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REVIEW ON "ALOE VERA MEDICINAL PLANT AND ITS USES"

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Abstract:

Aloe Vera, a cactus-like plant belongs to Asphodelaceae (Liliaceae) family has been used for traditional medical purposes for thousands of years. Aloe Vera derives its name from the Arabic word –"Alloeh"Which means shining bitter substance‖ because of the bitter liquid found in the leaves and Vera which means -"true" in Latin. Aloe is the oldest medicinal herb ever found and the world's most common medicinal plan. It is used in medicine sources of homeopathy ayurvedic and allopathy. Aloe Vera has various medicinal properties such as antitumor, anti arthritic, anti rheumatoid, anticancer, and ant diabetic properties. In addition, A. Vera has also been promoted for constipation, gastrointestinal disorders, and for immune system deficiencies. Aloe Vera is known for its anti-inflammatory, skin protection, anti-bacterial, anti-viral, antiseptic, and wound healing properties Aloe Vera gel is an active ingredient in hundreds of skin lotions, sun blocks and cosmetics

Keywords: Aloe Vera gel, Skin diseases, Medicinal Plant

Introduction: Aloe Vera is one of more than 400 species of Aloe belonging to family Liliaceae[1].Natural products are known to play an important role in Pharmaceutical biology. Plants have been an important source of medicine for thousands of years. Even today, the World Health Organization estimates that up to 80 percent of people still

rely mainly on traditional medicines.[2] Aloe leaves have a life span of about 12 years and take approximately 4 years to reach maturity before harvesting to be processed for aloe product manufacturing. [3]The aloe plant has long (up to 20 inches long and 5 inches wide), triangular, fleshy leaves that have spikes along the edges. The fresh parenchymal gel from the center of the leaf is clear; this part is sometimes dried to form aloe Vera concentrate or diluted with water to create aloe juice products 4This plant is often mentioned used in herbal medicines since the beginning of the first century AD .5 Aloe Vera is one of the most important medicinal plants in the world with applications in the cosmetic industry and also in the tonic or health drink product market The main feature of the A. Vera plant is its high water content, ranging from 99–99.5%. The remaining 0.5–1.0% solid material is reported to contain over 75 different potentially active compounds including water- and fat-soluble vitamins, minerals, enzymes, simple/complex polysaccharides, phenolic compounds, and organic acids. It has been used for many centuries for its curative and therapeutic properties and although over 75 active ingredients .[6]The bio active compounds are used as astringent, haemostatic, antidiabetic [7,8] , antiulcer, anti-septic [9] , antibacterial. [10] .anti-inflammatory, antioxidant and anticancer agent and also, effective in treating stomach ailments, gastrointestinal problems, skin diseases, constipation, radiation injury, wound healing, burns, dysentery, diarrhoea and in the treatment of skin diseases. Currently the plant is widely used in skin care, cosmetics and as nutraceuticals 11. AV is very good at maintaining moisture, tightening, and smoothing the skin .[12]

Fig:Aloevera

Taxonomy:

Kingdom: Plantae

Order: Asparagales

Family: Asphodelaceae

Genus: Aloe

Species: Aloe Vera

Botanical name: Aloe barbadensis miller

Synonyms: Aloe, Musabbar, Kumari

Biological source: Aloe is the dried juice collected by incision, from the bases of the leaves of various species of Aloe.

Geographical source: Aloes is indigenous to eastern and southern Africa and grown in Cape colony, Zanzibar and islands of Socotra. It is also cultivated in Caribbean islands, Europe and many parts of India including North West Himalayan region. Aloe species are mostly inhabitants of arid climates, and are widely distributed in Africa, India, and other arid areas.[13]

Active components with its properties: Aloe Vera contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids.

Sr no	class	components	Role
1	Vitamins	Vitamins A (beta-carotene), C and E, vitamin B12, folic acid, and choline.	Antioxidant neutralizes free radicals
2	Enzymes	aliiase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase.	Bradykinase has antiInflammatory property when applied topically on skin, while others help in the breakdown of sugars and fats
3	Minerals	calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc.	Essential for the proper functioning of various enzyme systems in different metabolic pathways and few are antioxidants.
4	Sugars	monosaccharides (glucose and fructose) - mannose-6-phosphate and polysaccharides: (glucomannans/polymannose)- glucomannans [beta-(1,4)-acetylated mannan] Acemannan, glycoprotein, Cglucosyl chromone	antiallergic properties, called alprogen and novel antiinflammatory compoun
5	Anthraquinones	Aloe-emodin, aloetic-acid, anthranol, aloin A and B (or collectively known as barbaloin), isobarbaloin, emodin, ester of cinnamic acid	Phenolic compounds act as a laxatives. Aloin and emodin act as analgesics, antibacterials and antivirals.

6	Fatty acids	Cholesterol, camp sterol, β-sisosterol and lupeol.	All these have anti-inflammatory action and lupeol also possesses antiseptic and analgesic properties
7	Hormones	Auxins and gibberellins	help in wound healing and have anti-inflammatory action
8	Amino acids	Alanine, arginine, aspartic acid, glutamic acid, glycine, histidine, hydroxyproline, isoleucine, leucine, lysine, methionine, phenylalanine, proline, threonine, tyrosine, valine	Aloe Vera Has Amino Acid several Benefits such as protein synthesis, tissue repair, and nutrient absorption.
9	Proteins	Lectins, lectin-like substance	several biological roles

Table 1. Summary of the chemical composition of A. Vera leaf pulp and exudates 14, 15

Phytochemical screening of plant material

Aloe Vera leaves contain various phytoconstituents are determined by different qualitative tests such as alkaloid (Dragendorff's), tannins (Ferric chloride test and stiasny reaction), anthraquinones, flavonoids (Magnesium and hydrochloric acid reduction), saponins (Foam index), triterpenes and sterols (Liebermann-burchard's test), oses and holosides (Alcohol saturated with thymol), mucilages (Alcohol 95% test), coumarins (UV-Lamp at 366 nm) and reducing compounds metabolites (Fehling's test) was performed by the standard methods. [16]

Pharmacological Properties of Aloe Vera gel

1. **Burn wound healing effect:** Aloe has a healing property. A. vera has been used for traditional medical purposes in several cultures.In vitro extracts of A. vera stimulate the proliferation of several cell types. Many studies have shown that treatment with whole A. Vera gel extracts resulted in faster healing of wounds.[17]
2. **Skin hydration effects:** In a study where the moisturising effects of cosmetic formulations containing different concentrations of lyophilised A. vera gel were studied, showed that only formulations with higher concentrations (0.25 % w/w and 0.5 % w/w) increased the water content of the stratum corneum after a single application. However, the transepidermal water loss was not changed by inclusion of the A. vera gel in the formulations compared to the vehicle used in the formulations. It was proposed that the A. vera gel containing products improved skin hydration possibly by means of a humectant mechanism. [18]
3. **Antifungal activity:** Antifungal activity of leaf pulp and liquid fraction of Aloe vera was evaluated on the mycellium development of Rhizoctonia solani, Fusarium oxysporum, and Colletotrichum coccodes ,that showed an inhibitory effect of the pulp of A. Vera on F. oxysporum at 104 µl l −1 and the liquid fraction reduced the rate of colony growth at a concentration of 105 µl 1 −1 in R. solani, F. oxysporum, and C. coccodes.[19]

From this it is evident that leaf pulp and liquid fraction of Aloe vera act against plant pathogenic fungi.

4. **Use for oily skin:** Aloe vera emulgel helped to reduce the flare of acne, contains the olive oil, rose oil and lemon oil also that deeply penetrates into skin and provides cleansing and smoothing effect over the skin. [22]It has also moisturizing property that protects the skin from over dry which is not good for acne prone skin .[23]
5. **Anti-oxidant / Antiseptic effect:** Aloe vera possesses enormous antioxidant effect. Glutathione peroxidise activity, superoxide dismutase enzymes and a phenolic anti-oxidant were found to be present in Aloe Vera gel, which may be responsible for these anti-oxidant effects .[24]
6. **Moisturizing and anti-aging effect:** Aloe vera is currently utilized in manufacturing more than 95 % of the dermatologically valuable products. This is because it possesses implausible moisturizing properties .[25]It improves the ability of skin to hydrate itself and help in removal of dead skin cells that producing collagen and elastin fibers, making the skin more elastic, and less wrinkled, thereby, reversing the degenerative skin changes. It softens the skin, by its cohesive action on superficial flaking epidermal cells and also by the action of amino acids .[26]

Conclusion

The plant exhibits many pharmacological activities like Burn wound healing effect, Skin hydration effects ,Antifungal activity, Anti-acne effect, Anti-oxidant / Antiseptic effect, Moisturizing and anti-aging effect Many traditional uses are also reported such as burn injury, eczema, cosmetics, inflammation, and fever, which continue to be studied, and further research still has to be done. Thus, it is quite promising as a multipurpose medicinal agent so further experiments are needed to isolate and to find out the mechanism of the bioactive chemicals using modern instruments. Among the major active compounds, research in focused on aloe-emodin, aloin, aloesin amodin, and acemannan. More applications are discovered as research from different viewpoints is conducted on this versatile plant to provide a better understanding of its composition and effects. Aloe vera is widely used in food, healthcare, skincare and medical industry as active ingredients for extra therapeutic, health enhance effectives. Aloe Vera improves skin moisture from the texture of roughness, shines, cracks, and scrapes.

Anti-acne, anti-oxidant, anti-diabetic non- irritant and deeply penetrating properties help the skin nourishment to turn into normal position with soothing and emollient effects

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