

INTERNAL USES OF ALOE VERA

Submitted By:

Ivan E. Danhof, Ph.D., M.D.  
North Texas Medical Associates  
222 S.W. 2nd St., #201  
Grand Prairie, Texas 75051

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Historical evidence encompassing more than 4,000 years testifies to the high regard of ancient peoples to the benefits of *Aloe vera*. *Aloe vera*, also known as *Aloe barbadensis*, is a succulent of the Liliaceae Family, which is particularly well adapted to growth in arid and semi-arid regions. Among the Family are the commonly known foods - asparagus, garlic, onion, turnip, etc.

The leaves of a mature three to four year old plant may be 30 inches or more in length, with a 5 inch wide base, 1½ inches in thickness, and tapering to a fine point. This species has thorns projecting from the lateral leaf margins.

The leaf is comprised of three mechanically separable fractions:

(1) the thick outer rind consisting of 15 to 18 layers of cells reinforced at its outer limit by strong xylans covered with a substantial layer of wax; (2) an internal gel consisting of hexagonal cellulose structures which enclose polysaccharides, glycoproteins, and other constituents in aqueous solution; the cellulosic structure creates a gel fillet which possesses structural integrity; the gel serves as a water/nutrient storage organ for the plant; (3) a thin, slimy, unstructured mucilage layer deployed between the thick outer rind and the internal gel; projecting into this layer from the rind are the vascular bundles comprised of xylem (water transport), phloem (nutrient transport), and pericyclic cells (containing the laxative anthraquinones which serve an ultraviolet absorptive function in the plant) all surrounded by a layer of encompassing sheath cells.

From the 16th through the early 19th centuries the yellow sap in the pericyclic cells was commercially collected, heated, the liquid evaporated, and the material sold world-wide as a potent cathartic agent. Today, aloin,



the major anthraquinone laxative, has been replaced by laxative agents having less violent cathartic actions.

In the 1930's interest in the internal gel was enhanced when the material was found to be remarkably effective in treating radiation-induced dermatitis. Since that time a number of external and internal uses for the internal gel of aloe have been reported in the literature, some of which are truly remarkable. Owing to increasing anecdotal reports purporting to corroborate beneficial effects of drinking the ground, preserved, internal gel of aloe, a number of scientific investigations have been undertaken to evaluate the validity of the anecdotal reports.

As the internal gel is 99+% water, the notion comes to mind that the 1% or so of solids, being divided amongst 200 different constituents, is not sufficient an amount of any one constituent to do anything at all on a rational basis. Thus, if there is a subjective benefit, it must be entirely psychological. Thus, one must rely on scientifically sound investigations to give any credence to the validity of the anecdotal reports.

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A few of the scientifically documented beneficial uses of drinking aloe beverages will be delineated in contradistinction to untold numbers of anecdotal reports which represent subjective impressions or appraisals.

#### Gastrointestinal Disorders

For over 300 years the curanderos and curanderas in the Rio Grande Valley of Texas and the northern states of Mexico have recommended internal aloe gel for "las enfermedades del estomago y los intestinos, pero especialmente para las úlceras." (the diseases of the stomach and

intestines, but especially for ulcers). As a result of these anecdotal reports, scientific investigations have been undertaken in animal models (laboratory rats) which have shown that if aloe gel is administered prior to the ulcer-inducing stress (immobilization), there is an 80% decrease in the number of ulcers formed compared with the control animals given saline instead of the aloe gel. Similarly, if the aloe gel was given after the ulcers were formed, healing was three times as fast compared to the healing in the control animals. (Galal et al, 1975)

In a second laboratory investigation, aloe gel pretreatment was 85% effective in preventing stomach lesions, and 50% better than the controls in healing the gastric ulcerations. (Kandil and Gobran, 1979)

Additional studies showed that a common group of plant constituents, the triterpenes, including lupeol, possess ulcero-protective activity against the formation of gastric ulcerations in albino rats induced by immobilization restraint. (Gupta et al, 1981) Other investigations have shown that aloe gel preparations contain lupeol as well as other triterpenoids. (Suga and Hirata, 1983)

Aloe gel mixed with heavy liquid petrolatum (2:1) was given to 12 patients, 7 males and 5 females, ages 24 to 84 years, with definitive x-ray evidence of duodenal ulcers. All 12 patients showed complete recovery with no recurrence for at least a year after ulcer healing. This study suffers, however, from the fact that (1) duodenal ulcers are often self-healing without any treatment, and (2) there was no control group of patients treated in a similar manner without the administration of aloe. Nonetheless, the physicians who conducted the study represent trained, clinically-experienced observers, and thus even these uncontrolled observations have some scientific merit. (Blitz et al, 1963)



### Atherosclerosis and Coronary Heart Disease

Coronary heart disease associated with the accumulation of blood fats (lipids) in the lining of the arteries is still one of the major causes of death in the Western world. Several studies in animal models as well as in human subjects have suggested that the ingestion of aloe gel may have a beneficial effect by lowering serum cholesterol, serum triglycerides, and serum phospholipids, which, when elevated, seem to accelerate the deposition of fatty materials in the large and medium-sized arteries, including the coronary arteries of the heart.

In one study albino laboratory rats were fed high cholesterol diets with the experimental group fed the polysaccharide (glucomannan) from aloe. Compared with the control animals, the group fed the aloe fraction showed:

- a. Decreased total cholesterol levels
- b. Decreased triglyceride levels
- c. Decreased phospholipid levels
- d. Decreased nonesterified fatty acid levels
- e. Increased HDL cholesterol (the "good" cholesterol) levels
- f. Markedly increased HDL/Total Cholesterol ratios

The evidence suggests that the ingestion of aloe gel may have a salubrious effect on fat (lipid) metabolism, which, if active in human subjects, would tend to decrease the risk of coronary artery disease in people.

(Joshi and Dixit, 1986)

Monkeys given Triton, which causes marked increases in blood lipids, were divided into two groups. The first group was given aloe, while the second group received the drug, clofibrate, which is used clinically to lower serum cholesterol and triglyceride levels. The following data show the reduction in the various parameters compared with the control animals.

