A Brief Review on Aloe vera -Anti Inflammatory Activity

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Abstract- *While many plants have intriguing medical properties, Aloe vera is arguably the most widely used herb in the world. Aloe vera has been used for its purgative properties, skin disease healing, and cosmetic purposes since the time of bible. Aloe vera is said to provide several health benefits, such as Anti-inflammatory, Hypoglycemic, Anti-cancer, Gastro protective, Anti-fungal and Immuno modulatory qualities. It is also heals wounds and burns. Polysaccharides are responsible for some of these activities. Numerous polysaccharides are linked to the leaf gel. Infact, Aloe vera gel has been shown to contain over 200 bioactive compounds. Vitamins bioavailability has been demonstrated to be improved by Aloe vera gel and whole leaf extract. Aloe vera now has a new usage as an excipient in formulations for tablets with sustained release. This review article aims to propose ALOE VERA into future research on Anti-Inflammatory medications.*

I. INTRODUCTION

The Arabic word "Alloeh",which means "shining bitter substance", is the source of the term Aloe vera. The Latin word "Vera" means "true". Two centuries ago, Aloe vera was considered the all purpose cure by Greek scientists. Aloe was dubbed "the plant of immortality" by the Egyptians. The Aloe vera plant is being used in dermatology for a number of uses. Aloe Barbadeasis Miller is Aloe vera's Botanical Name5.Aloe barbadensis is a perennial plant with spines that belongs to the Liliacea [Asphodelaceae] family.It is a perennial, xerophytic, succulent, shrubby or arborescent plant with pea-green hue that is a member of the Asphodelaceae family. It is primarily found growing in arid regions of America, Europe, Asia and Africa. It can be found in Tamilnadu, Maharashtra, Gujarat, Rajasthan and Andhra Pradesh,India5.

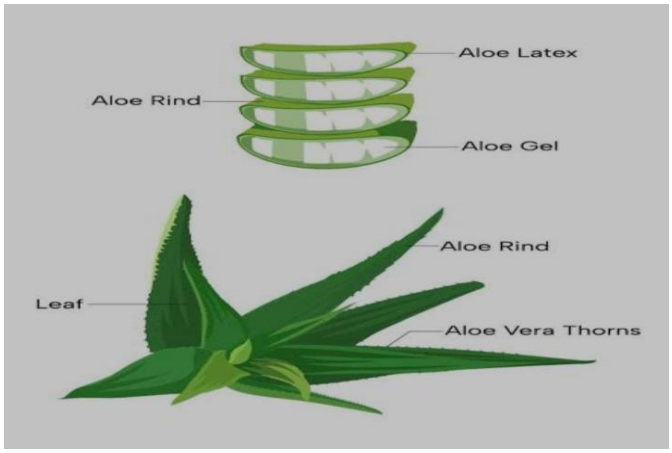
Certain kinds of aloe are grown as decorative plants in gardens and pots that it needs little water and thrives best in direct sunlight. It also needs soil that is sandy and well-drained. Cuts, burns, insect stings, bruises, acne, pimples, poison ivy, welts, skin lessions, eczema and sunburns have all been treated with Aloe barbadeasis15.As a healing response to an injury caused by viruses, irritants, or cell damage, tissue begins to inflame. Drugs that reduce inflammation do have negative effects 6. On the other hand, disorders including Atherosclerosis, Rheumatiod arthritis, and Vasomotor rhinorrhea develop if inflammation is left untreated7.Due to the fact that Aloe vera gel contains Chromone and Anthraquinones, it has potent anti inflammatory properties. Aloe vera gel's primary sugar is mannose-6-phosphate,which helps aloe vera heal wounds and reduce inflammation. Aloe vera's anti inflammatory properties aid to relieve inflammation in the joints8.Aloe vera is also being used to create new product. One such product is an edible covering that is used to preserve fruits like cherries and table grapes9.I've started researching the anti-inflammatory properties of Aloe barbadeasis mill[Liliaceae]17.This review suggests using aloe vera in upcoming studies on anti-inflammatory drugs.

STRUCTURE OF ALOE VERA:

The plant features fruits that are filled with many seeds, yellow tubular blooms, and triangular, fleshy leaves with serrated edges[5].

Aloe vera leaf composed of 3 layers,

①Inner transparent gel
②Middle layer of latex
③Outer thick layer



1. Inner transparent gel:

That is composed of glucomannans, aminoacids, lipids, sterols and vitamins, while the remaining 99% containing water.

2. MIDDLE LAYER OF LATEX:

The bitter yellow sap called Latex contains Glycosides and Anthraquinones.

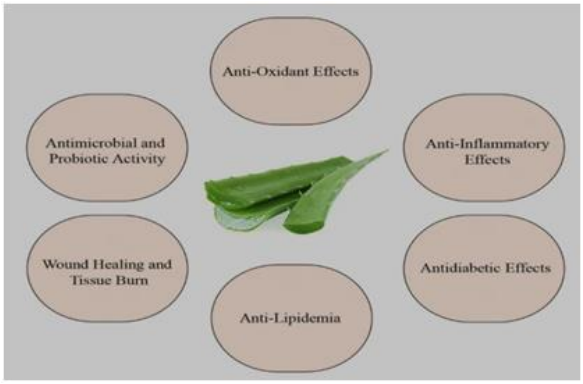
3. OUTER THICK LAYER:

The rind is the thick outer layer of 15-20 cells that synthesizes proteins and carbohydrates and serves as a protective layer. Vascular bundles found inside the rind are in charge of moving materials like starch and water[Xylem and Phloem][11].

PICTURE OF ALOEVERA PLANT:

ACTIVE CONSTITUTIONS OF ALOEVERA:

CONSTITUENTS	**USES**
Active enzymes	Anti-inflammatory, Antifungal, Antibacterial, Antiviral, Analgesic
Sugars and Amino acids	Anti inflammatory, Anticancer, Antiallergic, Antimicrobial
Salicylic acid and Hormones	Anti inflammatory, Antibacterial
Saponins	Cleansing and Antiseptic
Lipids and Steroids	Anti inflammatory, Antiseptic, Analgesic
Essential vitamins	Antioxidant, Anticancer[17]
Lignins	Topical preparation improves the other chemicals' ability to penetrate the skin.



ENZYMES:

Eight enzymes are present in it: peroxidase, cellulose, lipase, aliiase, alkaline phosphatase, amylase, Bradykinase, carboxypeptidase, and catalase.

Bradykinase:

When applied topically to the skin, bradykinase helps to reduce excessive inflammation, while other substances aid in the breakdown of fats and sugars.

SUGARS:

Both mono and polysaccharides are provided. They are called mucopolysaccharides and come from the plant's mucilage layer. Mannose-6-phosphate is the most well knownmonosccharide, while glucomannans are the most prevalent polysaccharides. Additionally, discovered is acemannan, a well known glycomannan. Aloe vera gel has recently yielded the novel anti-inflammatory chemical C-Glycosyl chrosome and a glycoprotein known as alprogen, which exhibits antiallergic characteristics.

FATTY ACIDS:

It contains plant steroids, including lupeol, beta sisosterol, cholesterol and campesterol. Each of them has anti inflammatory characteristics, while lupeol also has analgesic and antibacterial characteristics.

HORMONES:

Gibberellins and auxins,that have anti inflammatory and wound healing characteristics.

OTHERS:

It offers 7 of 8 essential amino acids and 20 of the 22 amino acids that humans needs.

Salicylic acid, which has anti inflammatory and antibacterial characteristics, is another ingredients in it. When added to topical medicines, the inert component Lignin improves the other chemicals ability to penetrate the skin. About 3% of the gel is made up of soapy chemicals called Saponins, which have antibacterial and cleansing characteristics[12,13].

ANTI-INFLAMMATORY ACTION OF ALOE VERA:

INFLAMMATION:

Inflammation is a normal defensive response to tissue injury, a wide array of processes, including enzyme activation, mediator release, fluid extra vasation, cell migration, tissue breakdown and repair are involved in inflammation14.

Aloe vera lowers the synthesis of prostaglandin E-2 from arachidonic acid and inhibits the cyclooxygenase pathway. C-glucosyl chrosome, a new anti-inflammatory molecule, was recently isolated from gel extracts13.Aloe vera gel is less efficient against inflammation that comes on by allergic substances and more effective against inflammation that comes on by prostaglandin production and leukocyte infiltration16.

Aloe vera anti-inflammatory properties are useful for reducing joint pain. The body's intricate mechanism for producing bradykinin in reaction to many kinds of injury results in excruciating inflammation. Research indicates that aloe vera has anti-bradykinin properties due to the presence of the enzyme bradykinase, which degrades bradykinin and minimizes inflammation8.

II. CONCLUSION

Aloe vera has powerful anti-inflammatory effects. It reduces the synthesis of prostaglandin E2 from arachidonic acid and inhibits the cyclooxygenase pathway. Aloe vera also functions as an antioxidant that battles free radicles, which are the primary cause of oxidative damage that leads to inflammation. I hope this review useful to suggests using aloe vera in upcoming studies on anti-inflammatory drugs.

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