additionally to assist affirm customary employments of the plant extract<sup>[54]</sup>

### 9. Anti-oxidant Activity

The utilization this study was to quantify the capacity of fluid concentrate of Aloe vera on oxidative damage and Anion Exchanger 1 (AE1, generally called Band 3) expression in human erythrocytes introduced to the water dissolvable free radical initiator 2,2'- azobis-2-amidinopropano dihydrochloride (AAPH). In addition, add up to phenolic blends in the concentrates were determined as catechin corresponding and the diverse malignancy counteractive action operator activities were stood out from regular and built standard cell fortifications, for instance, BHA and ascorbic corrosive. Since Aloe Vera separate did not bring about an utilization of the cytosolic cancer prevention agent, glutathione (GSH) when it was immediate hatched with GSH in fundamental circulated air through fluid arrangement, this shows Aloe vera extricate does not continue auto oxidation at this test condition.<sup>[53]</sup>

### 10. Anti-viral Activity

In this study we attempted the antiviral activity of an unpleasant hot glycerine concentrate of Aloe vera gel which was produced in Bushehr (Southwest of Iran) against HSV-2 replication in Vero cell line. The concentrate exhibited antiviral development against HSV-2 not simply before association and area of disease to the Vero cells also on post association periods of contamination replication. Thus, blends of Aloe vera from Bushehr could be a tolerable confident as a trademark source.<sup>[55]</sup>

These pharmacological activity are contains in the Aloe vera plant in active form and produced the effects on different disease and disorder in human beings. They are very important and effective to the act as a pharmacological agents.

### Side Effects and Precautions

#### Extended use

Oral aloe can cause cramping and diarrhea, which can lead to electrolyte imbalances and dehydration if used for an extended period time. Long haul utilization of aloe may expand the danger of colorectal tumor.

**Gastrointestinal symptoms**

Aloe gel should not contain aloin, which is the compound most often responsible for gastrointestinal symptoms.

**Before a colonoscopy**

Individuals must avoid using aloe vera for 1 month prior to having a colonoscopy, because it can stain the colon and make visualization difficult.

**Allergies**

Individuals who are oversensitive to garlic, onions, and tulips are more probable have a sensitivity to aloe.

**Carcinogenic activity**

The 2-yea investigation of a nondecolorized entire leaf concentrate of aloe vera given in a creature's drinking water discovered clear confirmation of cancer-causing action in male and female rodents, in view of tumors of the extensive intestine.<sup>[54]</sup>

**Use not recommended**

People with intestinal problems, heart disease, hemorrhoids, kidney problems, or electrolyte imbalances should not take aloe. People with diabetes should use caution if taking aloe vera, and check blood glucose levels regularly.

**Liver toxicity and hepatitis**

A report of liver toxicity and hepatitis has led many people to question the safety of aloe supplements.

**Bleeding**

Aloe Vera may increase the risk of bleeding. Alert is promoted in people with bleeding disorders or taking drugs that may increase the risk of bleeding.

**Increased risks**

Aloe may cause increased risk of irregular heartbeat, kidney failure, thyroid dysfunction, urinary stones, and uterine contractions. Due to aloe contains estrogen-like substance chemicals, this may alter the effects of other agents believed to have estrogen-like properties.<sup>[54]</sup>

**CONCLUSION**

I was studied about the too much information of herbal plant i.e Aloe Vera. It is a specific plant, it show various types of activities in medical era .so it play an important role in pharmaceutical field. Aloe Vera and its preparation have been widely used as a medicine since ancient times. Various researches have been conducted to prove the efficacy of aloe Vera in various health problems. The active ingredient hidden in its succulent leaves have the power to soothe human life and health in a myriad ways. Aloe Vera as the wonder plant is multiple from being an antiseptic, ant-inflammatory agent, helps in relieving like cancer and diabetes, and being a cosmetic field.

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