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MEDICINAL IMPORTANCE OF ALOE VERA

Arun Kumar
Assistant Professor, Department of Chemistry, Hindu Post Graduate College, Zamania, Ghazipur, India

ABSTRACT

Aloe vera plant is used in different medicinal system such as Ayurvedic, Homeopathic and Allopathic. Tribal community people used as food. Plant consists of two different parts i.e. parenchymal tissue and pericyclic tubules. Both these part contains numerous vitamins, minerals, enzymes, amino acids, natural sugars, bioactive compounds with purgative, antimicrobial, antifungal, antiseptic, anti-inflammatory and cosmetic values for health care. This plant has potential to cure burns, minor cuts and skin cancer. This review article focus the importance of plant in everyday life. The active ingredients in its succulent leaves have the power to soothe human life.

Keywords: Aloe vera, medicinal uses, cosmetic application, anti-diabetic.

I. INTRODUCTION

Across the entire Himalayan Region, folk healers have a remarkable knowledge of herbs. Traditional wisdom of Himalayan communities is passed thorough proverbs, folklores, legends, customs and myths. Indigenous Health Care Traditions in the Himalayan region have two treatment methods – natural and supernatural. The natural method is indicative whereas the supernatural method is etiological. The use of natural products in the prevention and treatment of oral conditions has increased recently and could be benefit to urban and rural communities. The name Aloe vera is derived from Arabic word “Alloeh” meaning “shining bitter substance” while vera in Latin means “true”. The genus Aloe belonging to family Alliaceae is a succulent herb of 80 – 100 cm in height which mature in 4 – 6 years and survives for nearly 50 years under favourable conditions. The plant is native to southern and eastern Africa along the upper Nile in the Sudan, and it was subsequently introduced into northern Africa and naturalized in the Mediterranean region and other countries across the globe. The plant is commercially cultivated in Aruba, Bonaive, Haiti, India, South Africa, United States of America and Venezuela, while the finest quality of Aloe is grown in desert of Southern California. The plant can survive in hot temperatures of 104˚F and with stand in below freezing temperature until root is not damaged.

II. PLANT DISCRIPION

There are over 250 species of Aloe grown around the world. Over the years, this plant has been known by number of names such as “the wand of heaven,” “heavens blessing,” and the silent healer”. This succulent perennial herbs as triangular, sessile stem, shallow root system, fleshy serrated leaves arranged in rosette having 30 – 50 cm length and 10 cm breadth at the base ; colour pea – green. The bright yellow tubular flowers, length 25 – 35 cm, axillary spike and stamens and frequently projected beyond the perianth tube and fruits contain many seeds.

The Aloe vera plant consists of two different parts, each of which produces substances with completely different compositions and therapeutic properties. The parenchymal tissue makes up the inner portion of the aloe leaves and produces the Aloe vera gel, a clear, thin, tasteless, jelly-like material. This tissue is recovered from the leaf by separating the gel from the inner cellular debris. The other part of the plant is known as pericyclic tubules, which occur just beneath the outer green ring of the leaf. These cells produces an exudate that consist of bitter yellow latex with powerful laxative – like action.
III. ACTIVE INGREDIENT OF ALOE VERA

Leaves have three layers. The outermost layer consist of 15 – 20 cells thick protective layer synthesizing carbohydrates and proteins. The active components of Aloe vera include anthraquinones, chromones, polysaccharides, and enzymes. The anthraquinones and chromones are responsible for the anticancer 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.

The other potentially active ingredients include vitamins, minerals, enzymes, lignins, saponins, salicylic acids and amino acids. Table 1 representing the chemical composition and properties and activity of Aloe vera.

<table>
<thead>
<tr>
<th>Constituents</th>
<th>Number and identification</th>
<th>Properties and activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amino acids</td>
<td>Provides 20 of the 22 required amino and 7 of the 8 essential ones</td>
<td>Basic building blocks of proteins in the body and muscle tissues</td>
</tr>
<tr>
<td>Anthraquinones</td>
<td>Provided Aloe emodin, Aloetic acid, alovin, anthracine</td>
<td>Analgesic, antibacteril</td>
</tr>
<tr>
<td>Enzymes</td>
<td>Anthranol, barbaloin, chrysophanic acid, smodin, ethereal oil, ester of cinnamic acid, isobarbaloin, resistannel</td>
<td>Antifungal and antiviral activity but toxic at high concentrations</td>
</tr>
<tr>
<td>Hormones</td>
<td>Auxins and gibberellins</td>
<td>Wound healing and anti-inflammatory</td>
</tr>
<tr>
<td>Minerals</td>
<td>Calcium, chromium, copper, iron, manganese, potassium, sodium and zinc</td>
<td>Essential for good health</td>
</tr>
<tr>
<td>Salicyclic acid</td>
<td>Aspirin like compounds</td>
<td>Analgesic</td>
</tr>
<tr>
<td>Saponins</td>
<td>Glycosides</td>
<td>Cleansing and antisepctic</td>
</tr>
<tr>
<td>Steroids</td>
<td>Cholesterol, campesterol, lupeol, sistosterol</td>
<td>Anti-inflammatory agents, lupeol has Antiseptic and analgesic properties</td>
</tr>
<tr>
<td>Sugars</td>
<td>Monosaccharides: Glucose and Fructose</td>
<td>Anti-viral, immune modulating activity of acemannan</td>
</tr>
<tr>
<td></td>
<td>Polysaccharides: Glucomannan/polymannose</td>
<td></td>
</tr>
<tr>
<td>Vitamins</td>
<td>A, B, C, E, choline, B12, folic acid</td>
<td>Antioxidant (A, C, E), neutralises free radicals</td>
</tr>
</tbody>
</table>

IV. MEDICINAL USES

Aloe vera is anthelmintic, asperients, carminative, deobstruent, diuretic, stomachic. Juice is used in skin care medicine, burns, colic, hepatopathy, splenopathy, constipation, abdominal tumors. Traditionally Aloe vera gel is used both, topically (treatment of wounds, minor burns) and internally to treat constipations, cough, ulcers, diabetes, headaches, immune-system deficiencies. Aloe vera also extensively used in treating urine related problems, pimples and ulcers etc. the bioactive compounds are used as astringent, haemostatic, antidiabetic, antiseptic, anticancer, antioxidant agent also effective in treating stomach ailments, treatment of skin diseases as represented in Figure 1.
4.1 Skin care and Cosmetic

Aloe vera is used for soothing the skin, and keeping the skin moist to help avoid scalp and skin in harsh and dry weather. Due to soothing and cooling qualities, Maharishi Ayurveda recommends Aloe vera for a number of skin problems. Aloe vera extracts have antibacterial and antifungal activities, which may help in the treatment of minor skin infections, such as boils and benign skin cysts. Aloe vera gel has been reported to have a protective effect against radiation damage to the skin.

4.2 Anti Diabetic

Aloe vera contains polysaccharides which increase the insulin level and show hypoglycemic properties. Arun kumar reviewed the beneficial effects of selective medicinal plants such as Allium cepa, Allium sativum, Azadirachta indica, Gymnema sylvestre and emphasize on the role of active ingredients which possess anti-diabetic activity.

4.3 Antiseptic

Due to the presence of antiseptic agents such as salicyclic acid, lupeol, urea, nitrogen, phenols, sulphur Aloe vera have antiseptic property. These compounds inhibit the action on fungi, bacteria, viruses.

4.4 Stress

Aloe vera juice is helpful in smooth functioning of the body. It reduces cell damaging process during stress condition and reduces biochemical and physiological changes in the body. Oxidative stress refers to chemical reactions in which compounds have their oxidative state changed. Apart from these it also contains vitamins – A, C and E. Aloe vera is an excellent example of a functional food that plays a significant role in protection from oxidative stress.

4.5 Anticancer Properties

The two fractions from Aloe that are claimed to have anticancer effects include glycoproteins and polysaccharides. Aloe vera juice enables the body to heal itself from cancer and also from the damage caused by radio and chemotherapy that destroys the healthy immune cells crucial for the recovery. Aloe vera emodin, an anthraquinone, has the ability to suppress or inhibit the growth of malignant cancer cells.

4.6 Wound Healing

Wound healing is a dynamic process, occurring in 3 phases. The first phase is inflammation, hyperaemia and leuakocyte infiltration. The second phase consists of removal of dead tissue. The third phase of proliferation consisting of epithelial regeneration and formation of fibrous tissue. The main functional component of Aloe vera is Acemannan, which is long chain acetylated mannose. This complex accelerates wound healing.
4.7 Antiviral Properties
Several ingredients of Aloe vera gel have been shown to be effective antiviral agent. A purified sample of aloe emodin was effective against infectivity of herpes simplex virus Type. I and Type II and it was capable of inactivating all of the viruses.

4.8 Antibacterial Property
The activity of Aloe vera inner gel against both Gram-positive and Gram-negative bacteria has been reported by several Chemists. Streptococcus pyogenes and Streptococcus faecalis are two micro organisms that have been inhibited by Aloe vera gel.

V. CONCLUSION
The active ingredients present in succulent leaves have the power to soothe human life. The plant has importance in everyday life to soothe a variety of skin ailments, anti ageing digestive tract health, blood and lymphatic circulations, functioning of kidney, liver and gall bladder makes it a boon to human kind. Aloe vera as the “wonder plant” is multiple from being an antiseptic, anti-inflammatory agent, and in cosmetic field. No doubt that Aloe vera is nature’s gift to humanity.

VI. ACKNOWLEDGEMENT
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