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RESEARCH ARTICLE

ALOE VERA - A REJUVENATING NATURAL REMEDY REVIEW

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Abstract

The Aloe Vera plant has been known and used for centuries. It is a true gift from nature. Ancient records show that the benefits of Aloe Vera have been known for centuries with its therapeutic advantages and healing properties. It is considered under any names depending upon the world community. The medicinal uses of this tropical plant is very well found in many literatures dated back. The nutrients make up of Aloe Vera is one of a kind and has amazing natural healing properties. Its uses are multiple and undoubtedly the nature's gift to humanity and it remains for us to introduce it to ourselves and thank the nature for its never-ending gift.

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Introduction:-

An apple a day keeps a doctor away, a famous quote reveals everything in it. Nature has given us vast variety of FOODS for different diseases which are seen in humans. Effective utilisation of biodiversity determines prosperity of the humans due to the limitless potential for application of biodiversity for human welfare. This is the most significant of the resources available to man. Humans depends upon microbial plant and animal species for food and for raw materials for a wide range of products, from medicines to building materials.¹

The ancient healers of folk/tribal medicine developed methods of indigenous diagnostic procedures to detect diseases and various types of treatment protocols. Treatment is mainly based on the utilization of locally available bioresources especially the plants used for food and medicine including animal products. Apart from this, they also effectively utilized abiotic components like minerals, metals and other natural products. They also effectively utilized abiotic components like minerals, metals and other natural products. Ancient healers also evolved an indigenous taxonomy of flora and fauna and documented the habit, habitat and distribution of different species especially used for food and medicine.²

Aloe Vera is a favourite herb of many nations of the world. Many literatures are available describing about its contribution and importance as medical and industrial use in years back. Many ancient works including the Bible, refer to the use of Aloe Vera. The Bible mentions removing Christ from the cross and wrapping his body in aloes and myrrh (John 19 : 39). The true historical background is still unclear, but literature supports its use in ancient days, however new researches suggests that it originated in Arabian peninsula. The Arabian Peninsula where Aloe vera evolved is close to historically important early trade routes between Asia and the Mediterranean. Historical sources suggest Aloe Vera trade routes were well established in the Red Sea and Mediterranean region as far back as the 4th Century B.C. King Solomon (971-931 B.C.) highly valued the medicinal properties of this plant, he even grew his own aloe vera. Aloe Vera had travelled to Persia and India by 600 B.C. by Arab traders. The Arabs called Aloe the "Desert Lily" for its internal and external uses.³

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Aloe vera is a perennial, drought-resisting, succulent plant belonging to the Asphodelaceae family. The name, aloe, is derived from the Arabic "alloe" or Hebrew "halal" meaning bitter shiny substance. It has a vast traditional role in indigenous system of medicine like ayurveda, siddha, Unani, and homoeopathy. Aloe barbadensis miller or Aloe vera, a semi tropical plant is one of the 250 species of Aloe. Most commonly used for its medicinal properties, Aloe Vera or the Sanskrit name "Ghee Kunwar" is a member of Lilly family. The plant has lance-shaped, sharp pointed, and jagged & edged leaves. Aloe vera is found as the wild herb along the coast of south India. It is under cultivation in large areas in many parts of India viz; Tamil Nadu, Gujarat, Maharashtra etc. Aloes are often thought to only grow in hot and dry climates but they grow in a variety of climates including desert, grassland, and coastal or even alpine locations. There are more than 200 compounds found in Aloe barbadensis, about 75 of which have biological activity, Aloe vera leaves contain a diverse array of compounds.

Few are carbohydrates, proteins, glycoproteins, amino acids, organic acids, lipids, sugars, vitamins, and minerals. Aloe vera has number of uses and mainly they are used as a food preservative and medicine. Numerous aloe species around the world are used for conditions ranging from dermatitis to cancer. Various literature are available in the data base describing that Aloe vera leaf possesses many pharmaceutical activities, including antimicrobial, anticancer, antioxidant, antidiabetic, antiulcer, hepatoprotective, immunomodulatory and many more. Thus Aloe Vera plant has been known and used for centuries for its health, beauty, medicinal and Skin care properties.⁴

The Arab community discovered a way to separate the inner gel and the sap from the outer rind. Finally they preserved by transforming in to a powder.³The Aloe vera plant has been known and used for centuries for its health, beauty, medicinal and skin care properties. The name Aloe vera derives from the Arabic word "Alloe" meaning "shining bitter substance," while "vera" in Latin means "true"^{3,5,6}

Aloe vera is one of the oldest known medicinal plants gifted by nature, Aloe vera often called Miracle plant known by many names, there are over 250 types of aloe vera of these only 4 or 5 are commonly used in medicines. Aloe Vera contains over 200 active components including vitamins, minerals, amino acids, enzymes, polysaccharide, and fatty acids-no wonder it's used for such a wide range of remedies⁷.

The semi-tropical plant, Aloe Vera, has a long and illustrious history dating from biblical times. It has been mentioned throughout recorded history and given a high ranking as an all-purpose herbal plant⁸. This plant has been known by a number of names such as 'the wand of heaven', 'heaven's blessing' and 'the silent healer', its efficacy is based on scientific dose-response curves. In Japan, it is known as "all-day service" and "doctor away" plant. Furthermore It's ALSO USED IN THE air purification process. The pharmacological attributes of A. vera have been revalidated in modern sciences through various in vivo and in vitro studies⁶.

Aloe vera has complex chemical ingredients. The main chemical components found in Aloes can be classified into nine categories: anthraquinones, inorganic compounds, enzymes, vitamins, essential amino acids, non-essential amino acids, carbohydrates, fatty acids, and other miscellaneous chemicals. Among these constituents, anthraquinones are the most important active ingredient of high medical values. A. vera also contains products of the isoprenoid pathway, which are carotenoids, steroids, terpenes and phytosterols. The potential of constituents which exhibit antagonistic and competitive activities also influences the overall biological activity of a particular A. vera preparations. A large number of biological activities related to health benefits have been determined including antimicrobial, antiinflammatory, lipid and glucose lowering, antiproliferative, immunostimulatory, and antioxidant functions.⁶

Aloe Gel, a clear colourless semisolid gel, was stabilized and marketed. This Aloe Vera Gel, beginning in the 50's, has gained respect as a commodity used as a base for nutritional drinks, as a moisturizer, and a healing agent in cosmetics and OTC drugs. Chemical analysis has revealed that this clear gel contains amino acids, minerals, vitamins, enzymes, proteins, polysaccharides and biological stimulators.⁸ The A. vera plant can be utilized in three basic forms: Aloe gel, Aloe latex and the whole leaf extract¹³.

The medicinal effect of this her is very well discussed in various literatures. The extract is good skin eger agans various nfections. It has antiseptic and antibiotic properties which make it highly valuable in treating cuts and abrasion. It has also been commonly used to treat first and second degree burns, as well as sunburns and poison oak, poison ivy, and poison sumac infections, and eczema. Aloe has been marketed as a remedy for coughs, wounds, ulcers, gastritis, Diabetes, Cancer, headaches, arthritis, immune-system deficiencies, and many other

conditions when taken internally. It can also be used as a hair styling gel and works especially well for curly or fuzzy hair. It is also used for making makeup, moisturizers, soaps, sunscreens, shampoos and lotions.⁹

The various compounds ones found in Aloe Vera are: Cholesterol, Sitosterol, Campesterol and Lupeol. These sterols contain antiseptic and analgesic properties. Leaves have three layers. The outer most layer consist of 15 - 20 cells thick protective layer synthesizing carbohydrates and proteins. The active components of aloe include anthraquinones, chromones, polysaccharides, and enzymes. The anthraquinones and chromones are responsible for the anti-cancer 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. . Outer Protective Layers of Leaf. The bitter yellow latex of pericyclic tubules in the outer layer of the leaves contain derivatives of hydroxytetracaine, anthraquinone and glycosides aloin A and B from 15% - 40% in different investigations . The other active principles of Aloe include hydroxyanthrone, aloemodin-anthrone 10-C-glucoside and chrones. Middle Layer of Leaf. The bitter yellow latex containing anthraquinones and glycosides has been reported from the middle layers of leaf. Inner Layers of Leaf. The innermost layer of leaf gel contains water up to 99%, with glucomannans, amino acids, lipids, sterols and vitamins. Aloe Vera contains numerous vitamins: Vitamins A, C, &E (crucial antioxidants that combat dangerous free radicals in the body), B & Choline (concerned with the production of energy, amino acid metabolism and developing muscle mass). Vitamin B12 (responsible for the production of red blood cells).and Folic acid (helps develop new blood cells).Aloe Vera contains the following minerals: Calcium, essential for proper bone and teeth density), manganese, copper, sodium, zinc etc. Aloe Vera contains both monosaccharide, such as glucose and fructose, and polysaccharides. Polysaccharides are the most important types of sugars. Sterols are important anti-inflammatory agents.^{9,10}

Therapeutic Uses

Aloe vera has been used for medicinal purposes in several cultures for millennia: Greece, Egypt, India, Mexico, Japan, and China.¹⁰ Aloe vera is anthelmintic, aperients, carminative, deob-struent, depurative, diuretic, stomachic and emmena-gogue. Juice is used in skin care medicine, dyspepsia, amenorrhea, burns, colic, hyperadenosis, hepatopathy , splenopathy, constipation, span menorrhea, abdominal tumors, dropsy carbuncles, sciatica, lumbago and flatu-lence. A number of glycoproteins present in Aloe vera gel have been reported to have anti-tumor and antiulcer effects and to increase proliferation of normal human dermal cells. Traditionally, Aloe vera gel is used both, topically (treat-ment of wounds, minor burns, and skin irritations) and internally to treat constipation, coughs, ulcers, diabetes, headaches, arthritis, immune-system deficiencies. It is used in ayurvedic formula-tions as appetite-stimulant, purgative, emmenagogue and antihelminthic, for treating cough, colds, piles, debility, dyspnoea, asthma and jaundice¹¹.

Wound Healing-

A wound is an injury and an inappropriate healing process can lead the wound to enter a chronic state which increases the risk of infection. Several different mechanisms have been proposed for the wound-healing effects of the extract from A.vera leaves. These include keeping the wound moist, faster maturation of collagen, increase in epithelial cell migration and reduction of inflammation. The healing property of Aloe vera is related to compounds such as glucomannan enriched in polysaccharides and acemannan^{12, 13, 10}

The wound healing property of Aloe vera gel has been attributed to Mannose-6-phosphate used for first to second degree burns. The glucomannan up-regulates the fibroblast growth factor stimulating the proliferation of fibroblasts and improves collagen production. And Acemannan increases periodontal ligament cell proliferation by up-regulating the growth factor 5, enhances type I collagen and alkaline phosphatase activity in primary human periodontal ligament cells.¹⁰

Skin and mucosal disorders

Used in sum of erythema, infiltration, and desquamation. Aloe vera extract were used with no side effects. The results of various study show that topical application of Aloe vera gel can be used as a safe and well-functioning nappy dermatitis therapy. Panahi et al. conducted randomized, double-blind trials on 32 infants in order to identify effective strategies to decrease the symptoms of nappy dermatitis in infants . lichen planus is a chronic inflammatory disease of mucous membranes, which can be treated to extent with this aloe vera gel, however the exact ethology of this disorder is not known. A study was conducted by Rajar et al. showed the efficacy of this gel with a good response . Current treatments for this disorder are aimed at alleviating clinical symptoms, such as itching and

inflammation. These beneficial effects could be attributed to the well-known anti-inflammatory properties of Aloe vera¹³.

Even for facial skin this gel is shown to be efficient. Cho et al. conducted a clinical trial on 30 healthy female over the age of 45, showed that Aloe vera significantly improved the facial wrinkles in both groups, and improved facial elasticity in the lower-dose group. Aloe vera gel can significantly improve wrinkles and elasticity in photo-aged human skin¹³. Mixed with selected essential oils, it makes an excellent skin smoothening moisturizer, sun block lotion plus a whole range of beauty products. Aloe vera gel has an antioxidant protein, metallothionein, is generated in the skin, which scavenges hydroxyl radicals and prevents suppression of superoxide dismutase and glutathione peroxidase in the skin¹⁰.

Anti-inflammatory action-

Aloe vera shows the anti-inflammatory activity due to bradykinase activity and helps in reducing the inflammation pain and act as a natural analgesic. The various sterol present in aloe includes campesterol, sitosterol, lupeol, and cholesterol which are anti-inflammatory in nature, helps in reducing the inflammation pain. Lupeol, the most active anti-inflammatory sterol, reduced inflammation in a dose dependent manner. Aloe vera inhibits the cyclooxygenase pathway and reduces prostaglandin E2 production from arachidonic acid. Other aspirin like compound present in Aloe is responsible for anti-inflammatory and antimicrobial properties.^{10,12} The antiseptic property of Aloe vera is due to presence of six antiseptic agents namely lupeol, salicylic acid, urea nitrogen, cinnamonic acid, phenols and sulphur. These compounds have inhibitory action on fungi, bacteria and viruses

Effects on the immune system.

Various study on models show significant effect of the aloe gel on immune system. In study conducted by Peng et al., 1991 showed that tumour necrosis factor from macrophages in mice, which in turn initiated an immune attack that resulted in necrosis and regression of the cancerous cells. Several low-molecular-weight compounds are also capable of inhibiting the release of reactive oxygen free radicals from activated human neutrophils.

Antitumor activity.

Glycoproteins present in Aloe vera gel have been reported to have antitumor and antiulcer effects and to increase proliferation of normal human dermal cells. In a study conducted by Kim et al. 1997 showed that an induction of glutathione S-transferase and an inhibition of the tumor-promoting effects of phorbol myristic acetate has also been reported which suggest a possible benefit of using aloe gel in cancer chemoprevention.

Laxative effects

Anthraquinones present in latex are a potent laxative; its stimulating mucus secretion, increase intestinal water content and intestinal peristalsis. Its metabolites in the colon acts as a stimulant and irritant to the gastrointestinal tract.

Moisturizing and anti-aging.

Various compounds found in aloe gel helps in retaining the moisture of the skin. Its moisturizing effects have also been studied in treatment of dry skin associated with occupational exposure where Aloe vera gel gloves improved the skin integrity, decrease appearance of acne wrinkle and decrease erythema, by West et al., 2003). The compounds in aloe vera act as cooling agent for the skin.¹⁰

The Aloe gel has been used for the treatment of radiation burns and radiation ulcers. The Aloe administration influence collagen composition (more type III) and increased collagen cross linking for wound contraction and improving breaking strength, occurs by interaction with growth receptors of fibroblasts. It also increases synthesis of hyaluronic acid and derma-tan sulphate in the granulation tissue of a healing wound. Acemannan complex carbohydrate accelerates wound healing and reduces radiation induced skin reactions. Traditional anti-diabetic plants might provide new oral anti-diabetic compounds, which can counter the high cost and poor availability of the current medicines for many rural populations in developing countries. The treatment of diabetes mellitus has been attempted with various indigenous plants and polyherbal formulations, (Chaurasia et al., 1994; Mitra et al., 1996). Aloe vera contains polysaccharides which increase the insulin level and show hypoglycaemic properties, (Yagi et al., 2006; Epifano et al., 2015; Muammar et al., 2016). Study conducted by Gourdazi et al supports the view that A. vera gel could be active against *P. aeruginosa* in wound infections at various concentrations and the use of it at optimum concentrations can help better therapy of many microbial diseases. Many medicinal plants as potential source of

novel antimicrobial compounds, A. vera being the most important one, are widely used. The gel is more active than the leaf.¹⁴

Antibacterial/antifungal/antiviral effects.

Streptococcus pyogenes and Streptococcus faecalis are two microorganisms that have been inhibited by aloe vera gel. Aloe vera gel reportedly was bactericidal against Pseudomonas aeruginosa while acemannan prevented it from adhering to human lung epithelial cells in a monolayer culture. A processed aloe vera gel preparation reportedly inhibited the growth of Candida albicans. In terms of antiviral effects, acemannan reduced herpes simplex infection in two cultured target cell lines¹⁵.

Protective effects:

Aloe vera gel has been reported to have a protective effect against radiation damage to the skin. On skin exposed to UV and gamma radiation, 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. Glutathione peroxidase activity, superoxide dismutase enzymes, and a phenolic antioxidant were found to be present in Aloe vera gel, which may be responsible for these antioxidant effects.¹⁶

Metabolic disorder.

In Diabetes mellitus characterized by hyperglycaemia due to either insulin resistance, insufficient insulin secretion or both (ADA, 2014). Diabetes mellitus can be classified into type 1 diabetes mellitus (T1DM), type 2 diabetes mellitus (T2DM), and gestational diabetes mellitus (GDM). Chemical drugs which are currently used to control blood sugar may generate side effects, including liver toxicity, weight gain, and increasing the risk of other cardiovascular disease, long-term use of antidiabetic drugs could induce kidney damage, Aloe vera is a medicinal plant that has been used for centuries as an antihyperglycemic agent that could be part of diabetes and pre-diabetes treatment. Several chemical compounds, chromium, and alprogen, abundantly found in Aloe vera, can restore the function of damaged pancreatic beta-cells and insulin activity and lower blood glucose levels (Alinejad-Mofrad et al., 2015). The study conducted by Indash et al. that Aloe vera significantly lowered FBG in prediabetic and diabetic patients. A study conducted by Albert M Hutapea et al. concluded about the anti-diabetic effect of Aloe vera on animal studies with the favourable properties and ability of this material, such as the antioxidant and anti-inflammatory ability. Also the results of Fallah Huseini et al. study shows similar conclusion as the results suggest that aloe leaf gel may safely improve glycaemic control in patients with advanced T2DM needing insulin.^{17,18,19,20}

There are eight main uses of aloe vera in dental practice:

1. Directly application at the sites of periodontal surgery.
2. Applications to the gum tissues when they have been traumatized.
3. Chemical burns.
4. Application at extraction sockets.
5. Acute oral lesions such as herpetic lesions, aphthous ulcers, canker sores & cracks occurring at the corners of our lips.
6. Chronic oral lesions such as Lichen Planus and Pemphigus.
7. Patients with dentures maladaptive may also benefit.
8. Can also be used around dental implants to control inflammation caused by bacterial contamination.^{17,18,19,16}

Mohammad Mehdi Fani found that, Aloe vera gel exerted strong bactericidal activity. Undiluted Aloe vera gel produced significant growth inhibition zones against all the oral bacteria tested. In an experiment done, the mean MIC values for Aloe vera gel measured by the micro dilution method against clinical isolates of S.mutans, was 12.5µg/ml.¹⁶

Aloe vera being used in various diseases is said to have certain active components like saponins, lignin, salicylic acid, anthraquinones and amino acids in which anthraquinones have the strong anti-bacterial, anti-viral and anti-neoplastic properties. Recent clinical trials of Aloe vera on oral diseases give very few side-effects with nausea as the main.¹⁹

The dental uses of aloe vera are numerous, literatures support the medicinal effect of this naturally occurring herb. These articles show that this herb has good antiseptic and anti-inflammatory properties and so it is used in the treatment of gingivitis and periodontitis. Studies have shown that mouthrinses and dentifrices containing aloe vera

have shown a remarkable reduction in gingivitis and plaque accumulation after its use. Its antiviral, antifungal, and anti-bacterial properties are very well documented. The wound healing and anti-inflammatory property of this gel is proved by the studies by Poor MR et al., showed the reduction in the incidence of alveolar osteitis in patients who received an aloe vera gel. As stated by Blackburn in his article this "natural medicament is a multilevel healer" and is used in various oral diseases as a main source or as an adjuvant. Wounds in the oral cavity can lead to discomfort or pain that can interrupt the day-to-day life activities like such as speaking, swallowing and mastication. Subsequently, this can result in xerostomia and oral dysesthesia. Some causes of oral lesions include: infection, physical, chemical, thermal, immunological, systemic diseases, trauma, neoplasia and chronic habits. The wound healing properties of Aloe vera are important to medical and surgical procedures pertaining to the various oral diseases and it has been demonstrated in laboratory and clinical studies.

Many lesions of the oral mucosa are characterized with the development of the wound process, the course and outcome of which depend on many factors: the localization of the wound, the state of general and local immunity, the degree of microbial contamination, the virulence of the microflora present and the methods of therapeutic measures. A very common oral lesion found is chronic recurrent aphthous stomatitis (RAS) is a chronic inflammatory disease of the oral mucosa and is characterized by the appearance of aphthae, occurring with periodic remissions and frequent exacerbations. Rational and effective treatment of various forms of diseases of the oral mucosa, in particular chronic recurrent aphthous stomatitis, is an urgent and difficult task in the practice of a dentist.²⁰ Aloe vera can serve as an alternative therapy in the dental field. Aloe vera can aid in preventing carious lesions, non-surgical scaling, and root planning in patients with chronic periodontitis, and oral wounds. Aloe vera is cost-effective, easily accessible, clinically applicable, utilizes minimal equipment, and has no known adverse side effects.^{20, 21}

Aloe vera agents are used in the treatment of gingivitis and periodontitis. They readily reduce the gingival inflammation and pain associated with it. Aloe vera gel reportedly inhibited the growth of candida albicans, which is the most common candida species in the oral cavity. As aloe vera tooth gel does not contain the abrasives which are present in the normal dentifrices they are a good alternative for individuals with sensitive teeth. Lichen planus a dermatological disease affecting the oral cavity is successfully treated with aloe vera gel. Hayes SM has reported a case of successful treatment of lichen planus with aloe gel. Latex free aloe vera coated gloves are now available mainly for cracked hands for the soothing, cooling, moisturizing effect of the substance.²²

The clinical trial conducted in 2002 for alveolar osteitis, showed improvement in the condition. The authors showed there are very few clinical trials in use of Aloe vera exclusively in oral diseases in spite of significant medicinal value, can be definitely tried in many oral and extra-oral diseases.²³ A study conducted found that a product which contains aloe vera component gives better relief to various ulcerative conditions of oral mucosa. Dental powder for rinsing the mouth cavity "Denta Aloe" has anti-inflammatory and wound healing effect. During bio stimulation, excitatory vital activity of cells is formed in the cells, due to which the activation of the metabolic process and the process of restoration and healing of tissues with proliferation, transformation and differentiation of cells of hematogenous and hystero-genic origin (complete regeneration) of the integumentary epithelium is achieved. Aloe extract and other components have an anti-inflammatory and reliable wound healing effect.²⁴

In a study done found that Indian herbs are very good against the various oral mucosal ulcers, irrespective of their aetiology. The naturally occurring constituents of medicinal herbs can resolve oral ulcers irrespective of their aetiology and prevent their recurrence. The healing ability of these herbs besides stepping up the immunity is responsible for their unmatched ability to cure the disease holistically. The authors also promoted the use of such naturally occurring herbs to be used in dentistry, readily available, natural, and safe resource as a part of dental practice definitely holds great potential for a "natural and green dental practice."^{25,34} Lycopene was seen to be more efficacious in improving mouth opening and tongue protrusion in OSMF patients proving to be more reliable treatment modality. As per the study conducted the authors they came to the conclusion that first line of drug of choice is lycopene when compared to aloe vera in case of OMF type cases.^{25,26} Due to the properties of Aloe vera and its compounds, it can be used to retain skin moisture and integrity. They concluded by saying that the various properties of this natural drug it can even be used in skin lesions. prevents skin ulcers as it contains mucopolysaccharides, amino acids, zinc, and water. In terms of quality and speed of wound healing, Aloe vera is much more effective and less costly compared to the currently available alternative treatments. it can be used to retain skin moisture and integrity and to prevent ulcers. It seems that the application of Aloe vera, as a

complementary treatment along with current methods, can improve wound healing and promote the health of society.^{26,27}

The authors showed that the effectiveness of aloe vera gel on a partial thickness burn wound, on skin is effective and a good natural herb for such cases. Twenty-seven patients with partial thickness burn wound, they were treated with aloe vera gel. Various authors are of same opinion the a herb is a natural remedy for different ailments affecting different system of human body. With minimal or side effects a natural herb is a good resource to the system, creating even source of internal income generating means.^{28,29,30,31,32,33,34.}

In a review written by Amar shows the various pros and cons of aloe vera gel as a cosmetic agent. Aloe vera is a natural product that is now a day frequently used in the field of cosmetology³⁵. In a review given by M Dia gives the various effects of aloe vera gel, its future use alone or in conjunction with other agents, its engineering products related advantages.³⁶ With the improvement in cosmetology, it has been proved that Aloe vera is a very important component of cosmetics. Aloe vera may also be used in food supplements, is a flavouring agent in food products, and helps to balance metabolism. The authors reports as many uses of aloe vera and is a medicine now and also traditionally to cure a wide range of health complications including skin problems, stomach problems, immune system problems, various lung and heart diseases, and many more, thus referred to as a wonder plant.^{37,38}

The author says this herb is of Nutricosmetic Interest from a study conducted on subjects related to aging. Their study good a good effect on skin. It improves skin barrier function, increases the skin's moisture content, and enhances skin firmness and elasticity³⁹. In review article by Adamsu, says that the leaves of this herb can be consumed. and thus it is used for making health drinks. All species of Aloe are not edible. It is not only the leaves of Aloe that have nutritional values also other parts of the plant do. The study evaluated the nutritional value of Aloe flowers and their possible use as edible flowers. Aloe species are increasingly being incorporated into different health drinks, foods, and beverages due to the beneficial biological activities of the phytochemicals.⁴⁰

Conclusion:-

The active ingredients hidden in its succulent leaves have the power to soothe human life and health in a many ways. The plant is good for a variety of uses: as a therapeutic, palliative as cosmetic agent which gives this the name as the "wonder plant". Aloe vera is undoubtedly, the nature's gift to humanity and it remains for us to introduce it to ourselves and thank the nature for its never-ending gift.

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