Miraculas *Aloe Vera* – Plant or Boon

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ABSTRACT

Aloe Vera looks like a cactus but it isn't – the plant is a member of the lily family which includes garlic and onion. Inside the leaf is a jelly-like substance. Early users of *Aloe Vera* discovered that when the jelly was applied to a wound, it would heal faster – a remarkable feat in a time, long before anti-biotic ointments, when the infection of a minor wound was often fatal. Descriptions and instructions for twelve different recipes for the internal and external uses of *Aloe Vera* can be found in an Egyptian relic, the Eberpapyrus, dating to around 1,500 BC. By 400 BC, the properties of *Aloe Vera* were well accepted from China to India. Today, *Aloe Vera* is cultivated throughout the world. Terms including; the potted physician and nature's medicine chest, attempted to describe the significant historical uses of *Aloe Vera*.

Keywords: Antimicrobial, *Aloe vera* gel, *Aloe vera* leaf

Introduction

Aloe vera is the oldest medicinal plant ever known and the most applied medicinal plant worldwide. Aloe (*Aloe vera*) is an important and traditional medicinal plant belonging to the family Liliaceae . It is indigenous to Africa and Mediterranean countries. It is reported to grow wild in the islands of Cyprus, Malta, Sicily, Canary cape, Cape Verde and arid tracts of India. It is not a cactus, this is a hardy perennial tropical plant that can be cultivated in drought prone areas and is one of the crops whose potential is yet to be exploited, despite being identified as 'a new plant resource with the most promising prospects in the world'. In India, it is scattered in the wild, along the coast of southern India. [1, 2, 3]Through the International Aloe Science Council (IASC), the industry has solidified its dedication to providing the world with the highest quality Aloe. The wide acceptance of Aloe by society in so many consumer products suggests that the IASC is moving in the proper direction.[4]

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Plant Profile

Scientific Classification

Kingdom	:	Plantae
Class	:	Angiosperms
Sub class	:	Monocots
Order	:	Asparagales
Family	:	Xanthorrhoeaceae
Sub Family	:	Asphodeloideae
Genus	:	*Aloe*

Species : *vera* [5, 6 ,7]

Figure No. 1 ***Aloe vera***

Morphology characteristics

Aloe vera is a stem less or very short-stemmed succulent plant growing to 50–100 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.[8,9] Most commonly accepted species of Aloe is given in table no. 1

Table No. 1 (Most commonly accepted species of Aloe)

Sr. No.	Name	Sr. No.	Name
1.	*Aloe aculeata* Pole-Evans	25.	*Aloe africana Mill.*
2.	*Aloe africana* Mill.	26.	*Aloe albida (Stapf) Reynolds*
3.	*Aloe africana* Mill.	27.	*Aloe albiflora Guillaumin*
4.	*Aloe albiflora Guillaumin*	28.	*Aloe arborescens Mill.*
5.	*Aloe arenicola Reynolds*	29.	*Aloe argenticauda Merxm.*
6.	*Aloe aristata Haw*	30.	*Aloe bakeri Scott-Elliot*
7.	*Aloe ballii Reynolds*	31.	*Aloe ballyi Reynolds*
8.	*Aloe barberae Dyer*	32.	*Aloe brevifolia Mill.*
9.	*Aloe broomii Schönland*	33.	*Aloe buettneri A.Berger*
10.	*Aloe camperi Schweinf.*	34.	*Aloe capitata Baker*
11.	*Aloe ciliaris Haw*	35.	*Aloe commixta A.Berger*
12.	*Aloe comosa Marloth & A. Berger*	36.	*Aloe corallina Verd*
13.	*Aloe decumbens (Reynolds) van Jaarsv*	37.	*Aloe dewinteri Giess ex Borman & Hardy*

14.	*Aloe dichotoma Masson*	*38.*	*Aloe dinteri A.Berger*
15.	*Aloe eminens Reynolds & Bally*	*39.*	*Aloe erinacea D. S.Hardy*
16.	*Aloe excelsa A.Berger*	*40.*	*Aloe ferox Mill*
17.	*Aloe forbesii Balf.f*	*41.*	*Aloe gracilis Haw*
18.	*Aloe haemanthifolia Marloth & A.Berger*	*42.*	*Aloe helenae Danguy*
19.	*Aloe hereroensis Engl*	*43.*	*Aloe inermis Forssk*
20.	*Aloe inyangensis Christian*	*44.*	*Aloe jucunda Reynolds*
21.	*Aloe juddii van Jaarsv*	*45.*	*Aloe kilifiensis Christian*
22.	*Aloe khamiesensis Pillans*	*46.*	*Aloe maculata All*
23.	*Aloe marlothii A.Berger*	*47.*	*Aloe namibensis Giess*
24.	*Aloe pearsonii Schönland*	*48.*	*Aloe perfoliata L*

Chemical constituents

Aloe contains two classes of Aloins:

(1) Nataloins, which yield picric and oxalic acids with nitric acid, and do not give a red coloration with nitric acid; and

(2) Barbaloins, which yield aloetic acid (C7H2N3O5), chrysammic acid (C7H2N2O6), picric and oxalic acids with nitric acid, being reddened by the acid. Barbaloins are of two type.

(a) A-barbaloins- obtained from Barbados aloes

(b) B-barbaloins - obtained from Socotrine and Zanzibar aloes

Active components with its properties: *Aloe vera* contains 75 potentially active constituents like vitamins,

enzymes, minerals, sugars, lignin, saponins etc. few are listed in table no. 2 with their use. [10, 11, 12]

Table No. 2 (Active components with its properties)

Sr. No.	Chemical	Type of chemicals	Use
1	Enzymes	aliiase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, and peroxidase	Inflammation, break down of fats and sugars.
2	Minerals	calcium, chromium, copper, selenium, magnesium, manganese, potassium, sodium and zinc	Used in various metabolic activity, antioxidant.
3	Sugars	monosaccharides (glucose and fructose) and polysaccharides (glucomannans/ polymannose)	Sweetener
3	Fatty acids	cholesterol, campesterol, β-sisosterol and lupeol	Anti-inflammatory, antiseptic, analgesic
5	Hormones	Auxins and gibberellins	wound healing and anti-inflammatory

Material method

Collection of plant material

The leaves of *Aloe vera* (*A. indica*) were collected from nearby nursery of Bulandshahr (UP). They were washed to remove dirt's and impurities. The leaves were chopped and kept for dry in shade at room temperature. Grind the chopped leave with the mortar and further ground into a coarse powder by using an

automated grinder. They were stored in polyethene bag, imbedded and kept in the oven to be used as samples for the extraction.

Extraction of plant material by soxhelt

Grinded and chopped leave are extracted by using the Soxhelt apparatus with different solvent. Extraction was carried out for 24 hours. Samples free from foreign particle were collected at the end, stored in a freezer, and perform qualitative analysis by using different chemical and reagent.

Phytochemical investigation

Evaluation of phytochemical constituent carried out for qualitative analysis and result shown below in given table no. 3[13, 14]

Table No. 3 (Result of phytochemical evaluation)

No.	Chemical constituents	Test reagent	Observation	Result
1-	Alkaloids	a-Wagners Reagent	Reddish Brown	
		b-Tannic acid Test	buff colour ppt	+Ve
2-	Carbohydrate	a-Fehling	Purple or violet	
		b-Molish Test	Purple or violet	+Ve
3-	Comerin Test	NaOH CHcl3	Yellow colour	+ve
4-	Flavonoids	a-NaOH+Dw	Yellow colour	
		b-ZincHydrochloride reduction	Red colour	+ve
5-	Protein	a-NinhydrinTest	Yellow colour	-ve
		b-Xanthoprotic	Yellow colour	+ve
6-	Sponin Gylcoside	Froth Test	Froth	+ ve
7-	Sterol Test	Salkawski Test	Yellow colour	+ve
8-	Tannin Test	a-Ferric Chloride test	Blue colour	-ve
		b-Alkaline reagent test	Yellow to red ppt	+ve
9-	Quninone Test	NaOH+ Extract	Blue Green Red colour	+ve

Uses of *Aloe Vera*

The plant *Aloe vera* is used in Ayurvedic, Homoeopathic and Allopathic streams of medicine, and not only tribal community but also most of the people for food and medicine. Most commonly uses of Aloe is given in figure no. 2

[15, 16, 17, 18, 19]

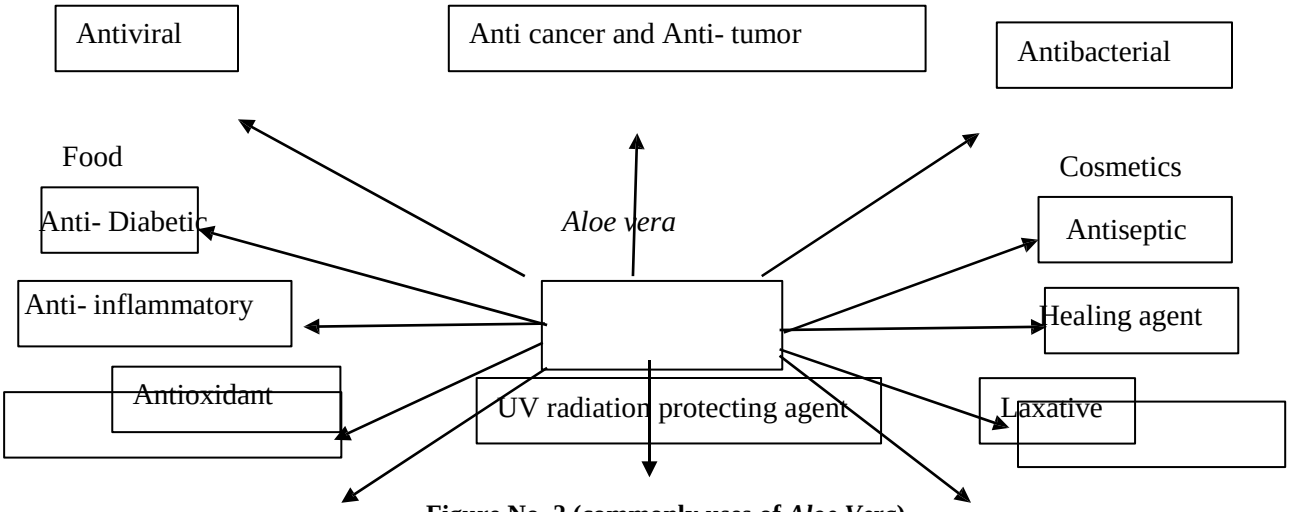

Figure No. 2 (commonly uses of *Aloe Vera*)

Conclusion

The plant leaves contains numerous vitamins, minerals, enzymes, amino acids, natural sugars and other bioactive compounds with emollient, purgative, anti-microbial, anti inflammatory, antioxidant, aphrodisiac, anti-helmenthic, antifungal, antiseptic and cosmetic values for health care. That's why this plant is used in Ayurvedic, Homoeopathic and Allopathic streams of medicine, and not only tribal community but also most of the people are using this plant for food as well as medicine. This plant has potential to cure sunburns, burns and minor cuts, and even skin cancer. The external use of *Aloe vera* in cosmetic primarily acts as skin beautifying agent and prevents injury of epithelial tissues, cures acne and gives a youthful glow to skin, also acts as extremely powerful laxative.

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