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Aloe vera – A Wonderful Medicinal Plant for Home Garden

L. C. De

ICAR-NRC for Orchids, Pakyong, Sikkim (737 106), India

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Corresponding Author

L. C. De

e-mail: lakshmanchandrade@gmail.com

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E-mail: bioticapublications@gmail.com

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Abstract

A *loea vera* is a perennial succulent plant, bearing rosettes of leaves at the end of juicy green branches and grown well in arid and semi-arid climate for its medicinal potency. It is commonly called as 'Barbados Aloe', 'Ghrit Kumari' or 'Indian Aloe'. *Aloe vera* leaves are rich in amino acids, anthraquinones, enzymes, hormones, minerals, salicylic acids, saponins, steroids, sugars, vitamins, etc. It is popular for its analgesic, anti-inflammatory, wound healing, immune modulating and anti-tumor activities as well as antiviral, anti-bacterial, and antifungal properties.

Introduction

The name *Aloe vera* derives from the Arabic word "Alloeh" meaning "shining bitter substance," while "vera" in Latin means "true." The Egyptians called Aloe "the plant of immortality." *Aloe vera* has been used for medicinal purposes in several cultures of Greece, Egypt, India, Mexico, Japan and China for millennia. Egyptian queens Nefertiti and Cleopatra used it as part of their regular beauty regimes. Alexander the Great, and Christopher Columbus used it to treat soldiers' wounds. The medicinal use of aloe has already been mentioned more than 4000 years ago in a collection of Sumerian clay tablets dated 2100 BC. Aloe was also mentioned as a laxative in the Egyptian Papyrus Ebers from 1552 BC. Aloe has been a very long historical use as a strong laxative treatment for chronic constipation, and it is still listed as a laxative in many pharmacopoeias. However, it is now largely superseded by less toxic laxatives. The original commercial use for the Aloe plant was in the production of a late substance called Aloin, a yellow sap used for many years as a laxative ingredient. In 1964 however, Dr. Bill C. Coates a practicing pharmacist in Dallas, Texas, USA, became a man with a dream – to make the complete benefits of *Aloe vera* available to the world and the millions of people who need it in the form of "Gel" without losing its potency (Figure 1).

Description

Aloe L. belongs to the family Liliaceae, which represent perennial succulent plants, bearing rosettes of leaves at the end of juicy green branches. *Aloe vera* is native to Africa and introduced to India. The species is found in the Arabian Peninsula, through North Africa as well as Sudan and neighbouring countries. *Aloe vera* grows in arid and semi-arid climate and is widely distributed in Africa, India, and other dry areas. In India, it is commonly observed in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu. It is commonly called as 'Barbados Aloe', 'Ghrit Kumari' or 'Indian Aloe'. It is a stemless or very short-stemmed succulent plant grown upto 60–100 cm tall, spreading by offsets. The leaves are thick and

fleshy, green to grey-green, with some varieties showing white flecks on their upper and lower stem surfaces. The margin of the leaf is serrated and has small white teeth. The flowers are produced in summer on a spike up to 90 cm tall, each flower being pendulous, with a yellow tubular corolla 2–3 cm long. Like other *Aloe* species, *Aloe vera* forms arbuscular mycorrhiza, asymbiosis that allows the plant better access to mineral nutrients in soil.

Propagation

Vegetatively aloes are cultivated through suckers. About 3 to 4 months old suckers with 4 to 5 leaves and 20-25 cm length are used for planting. Shoot bud explants raised *in vitro* is used to produce multiple shoots after surface sterilization. As many as 28 shoot buds can be obtained from a single shoot bud after 2 weeks of cultures on ½ MS basal medium supplemented with BA, IAA and sucrose. After multiplication, micro-shoots (1-2 cm) are cultured on half strength MS basal salts supplemented with IBA (0.50 mg/l), NAA (0.5 mg/l) and IAA (0.5 mg/l) for rooting (De, 2017).

Cultivation

Pot Culture

This succulent enables the species to survive in areas of low natural rainfall, making it ideal for rockeries and other low water-use gardens. It is intolerant of very heavy frost or snow. In pots, the species requires well-drained, sandy potting soil and bright, sunny conditions; however, *Aloe* plants can burn under too much sun or dry when the pot does not drain water. The use of a good-quality commercial propagation mix or packaged “cacti and succulent mix” is ideal, as they allow good drainage. Terra cotta pots are preferable as they are porous (Figure 2). Potted plants should be allowed to completely dry prior to re-watering. When potted, aloes become crowded with “pups” growing from the sides of the “mother plant”, they should be divided and repotted to allow room for further growth and help prevent pest infestations. During winter, *Aloe vera* may become dormant, during which little moisture is required. In areas that receive frost or snow, the species is best kept indoors or in heated glasshouses.

Cultivation in Garden

A well drained loamy or sandy loam soil with moderate fertility and pH up to 8.5 is ideal for its commercial cultivation (Figure 3). The field is prepared by 1-2 ploughing followed by leveling and made into plots measuring 6-8 m × 3 m. The plants respond well under organic cultivation. About 10-15 tones of FYM are applied at the time of land preparation for one hectare of land. The suckers are planted in 15cm deep pits at 60 × 60 cm spacing. About 28,000-34,000

suckers are needed for one hectare planting. Under rainfed conditions, the suckers are planted in July-August. Leaves should be harvested after 7-8 months of planting. Sharp knife is used for harvesting. Typically, the outermost 3–4 leaves are harvested by pulling each leaf away from the plant stalk and cutting at the white base. On an average, 15-20 t/ha fresh leaves can be obtained from second year after planting.

Medicinal Properties

Active Ingredients: *Aloe vera* leaves are rich in amino acids, anthraquinones, enzymes, hormones, minerals, salicylic acids, saponins, steroids, sugars, vitamins, etc. (Atherton, 1998; Shelton, 1991).

Amino Acids: 20 amino acids of which 7-8 are essential.

Anthraquinones: Aloe emodin, Aloetic acid, alovin, anthracene.

Enzymes: Aliiase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase.

Hormones: Auxins and gibberellins.

Minerals: Calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc.

Saponins: Glycosides.

Steroids: Cholesterol, campesterol, lupeol, sistosterol.

Sugars: Monosaccharides: Glucose, Fructose; Polysaccharides: Glucomannans/ polymannose.

Vitamins: A, B, C, E, choline, B₁₂, folic acid.

Unique benefits of *Aloe vera* to the body

Deep penetration in the body tissues, good antiseptic against fungi, bacteria and fungi, stimulates new cell growth, settles body nervous systems and detoxify the body.

External uses of *Aloe vera*

It acts as an astringent, moisturizer, humidifier and cleanser. It softens the skin, diminishes wrinkles and cures acne, herpes, red spots, psoriasis, eczema, mycosis, fever blisters, skin irritation and provides protection to the skin against pollution. Also, it is ideal for sunburns, fragile skin, and for removal and repair of dead skins and cells. *Aloe vera* cures gum diseases and relieves itching. It relieves joint and muscle pain.

Internal uses of *Aloe vera*

It has analgesic, anti-inflammatory, wound healing, immune modulating and anti-tumor activities as well as antiviral, anti-bacterial, and antifungal properties. Ghrit Kumari gives relief in liver infections, cures stomach and intestinal problems, acts as an anti-inflammatory agent, stabilizes blood sugar and reduces cholesterol in diabetics, lowers high cholesterol and triglyceride levels and acts as antiviral and anti-tumour related disorders.



Figure 1: *Aloe vera* gel



Figure 2: *Aloe vera* in pot



Figure 3: *Aloe vera* in home garden

Conclusion

The plant has become popular in everyday life as it cures a variety of skin ailments such as mild cuts, antidote for insect stings, bruises, poison ivy and eczema along with skin moisturizing and anti ageing, digestive tract health, blood and lymphatic circulation and functioning of kidney, liver and gall bladder. *Aloe vera* is now considered as the “wonder multipurpose medicinal plant” from being an antiseptic, anti-inflammatory agent, aids in relieving like cancer and diabetes, and being a cosmetic field. The plant is in need to a greater commercialization for better utilization of this plant for human-kind. *Aloe Veras* are no doubt the nature’s gift to humanity for cosmetic, burn and medicinal application and thank the nature for its never-ending gift.

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