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Medicinal Properties of Aloe Vera and their Functions

Ugwuowoh D. A. N.

Department of Pharmacy Kampala International University, Uganda

ABSTRACT

Aloe vera is a plant species of the genus Aloe that is cultivated globally for agricultural and medicinal uses. The species is also used for decorative purposes and grows successfully indoors as a potted plant. It is found in many consumer products including beverages, skin lotion, cosmetics, or ointments for minor burns and sunburns. The medicinal claims made about Aloe vera, as with many herbs and plants, are endless. One of such is that Aloe vera may be used on skin conditions or superficial cuts for its antimicrobial and antioxidant properties. Similarly, studies have revealed that Aloe vera in tooth gels is as effective as toothpaste in fighting cavities. The antifungal activity of aloe vera has not received enough attention, although its inhibitory activity against Candida 35 has been reported. For its antifungal properties however, Aloe vera is used as a fish tank water conditioner. This paper therefore evaluated the various medicinal properties of Aloe vera and their benefits.

Keywords: Aloe vera, Medicinal properties, Antifungal, Antimicrobial, Uses.

INTRODUCTION

Aloe vera is a succulent plant species of the genus Aloe. An evergreen perennial, it originates from the Arabian Peninsula but grows wild in tropical climates around the world and is cultivated for agricultural and medicinal uses. The species is also used for decorative purposes and grows successfully indoors as a potted plant. It is found in many consumer products including beverages, skin lotion, cosmetics, or ointments for minor burns and sunburns. There is little clinical evidence for the effectiveness or safety of Aloe vera extract as a cosmetic or medicine. Aloe vera is a stem-less or very short-stemmed plant growing to 60-100cm (24-39in) 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. [1]. The flowers are produced in summer on a spike up to 90cm (35in) tall, each flower being pendulous, with a yellow tubular corolla 2–3cm (0.8–1.2in) long. Like other Aloe species, Aloe vera forms arbuscular mycorrhiza, a symbiosis that allows the plant better access to mineral nutrients in soil. Aloe vera leaves contain phytochemicals under study for possible bioactivity, such as acetylated mannans, polymannans, anthraquinone C-glycosides, anthrones, and other anthraquinones, such as emodin and various lectins. Aloe vera has been widely grown as an ornamental plant. The species is popular with modern gardeners as a putatively medicinal plant and for its interesting flowers, form, and succulence [2]. This succulence enables the species to survive in areas of low natural rainfall, making it ideal for rockeries and other low water-use gardens. The species is hardy in zones 8-11, and is intolerant of heavy frost and snow. There is large-scale agricultural production of Aloe vera in Australia, Bangladesh, Cuba, the Dominican Republic, China, Mexico, India, Jamaica, Spain, where it grows even well inland, Kenya, Tanzania and South Africa, along with the USA to supply the cosmetics industry.

Benefits of Aloe Vera

The medicinal claims made about Aloe vera, as with many herbs and plants, are endless. Some re-backed by rigorous scientific studies while others are not.

Antioxidant and Antimicrobial Properties of Aloe Vera

Aloe vera may be used on skin conditions or superficial cuts for its antimicrobial and antioxidant properties. The team set out to determine whether the methanol extract of leaf skins and flowers of Aloe vera might have beneficial effects on human health. The scientists focused on the extract's possible antioxidant and antimycoplasmic activities [3]. Mycoplasma is a type of bacteria that lack a cell wall; they are unaffected by many common antibiotics. Antimycoplasmic substances destroy these bacteria. They reported that both Aloe vera flower and leaf extracts had antioxidant properties, especially the leaf skin extract. The leaf skin extract also exhibited antimycoplasmic properties. The authors concluded that Aloe vera extracts from leaf skin and flowers can be considered as good natural antioxidant sources."

Laxative Effects

Anthraquinones present in Aloe vera latex are a potent laxative, increasing intestinal peristalsis.

Teeth and Gums

A study published in General Dentistry reported that Aloe vera in tooth gels is as effective as toothpaste in fighting cavities. The researchers compared the germ-fighting ability of an Aloe vera tooth gel with two popular toothpastes. They found that the gel was just as good, and in some cases even better than the commercial toothpastes at controlling cavity-causing oral bacteria. The authors explain that Aloe latex contains anthraquinones, compounds that actively heal and reduce pain through natural anti-inflammatory effects. The scientists warned that not all gels they analyzed contained the proper form of Aloe vera- they must contain the stabilized gel that exists in the center of the plant to be effective.

Constipation

Germany's regulatory agency for herbs-Commission E -approved the use of Aloe vera for the treatment of constipation. Dosages of 50-200 milligrams of Aloe latex are commonly taken in liquid or capsule form once daily for up to 10 days. The U.S. Food and Drug Administration (FDA) ruled in 2002 that there is not enough data on the safety and efficacy of Aloe products; so, in the U.S., they cannot be sold to treat constipation [2, 3].

Diabetes-induced Foot Ulcers

[4], A study carried out at the Sinhgad College of Pharmacy, India, and published in the International Wound Journal looked at Aloe's ability to treat ulcers. They reported that a "gel formed with carbopol 974p (1 percent) and Aloe vera promotes significant wound healing and closure in diabetic rats compared with the commercial product and provides a promising product to be used in diabetes-induced foot ulcers.

Antifungal Activity

Antifungal activity has received less attention, although inhibitory activity against Candida 35 has been reported. For its antifungal properties Aloe vera is used as a fish tank water conditioner.

Antiviral and Antitumor activity

These actions may be due to the indirect or direct effects: indirect through the stimulation of the immune system and direct to anthraquinones 3. So, clinical trials are in progress to obtain conclusive evidence for the use of Aloe vera in the treatment of HIV-AIDS or cancer.

Age-related Effects

Aloe vera was investigated on pathogen-free rats with some promising results on age-related diseases.

Protection from Skin Damage after Radiation Therapy

A study carried out at the University of Naples, Italy, tested five different topical creams to see how effective they might be in protecting the skin of breast cancer patients receiving radiation therapy. One of these creams contained Aloe. They divided 100 patients into five groups of 20; each was prescribed a different topical treatment. They applied the creams twice daily, starting 15 days before radiation therapy treatment, and carried on for 1 month afterward. During the 6-week period, the participants underwent weekly skin assessments. In the journal Radiation Oncology, [5] the scientists reported that the preventive use of the topical hydrating creams reduced the incidence of skin side effects in the women treated with radiation therapy for breast cancer, none performed significantly better. All moisturizing creams used in this study were equally valid in the treatment of skin damage induced by radiotherapy [6].

Cosmetic Uses

Generally, Aloe vera has many uses both for humans and animals. Three distinct preparations of the plant are used: Aloe vera latex, Aloe vera gel and Aloe vera whole leaf extract, whose biological ingredients may act alone or in synergy [7]. It is well known that Aloe gel enables the plant to hold moisture for extremely long periods of time and has soothing effects as well. Aloe vera has found an extensive application in the cosmetic and toiletry industries, such as moisturizers, cleansers, sun lotions, toothpastes, mouthwashes, shaving creams, deodorants and shampoos.

Food Uses

The food and beverage market is a promising arena for Aloe vera. It has been used as a resource of functional food such as yogurt or for the preparation of health drinks, including tea. It is well known, that botanical products are widely used as nutritional supplement for promotion of health or prevention of diseases [5].

CONCLUSION

Aloe vera is a plant species of the genus Aloe that is cultivated globally for agricultural and medicinal uses. The species is also used for decorative purposes and grows successfully indoors as a potted plant. It is found in many consumer products including beverages, skin lotion, cosmetics, or ointments for minor burns and sunburns. The medicinal claims made about Aloe vera, as with many herbs and plants, are endless. One of such is that Aloe vera may be used on skin conditions or superficial cuts for its antimicrobial and antioxidant properties. Similarly, studies have revealed that Aloe vera in tooth gels is as effective as toothpaste in fighting cavities. The antifungal activity of aloe vera has not received enough attention, although its inhibitory activity against Candida 35 has been reported. For its antifungal properties however, Aloe vera is used as a fish tank water conditioner. There is need for extensive research on this plant in order to ensure that adequate utilization of its medicinal properties especially in pharmaceutical industries.

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