

## Aloe Barbadensis

Aloe barbadensis (also known as **Aloe Vera**) is an ancient plant which is a member of the Liliaceae family. This species is native to the Mediterranean region but is now widely spread in North America, Europe and Asia. The virtues of **Aloe vera** have been recorded for thousands of years by many ancient civilizations, including Egypt, Persia, Greece, India and other African tribes. In 1500 B.C. Egyptians recorded use of the herbal plant in treating burns, infections and parasites and since then it was used as perfume or incense (the fresh gel was used by Cleopatra to keep her skin soft and young).

**Aloe vera** then travelled to various parts of the globe and in the last century became a commonly available household medicinal plant, as many housewives are reported to grow **Aloe vera** as kitchen plants. Today, over a hundred thousand plants are grown in Florida, Texas and Mexico for marketing and annual sales are estimated in millions and millions of dollars.

More recent reviews show cumulative evidence supporting the topical and/or oral use of the **Aloe Vera** extracts as highly effective in treatment of wounds and first- or second-degree burns, by promoting the rates of healing, as well as acting as fresh foods preservative or as a water conserving agent. It is now also widely used on face tissues, as moisturizer and/or anti-irritant, to reduce chafing of the nose. Aloe Vera is also being used for soothing the skin and keeping it moist to help avoid flakiness and harshness during dry weather.

Due to all of the positive effects of **Aloe Vera** mentioned above, it is commonly used in the cosmetic and alternative medicine industries as an ingredient. It is common practice for cosmetic companies to add sap or other **Aloe vera** derivatives to products such as makeup, tissue moisturizers, soaps, sunscreens, shaving creams and shampoos.

As reported in literature, the extracted gel consists of 99.3% water and the remaining 0.7% is made of glucose and mannose as a major part among other ingredients such as aloesin, anthraquinones, gel polysaccharides such as aloemannan and acemannan, lectin, vitamins and Minerals.

Topical and oral use of **Aloe vera** is nontoxic with no side effects. Toxicity of the crude extract from **Aloe vera** was measured and results show that the aloe barbadensis derived ingredients were **nontoxic in acute oral studies using mice and rats**. (Further information about its non-toxicity is also available in the *Aloe Barbadensis MSDS - Material safety data sheet*).

### Action of the Aloe Barbadensis Extract :

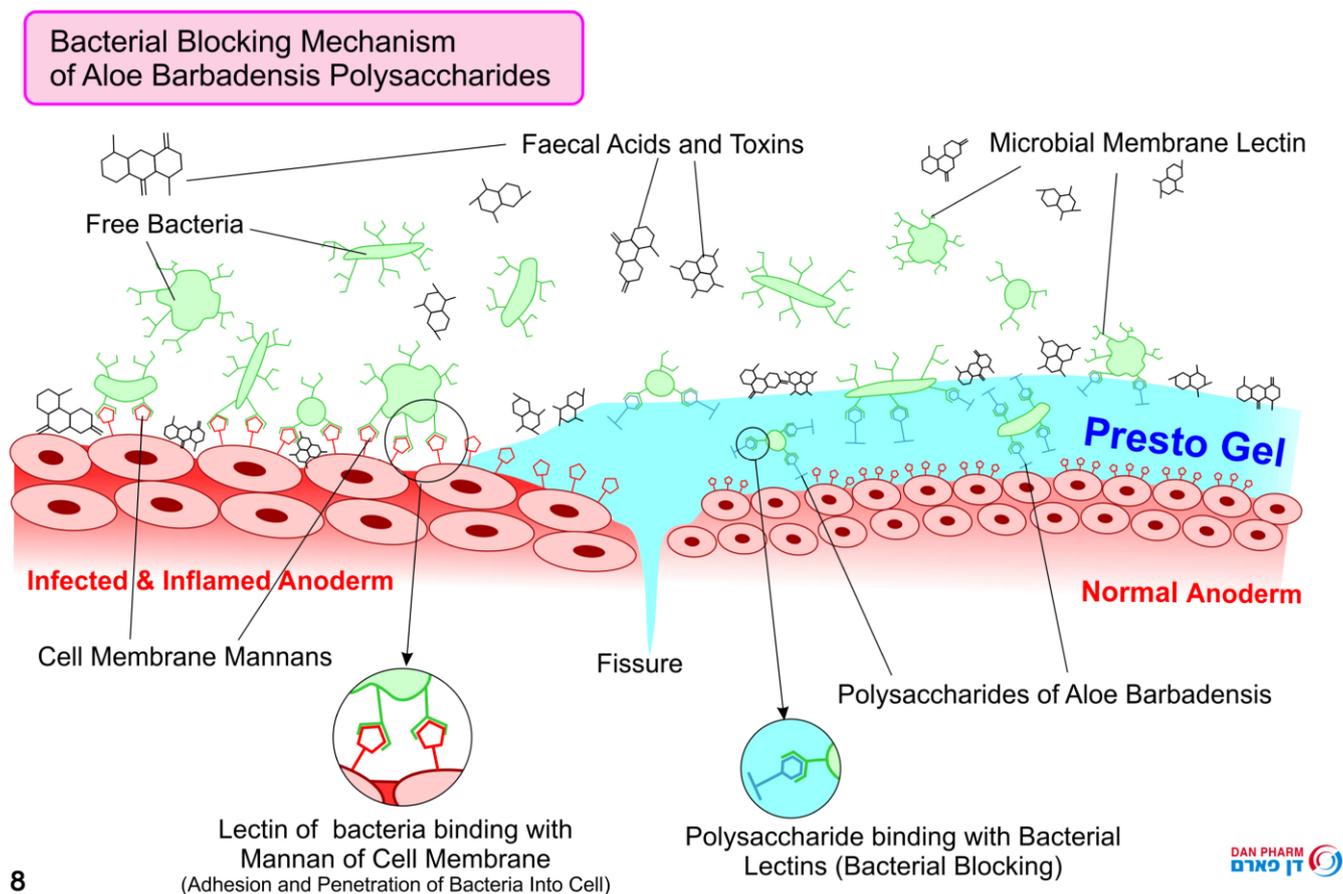
As mentioned above, Aloe Barbadensis contains mainly polysaccharides, therefore, the most common mechanism for the Aloe Barbadensis action as a bacterial blocker is by sticking to cell tissues so that bacteria cannot enter the infected system. The exact mechanism mentioned was described by Randey and his co-workers in 2010. They have demonstrated in their research that A. Barbadensis holds excellent potential as a bacterial blocking agent and described the mechanism as follows:

A. Barbadensis contains acemannan (acetylated mannose) which makes a mucilaginous layer around the infected system. This layer traps the microbial flora, making them unable to invade the system.

Micro-organisms are equipped with their own binding, self-adhering mechanism on the surface of their cell membrane.

The chains of polysaccharide molecules of aloe barbadensis, which consists of mannose molecules, proceed in the **Mannan-binding lectin pathway** (also known as the Ali/Krueger Pathway). In this pathway, mannose-binding lectin binds to mannose residues on carbohydrate or glycoprotein components of microorganisms, including bacteria.

Lectins are sugar-binding proteins or glycoproteins that are highly specific for their sugar parts. Microorganisms use lectins to attach themselves to the cells of the host organism during infection. Lectins are disabled by the Bacterial Blocking Ability of Aloe Barbadensis polysaccharides, which bind to them and **provide a protective layer**. As a consequence, they prevent their attachment to cell membranes, thus providing a **safe physical barrier against microbial invasion** for each cell and **prevents contact with acids and toxins**, which are the main cause of inflamed mucosa. The **bacteria is not killed**, but it is **prevented** from penetrating the host cell. The infection mechanism and bacterial development are blocked with the result that inflammation is controlled and discomforts are relieved. The right conditions are now created for the body's natural biological mechanisms, responsible for wound healing, to take over and the natural process of cell regeneration is accelerated.



Finally, we can summarize that the extracts of Aloe Barbadensis are

- non-toxic,
- have no side effects,
- widely available and
- commonly used in homes everywhere in food and cosmetic products.

It acts only as a **blocker for bacteria and fungi**, preventing them from the infected system and in this way allowing the body's natural healing mechanisms to take place without any microbial interruptions so the healing process duration **shortens** dramatically.