

ALOE VERA THEIR CHEMICALS COMPOSITION AND APPLICATIONS

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ABSTRACT

This article provides information on the botanical description, systematics, morphology, importance, chemical composition, application in medicine and folk medicine, as well as medicinal properties of the aloe plant.

Keywords: Aloerin, Aloein famodin, Anthrax, Skin, Burns, Dermatology, Skin Diseases, Healing Properties.

The plant of Aloe vera and its usage as drug dates back to 6000 years B.C. The plates belonging to Sumer period during 2200 years BC, show use of this plant as a drug. In that plates, it is written about origin of this plant as Africa, that has 240 species and is ever green. One prescription that belong to 1550 BC shows Aloe vera plant used for different illness. It was known to people in Egypt and also Greece for example Aristoteles explains special characteristics of Aloe vera. Jelatin that is extracted from this plant is continuously used to treat burns, cuts and inflamed scars since many years. It is also used in cosmetics sector, medical sector and beverage sectors. It is useful for skin damaged from X ray as reported in many researches in journals related X rays. Because of high concentration of water and oil in this plant, it helps to protect skin from drieness and so the skin that is burnt or cut heals very quickly. Aloe vera include "Antrokinon" chemicals that are known as anti virus, anti bacteria and anti cancer. Researchers shows that plant is very helpful for treatment of Psoriyazis. Aloe vera is very similar to Cactus but belongs to Lily family of Aloe barbadensis groups. Aloe vera has 400 species but just 2 species; A.barbadensis and A.aborescens are used for trade in the world. This plant need very less water for living and also can survive on saline soils, beaches and is resistance to diseases and insects. It can live in very hot regions, but cannot tolerate cold. Aloe vera grows in South Texas, Florida and South California in USA. It also grows in Mexico, India, South and central America, Africa, Australia, Carribians and Iran. The inner leaf lining of the plant is used as a potent natural laxative. In a 1990 survey of members of a health maintenance organization, aloe vera was used by 64%; of these, 91% believed it had been helpful .

Polysaccharide composition

Polysaccharides make up most of the dry matter of the Aloe vera parenchyma. A storage polysaccharide, acetylated glucomannan, is located within the protoplast of the parenchyma cells and a variety of polysaccharides are present in the cell wall matrix. An overall carbohydrate analysis of the alcohol insoluble residues showed that the cell walls in the fillet of the aloe leaf hold mainly mannose-containing polysaccharides, cellulose and pectic polysaccharides whereas the skin of the leaf contains in addition significant quantities of xylose-containing polysaccharides. As mentioned before, this discrepancy in polysaccharide composition was initially explained by differences in geographical locations of the plants and seasonal changes but later it was found that extraction and processing of the parenchyma tissue are also very important variables that contribute to the differences in the results. Other polysaccharides such as arabinan, arabinorhamnogalactan, galactan, galactogalacturan, glucogalactomannan, galactoglucoarabinomannan and glucuronic acid-containing polysaccharides have been isolated from the Aloe vera inner leaf gel part.

Anti-cancer effects

The two fractions from aloes that are claimed to have anti-cancer effects include glycoproteins (lectins) and polysaccharides. The anti-tumour activity of polysaccharides isolated from Aloe vera and specifically acemannan has been investigated in many in vitro models as well as in different animal species. Different studies indicated anti-tumour activity for Aloe vera gel in terms of reduced tumour burden, tumour shrinkage, tumour necrosis and prolonged survival rates. In addition to these effects, Aloe vera gel has also shown chemopreventative and anti-genotoxic effects on benzo[α]pyrene-DNA adducts]. One mechanism of action that was proposed for these anti-cancer effects of aloe polysaccharides is stimulation of the immune response.

CONCLUSIONS

Aloe vera has a long history as a medicinal plant with diverse therapeutic applications. Although it was claimed that some of the biological activities of this plant can be attributed to the polysaccharides found in the leaf gel, it is a daunting task to link individual polysaccharides to specific therapeutic properties. Differences in plant composition due to geographic location as well as differences in gel extraction methods and sample preparation techniques have contributed to discrepancies in the results obtained from many studies in terms of the chemical composition and biological activities of Aloe vera leaf gel. Interesting pharmaceutical applications such as intestinal absorption enhancement activities and skin penetration improvement effects have recently been shown for Aloe vera gel. The dried gel has also showed potential as an excipient in modified release matrix type tablets. More applications are

discovered as research from different view points is conducted on this versatile plant to provide a better understanding of its composition and effects.

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