

ALOE VERA

The Aloe Vera plant has been known and used for centuries for its HEALTH, BEAUTY, MEDICINAL and SKIN CARE properties.

- The Greeks scientists, 2000 years ago regarded Aloe Vera as the universal panacea.
- The Egyptians called the Aloe "The PLANT of IMMORTALITY"
- The American Indians called Aloe " The WAND of HEAVEN"

Today the common name is just "ALOE VERA" or "The BURN PLANT"

The ALOE VERA plant, a member of the Lily Family, is a succulent that closely resembles a cactus. There are more than 200 species of Aloe Vera, but some are more nutritious and more effective medicinally than others and "ALOE VERA BARBADENSIS" is the species that is most Beneficial.

Today many ancient tales of the healing powers of Aloe Vera are factual, rather than fanciful, as modern medicine unlocks the secrets contained within the leaves.

The outside of the leaf is smooth and rubbery to touch and inside is the Aloe Vera "Gel" that is so highly regarded. The gel appears to contain a "WOUND HORMONE" that accelerates the rates of healing of injured surfaces.

Scientists have found that the Aloe Vera "GEL" is a diverse mixture of ANTIBIOTIC, ASTRINGENT, COAGULATING AGENT, PAIN INHIBITOR, CELL GROWTH STIMULATOR and SCAR INHIBITOR.

Although Scientists have not yet discovered all the secrets of why Aloe Vera works - they do realize that it is the "Specific Mixture of the Ingredients" in Aloe Vera that is responsible for giving the plant it's wide range of healing powers.

The properties of Aloe Vera Gel, applied externally or taken internally, have been described in numerous scientific journals and reveals that the Aloe Vera contains more than 70 Essential Ingredients including most Vitamins, Minerals, Enzymes, Protein, Amino Acids and a recent study also discovered Vitamin B 12.

Taken internally, they report that Stabilized Aloe Vera Gel helped many ailments including - Insomnia, Infection, Indigestion, Heartburn, Constipation, Hemorrhoids, Ulcers, Arthritis, - there are many more.

Used externally, many people attest to the effectiveness of Aloe Vera in helping to treat - Burns, Sunburn, Scalds, Psoriasis, Eczema, Acne, Stings, Scrapes, Abrasions, Scalp Care, Sore Muscles, Cold Sores, Bruises, Sprains, Arthritis - the list is endless.

Stabilized Aloe Vera Gel is now available in a wide range of Ladies and Gents Health and Skin care products such as - Pure Aloe Vera Juice, Medicated Jelly, Medicated Cream, Heat Rub, Moisturizer, hand and Body Lotion, Facial Cleansing Wash, Mini Lift Mask, etc.

Aloe Vera is Non Toxic - it is not a drug - it is not a medicine - and is not intended to replace any drugs or medicine but documents and experiences show that when people use a product or drink the juice - for whatever reason;

Conditions Treated Naturally with Aloe Vera

The following article is published in the magazine: *Alternative Medicine, The Voice of Alternative Medicine®* (issue 28, March 1999).

The Potted Physician

13 Ways Aloe Vera Can Help You

Known to herbalists and medical folklorists for centuries as the "medical plant" or "the potted physician", this cactus-like plant with green dagger-shaped leaves filled with a clear, viscous gel was brought from Africa to North America in the sixteenth century.

But long before this, aloe, whose name means "shining bitter substance," was widely regarded as a master healing plant. The ancient Egyptians referred to aloe as the "plant of immortality" and included it among the funerary gifts buried with the pharaohs. In recent decades, medical research has confirmed and extended many of the health claims for the shining bitter substance (used topically or consumed as a liquid) that is the heart of aloe. Here is a brief review of its merits.

Helps Heal Wounds

The bulk of the aloe leaf is filled with gel, 96% water with the other 4% containing 75 known substances. Applied to wounds, aloe gel is a mild anesthetic, relieving itching, swelling, and pain: it also is antibacterial and antifungal, increases blood flow to

wounded areas, and stimulates fibroblasts, the skin cells responsible for wound healing.

An animal-based study in the *Journal of the American Podiatric Medical Association* found that both oral and topical aloe preparations speed wound healing. Animals were given either aloe (100mg/kg body weight) in their drinking water for two months or 25% aloe vera cream applied directly to wounds for six days.

Aloe had positive effects in both cases. The size of wounds decreased 62% in the animals taking oral aloe compared to a 51% in the control group. Topical aloe produced a 51% decrease in wound size compared to a 33% in the control group.

Supports Surgical Recovery

Aloe decreases surgical recovery time, according to a report in the *Journal of Dermatologic Surgery and Oncology*. Eighteen acne patients underwent facial dermabrasion surgery, in which lesions are scraped away. Dressings were applied to their faces, with half of each person's face receiving the standard dressing coated with surgical gel, and the other half with aloe added to this dressing. The half of the face treated with aloe healed approximately 72 hours faster than the other side.

Dermatologist James Fulton, M.D., of Newport Beach, California, principal author of the report, uses topical aloe in his practice to speed wound healing. "Any wound we treat, whether it's suturing a cut or removing a skin cancer, heals better with aloe vera on it," he states.

Soothes Burns

In a study in the *Journal of the Medical Association of Thailand*, 27 patients with moderate burn wounds were treated

with a gauze coated in either aloe gel or Vaseline™ (petroleum jelly). The burns healed more quickly in the aloe group, with an average healing time of 12 days compared to 18 days for the group using Vaseline.

Minimizes Frostbite Damage

A study published in the *Annals of Emergency Medicine* established that aloe works for frostbite as well. Researchers gave standard treatments for frostbite (antibiotics, ibuprofen, and re-warming) to 154 patients with mild to severe frostbite. Of patients who additionally received aloe vera cream, 67.9% healed without any tissue loss (amputation) compared to 32.7% in the control group. Researchers concluded that aloe prevented a decrease of blood flow to the frozen tissues, a common cause of tissue loss in frostbite.

Screens Out Radiation

Aloe protects against skin damage from X rays, according to researchers at Hoshi University in Japan publishing in the journal *Yakugaku Zasshi*. They found that aloe was an effective antioxidant, mopping up the free radicals caused by radiation, and that it protected two of the body's healing substances, superoxide dismutase (an antioxidant enzyme) and glutathione (an amino acid which stimulates the immune system).

Heals Psoriasis Lesions

In a double-blind, placebo-controlled study published in *Tropical Medicine and International Health*, 60 patients with chronic psoriasis were given a 0.5% aloe vera extract in a mineral

oil crème. The ointment was applied three times daily for five consecutive days (15 applications total per week) for four weeks.

When patients were checked after eight months, far more psoriasis skin lesions had healed in the aloe group (82.8%) than in the placebo group (7.7%). Further, 83.3% of the aloe group were considered cured of their psoriasis compared to only 6.6% of the placebo group.

Eases Intestinal Problems

Aloe vera juice can be effective for treating inflammatory bowel disease, according to a study in the *Journal of Alternative Medicine*. Ten patients were given two ounces of aloe juice, three times daily, for seven days. After one week, all patients were cured of diarrhea, four had improved bowel regularity, and three reported increased energy.

Researchers concluded that aloe was able to rebalance the intestines by "regulating gastrointestinal pH while improving gastrointestinal motility, increasing stool specific gravity, and reducing populations of certain fecal microorganisms, including yeast." Other studies have shown that aloe vera juice helps to detoxify the bowel, neutralize stomach acidity, and relieve constipation and gastric ulcers.

Reduces Blood Sugar in Diabetes

Aloe reduced the blood sugar levels in diabetics, as reported in *Hormone Research*. Five patients with adult (non-insulin-dependent) diabetes were given 1/2 teaspoon of aloe extract daily for up to 14 weeks. Blood sugar levels were reduced in all patients by an average of 45%, with no change in their total weight.

Reduces Arthritic Swelling

Aloe can help prevent arthritis and reduce the inflammation in joints already affected by arthritis, according to the *Journal of the American Podiatric Medical Association*. Aloe can also inhibit the autoimmune reaction associated with certain forms of arthritis, in which the body attacks its own tissues.

Animals were injected with a bacterium to cause arthritic symptoms, namely inflammation and swelling. To determine if it could prevent arthritis, aloe (150mg/kg body weight) was injected under the skin daily for 13 days. Physical measurements were taken daily to determine the amount of swelling and inflammation.

Several compounds from aloe showed anti-arthritic activity, according to the researchers. One organic acid in aloe reduced inflammation by 79.7% and suppressed the autoimmune response by 42.4%. Another aloe compound (anthraquinone) reduced inflammation by 67.3% but had no effect on the autoimmune response.

Curtailling HIV Infection

An extract of mannose, one of the sugars in aloe, can inhibit HIV-1 (the virus associated with AIDS). In a 1991 study in *Molecular Biotherapy*, HIV-1 cells were treated *in vitro* (outside the body) with a mannose extract. Aloe slowed virus reproduction by as much as 30%, reduced viral load (total amount of the virus), suppressed the spread of the virus from infected cells, and increased the viability (chance of survival) of infected cells.

Nutritional Support for HIV Patients

Aloe vera juice proved to be an effective part of a nutritional support program for HIV+ patients according to the *Journal of Advancement in Medicine*. For four months, 29 patients were given 100% pure aloe vera juice (five ounces, four times daily) along with an essential fatty acid supplement and another supplement containing vitamins, minerals, and amino acids. Patients were told to continue with their normal diet and not to take other supplements.

After 90 days, all of the patients had fewer occurrences of opportunistic infections, thrush, fatigue, and diarrhea, as well as increased white blood cell counts (meaning their immune systems were responding positively). Their assessment of overall quality of health also improved. In 25% of the patients, aloe apparently knocked out the virus's ability to reproduce. Researchers found that aloe (the mannose extract and perhaps other compounds) stimulates the body's immune system, particularly T4 helper cells, white blood cells that activate the immune response to infection.

Stimulates Immune Response Against Cancer

Aloe may help prolong survival time and stimulate the immune system of cancer patients, according to recent research.

In a 1994 study in the Japanese medical journal *Yakuhak Hoeji*, mice with cancerous tumors were given aloe orally for 14 days. While the aloe did not suppress tumor growth, the average life span of the mice was prolonged by 22% for those given 50mg aloe/kg body weight and by 32% for those given 100mg/kg daily. A simultaneous experiment on human cancer cells (outside the

body) found that high doses of aloe significantly suppressed the growth of these cancer cells.

Researchers writing in *Cancer Immunology and Immunotherapy* found that a compound (lectin) from aloe, when injected directly into tumors, activated the immune system to attack the cancer. Killer T cells, white blood cells that bind to invading cells and destroy them, began to attack the tumor cells injected with lectin.

Aloe turns on the immune system by activating macrophages (white blood cells which "swallow" antigens), causing the release of immune-activating (and anticancer) substances such as interferons, interleukines, and tumor necrosis factor. In addition, aloe promotes the growth of normal (non-cancerous) cells, researchers said.

Benefits Lung Cancer

Aloe's protective effect was confirmed in a study of 673 lung cancer patients in Okinawa, Japan, published in the *Japanese Journal of Cancer Research*. This survey looked at the connection between smoking, comparative amounts of 17 plant foods in the diet, and the occurrence of lung cancer over a five-year period.

Aloe was the only one of the plant foods that was protective against cancer. "The results of plant epidemiology suggests that aloe prevents human pulmonary carcinogenesis [lung cancer]," stated the researchers. Further, aloe is "widely preventive or suppressive against various human cancers."

ACNE - Cosmetic preparations such as soaps, cleansers, and moisturizers aid the treatment of the skin to decrease the severity of acne. These need to be used in conjunction with a balanced diet, regular personal hygiene and fresh air and sunshine.

ABRASIONS - If a fresh leaf is available, rest this directly on the wound: it helps relieve the pain. The stabilized gel may also be used. Apply frequently over the first 24 hours.

ACHES - Muscle aches and pains and other discomfort associated with joints respond well to an Aloe Vera massage cream.

ALLERGIES - Treat with the application of a fresh leaf if possible. This usually relieves the pain and reduces the swelling in the case of jellyfish, bee, poison ivy etc. - which may cause severe allergic reactions, seek medical assistance.

ANIMAL FIRST AID - Vera is suitable on animals for similar conditions treated in humans.

ARTHRITIS - Relief is obtained from drinking two to four tablespoons of gel daily. Maintain treatment for at least two months before considering whether it is beneficial or not. When the severe pain is arrested reduce the dose to half.

BURNS/SCALDS - All burns should be treated as potentially dangerous injuries. However, the immediate application of an Aloe Vera leaf or gel will relieve the pain, reduce the chance of infection and lessen the danger of scarring. As all burns and scalds induce shock in the victim any case of severe burns needs medical attention. In the case of sunburn, Aloe Vera products will help reduce the harming effects of the sun if applied before sun

baking. They also relieve the pain and discomfort of sunburn after exposure to the sun.

ATHLETIC INJURIES - the massage cream is especially effective in massaging muscles and joints in warm up exercises. Several coaches of American football and baseball teams rely upon Aloe Vera products to maintain team fitness and treat sports injuries, especially sprains, strains and tendonitis.

CUTS & WOUNDS - Immediate application of Aloe Vera gel will prevent infection and aid healing.

INJURIES DISORDERS - Taken internal the gel will relieve ulcers, colitis, constipation and other digestive disorders.

EYE AND EAR DISORDERS - Although delicate organs of the body, the eye and ear can be treated with drops for immediate first aid. It is better to dilute the gel with half water to lessen the degree of smarting.

Eczematous Rashes and Psoriasis - Aloe Vera products are effective when taken internally as well as when applied to the affected areas. Psoriasis may not be cured but it can be controlled.

Fungal Diseases - Aloe Vera is especially beneficial in the treatment of athlete's foot. It should be rubbed over the affected area at least four times a day.

Haemorrhoids - Either a syringe containing the juice or an applicator containing the ointment can be inserted into the rectum to relieve pain. Application can be as often as desired.

Hair and Scalp - Any product containing at least 70% Aloe Vera is beneficial to the good health of the hair and scalp.

Sinus - When inhaled through an inhaler Aloe Vera gel acts as a decongestant, although not as immediately as an antihistamine.

Skin Cancers - Regular application at least two to four times daily may arrest skin cancer.

Summary of conditions that can be treated Externally and/or Internally

Conditions that can be treated with External applications.

Skin Disorders - Burns, Scalds, Sunburn, Ulcers, Blisters, Diaper and Heat rash, Razor burns, Prickly heat, Windburn, Abrasions, Insect stings and bites, Allergies associated with plants or insects, Dandruff, Eczema, Dermatitis, Impetigo, Psoriasis, Body and bed sores, Cuts, Contusions, Lacerations, Chronic ulcers, Boils and Abscesses.

Oral Disorders - Cancer sores, Cold sores, Fever blisters, Minor sore throats, Mouth irritations, Denture sores, Gingivitis, Mouth and Gum diseases.

Eye and Ear Disorders - Conjunctivitis, Sties, Corneal ulcers and Cataracts, Puncture wounds and infected pierced ears.

Conditions that can be treated with Internal applications.

Fungal Infections - Athlete's foot, Ringworm, Pruritus anivalvae, Balnea, Essential Pruritus, Vaginal yeast infections.

Athletic Injuries - Muscle cramps, Sprains, Strains, Bruises, Swelling, Soreness, Tendonitis and Bursitis.

Stomach Disorders - Indigestion, heartburn, Hyper-acidity, peptic and Duodenal Ulcers, Colitis, Hemorrhoids.

Kidney Disorders

Diabetes

Parasites - Pinworms and Thread worms.

Aloe Vera appears to be beneficial for many people with digestive disorders. For this reason, many people with digestive problems, and concerns such as Irritable Bowel Syndrome and Acid Reflux are looking into **Aloe Vera drinks (the Plain Gel)** for relief.

People with Crohn's have also reported similar relief. (PLEASE NOTE, ALOE VERA - NOR ANYTHING ELSE SHOULD BE THOUGHT OF AS A "CURE" IN AND OF ITSELF. It does; however, provide your body - your immune system - with a large number of vitamins, enzymes, and other nutrients it needs to do its job properly.)

The following is some interesting information released (April 2001) about **IBS** and **Colitis**.

SOURCE: *The American Journal of Gastroenterology* 2001;96:773-775.

A common virus may be the cause of many hard-to-treat cases of inflammatory bowel disease, researchers in Italy report.

More than one third of patients in a new study who had colitis that did not respond to steroids were infected with cytomegalovirus (CMV), the investigators found.

A form of inflammatory bowel disease, ulcerative colitis causes the large intestine to become inflamed and ulcerated, leading to

bloody diarrhea, abdominal cramps and fever. Colitis can also occur in patients with Crohn's disease, a chronic inflammation of the intestinal wall.

The brand of Aloe you drink is especially important where such health problems exist. Some have ingredients or chemicals which can worsen pre-existing conditions. Some are little better than bottled water. Others are excellent with a high polysaccharide count (6-10%)

Recent studies are demonstrating the remarkable benefits of anti-oxidants such as Vitamins C and E.

The REUTERS News Agency, on the first of November (2001) reports:

" Melov said the study, published in the Journal of Neuroscience, showed for the first time that these drugs <anti-oxidants> work in making mammals live longer. We are starting to have a very good understanding of the types of damage that can arise in the aging process," he said.

Oxidation is the chemical reaction that causes metals to rust, but in cells, it can damage DNA, leading sometimes to cancer, other diseases and, many scientists believe, to the changes associated with aging.

Anti-oxidants include Vitamins C and E.

The mice in Melov's study were genetically engineered to undergo a form of oxidative damage and without drugs only live about a week, allowing researchers to quickly see the results. <The mice who received the anti-oxidant drugs lived four times longer than their expected lifespan.>

Melov explained that the drugs work by zeroing in on so-called free radicals -- toxic molecules produced in every cell in the body that are necessary pollutants in burning energy.

The anti-oxidant compounds move into cells and even into the mitochondria -- the centers of metabolism -- to counter the aging effects wrought by the free radicals. "

(Source: "*Study: Anti-Aging Drugs Quadruple Life Span of Mice*" by Michael Kahn of *Reuters*, November 1st, 2001, as reported in

Aloe Vera is one of the most potent sources of Vitamins E and C. It carries the additional benefit of being one of the only known sources of natural Vitamin B-12 (other sources are animal sources).

Will Aloe slow down the aging process? There is no conclusive evidence of this for humans - but the research on anti-oxidants (especially the combinations of anti-oxidants such as Vitamins E and C) is certainly promising.

Aloe Vera offers these vitamins, and over 200 other beneficial vitamins, enzymes, minerals, and compounds. Some brands are better than others (more pure, potent, and fresh), so do your homework before purchasing.

Research

The last several years have witnessed a boom in research on Aloe Vera and its applications for humans and animals. The following are just a couple:

Professor of Physiology (University of Texas) and chief of the Research Laboratory of North Texas, Ivan Danhof, showed (1984) that the application of Aloe gel to the skin accelerates

fibroblasts. Fibroblasts aid in the manufacture of collagen which is the protein that controls the aging process of the skin and wrinkling. (As one ages, collagen starts to disappear from the skin, causing slackening and wrinkling.) Aloe gel helps to protect the outer layers of the skin by helping it to reorganize skin cells. He further showed the moisturizing properties of Aloe by demonstrating that the skin absorbs moisture from Aloe gel three to four times faster than water.

One report ("*Clinical Review*" 1987) shows that a compound - acemannon - found in Aloe Vera seems to have some remarkable anti-viral properties. Even where HIV (the virus that often leads to AIDS) is concerned, Dr. Reg McDaniel stated, "It appears that carrisyn [editor's note: Carrisyn is the commercial name of acemannon patented by Carrington Laboratories] neutralizes the [AIDS] virus by transforming it's protein envelope thus preventing it from attaching itself to the T4 cells."

Around the same time researchers in Canada isolated acemannon for their own studies. Since then, clinical trials on people living with AIDS ("PLWA") have shown that acemannon re-enforces the body's natural defense (immune) system of thus may stop the progression of HIV. Such studies have been corroborated by others, showing not only the nutrition value of ingesting Aloe Vera (in drink form), but also it's potential for providing significant benefits to boost the immune system. Of course, how the Aloe drink is processed is a determining factor in the degree of potential benefit.

Please keep in mind, there is no known method of curing AIDS - so PLWA should not view this as a cure, but rather as another option in possibly arresting or slowing down HIV. Aloe **has not** been scientifically proven to completely remove HIV from the body. Anybody who says that it - or anything else, has been

shown to cure AIDS (cancer, etc.) is either misinformed or intentionally deceiving for their own purposes (usually financial). Aloe is; however, a bright hope in the battle of many illnesses - and certainly in strengthening the immune system.

Dr. Lee Cowden (Dallas, Texas) observed that several conditions benefit when treated by oral consumption of Aloe Vera. They include: irritable bowel syndrome, ulcerative colitis, esophagitis, peptic ulcer, rheumatoid arthritis, osteoarthritis, mouth lesions, sore throat, and lupus.

Dr. Robert H. Davis (Physiologist at the University of Pennsylvania College of Podiatric Medicine) conducted Aloe research since the early 1970's.

In laboratory tests on animals his findings included the results that Aloe can prevent and arrest arthritis, improve wound healing, inhibit pain, block inflammation, restore bone growth, and act as a vehicle for the delivery of nutrients to the body. Dr. Davis stated, "Aloe vera contains the greatest number of active substances of any plant I've looked at."

Aloe is also known to help unblock and keep clean the receptors inside the lining of the intestines - facilitating the absorption into the bloodstream of vitamins and other nutrients.

Dr. B. Frielander, (San Diego, CA) a Nutritionist, noted that patients with chronic colon problems including constipation, hemorrhoids, colitis and Crohn's disease, benefit from drinking aloe vera juice as a part of a nutritional program. He noted that even their complexions looked better!

Not all doctors will agree with the use of Aloe Vera (indeed, some don't accept it as of any benefit at all), its growing acceptance

and increased use in the medical profession (or at least a nod in its direction) has given more optimism to those who seek non-toxic alternatives to drugs. And, where modern drugs may not be helping the individual, Aloe Vera and other options (chiropractic, herbs, meditation, etc.) are growing in popularity.

Certainly the use of Aloe Vera for so many centuries and so many scattered and varied cultures and locations of the world must give occasion to at least further look into its potential for the benefit of humankind.

But, as with all things, wisdom must be followed. Aloe Vera can be used externally (on the skin) and internally (drinks).

While Aloe is shown in studies to benefit in many ways, no reputable study nor scientist has claimed that Aloe will work the same for everybody - nor are results universally applied.

ALOE VERA

Source(s): Inner leaf gel of aloe vera

Historical Uses: Therapeutic purposes date back 4000 years in Africa.¹ Fresh aloe vera gel is well known for its emollient and wound healing activity.²

There are over 150 species of aloe, a succulent perennial that is chiefly indigenous to Africa.³ Aloe may be added directly to foods for human consumption.⁴

A number of substances have been isolated from the whole leaf.⁵
^{6,7} The leaf of the plant consists of two major parts: leaf epidermis and inner leaf gel. The leaf epidermis consists of bundle sheath cells which exude a yellow, bitter latex material, which contains aloin, aloe-emodin, chrysophanic acid, volatile oil, resins,² aglycones and B-glycosides.⁸ Aloin and aloe-emodin have laxative properties,² and the dried latex of the aloe vera leaves is recognized by the German government as an approved herb for use as a cathartic in treating constipation.⁸ Aloe vera gel, the mucilaginous substance obtained from the inner leaf, has long been used for its emollient and wound healing properties² and contains mainly polysaccharides consisting of acetylated mannose, glucose, galactose, and arabinose.²

Before a process was developed to stabilize aloe vera gel or extracts, fresh preparations were regarded as being required for therapeutic efficacy.¹⁰ Fresh oral aloe vera gel was effective in healing peptic ulcer.¹¹ Numerous studies have documented the efficacy of fresh gel in healing skin or mucosa ulcerated by excessive x-ray irradiation^{12, 13, 14} or thermal burns.¹⁵ Fresh aloe vera gel applied topically was shown to be effective in improving leg ulcers, seborrhea, sebohreic alopecia, acne vulgaris, and alopecia areata.¹⁶ Several human clinical studies, which documented efficacy of aloe vera gel in treating psoriasis, burn wounds, and skin abrasions, have been summarized.¹⁷

Extracts of aloe vera gel have also demonstrated beneficial effects. The glycoprotein fraction of aloe enhanced in vitro immune activity (phagocytosis) in leucocytes from adult asthmatics.¹⁸ The glycoprotein and polysaccharide fractions of aloe extracts were also shown to be active in controlling the symptoms of bronchial asthma.¹⁸ Animal studies also indicated favorable response when aloe vera extract was used to treat

topical fungal infections and allergic reactions.¹⁹ A highly active polysaccharide fraction extracted from aloe vera gel showed anti-complementary immunological adjuvant activity in mice.²⁰ Antiviral activity was demonstrated by partially purified extracts from aloe vera gel, which inhibited human cytomegalovirus infection.²¹ Pharmacological evidence for an anti-inflammatory effect of aloe extract is supported by the finding that aloe extract contains bradykininase activity²² and reacts with the protease inhibitors alpha2-macroglobulin and alpha1-antitrypsin.²³

It is now possible to stabilize aloe vera gel extract as a lyophilized solid, which can be incorporated into various liquid or dry products. The immunostimulant active ingredient, acemannan (ACM), has been isolated and identified.² Acemannan is the United States Accepted Name (USAN) for long-chain polydispersed beta-(1,4)-acetylated polymannose with interspersed O-acetyl groups with a mannose monomer/acetyl ratio of approximately 1:1 and extracted from Aloe vera (barbadensis Miller).

ACM acts on both macrophages and T cells, and as a result, may enhance both cellular and humoral immunity.²⁴ ACM stimulates potent cytokine secretion by human peripheral blood mononuclear cells (PBMC) in vitro, as evidenced by dose-dependent release of interleukin-1B, interleukin-6, and tumor necrosis factor-(from monocytes and lymphocytes.²⁵ ACM also stimulates natural killer (NK) activity in human PBMC in vitro in a manner similar to interleukin-2 and gamma-interferon.²⁶ In an animal tumor model, ACM stimulated monokine synthesis in mice resulting in the initiation of immune attack, necrosis, and regression of implanted sarcomas.²⁷

Additional immune modulating effects of ACM have been observed. ACM stimulated in vitro macrophage phagocytosis and killing of *Candida albicans*²⁸ and increased human lymphocyte

response in vitro to alloantigen at concentrations achievable in vivo.²⁹ ACM has direct antiviral activity and has been shown to partially inhibit replication of the HIV-1 virus in vitro and has synergistic in vitro antiviral effects in combination with azidothymidine (AZT) and acyclovir.³⁰ ACM may also delay the development of clinical signs in cats infected with the feline leukemia virus³¹ or feline influenza virus.³² Since ACM is taken up by macrophages and stimulates IL-1 and interferon release, mediation by these two immunomodulators could be the major pathway of the antiviral effect.³³ Complex carbohydrates have also been shown to stimulate circulating interferon levels.³⁴

The macrophage-stimulating activity of ACM is key to its use as an accelerator of wound healing, which results in increased deposition of granulation tissue and collagen when ACM is applied topically³⁵ or given systemically³⁶ to rats or guinea pigs.³⁷ Compared to common topical agents for wound treatment, a commercial product containing ACM was less damaging to in vitro skin cells.³⁸

Extensive toxicology studies have been conducted on ACM. Following oral administration at doses up to 2 grams/kg body weight/day (equivalent to 140 grams/day in a 150-lb human) in rats for 6 months or 1.5 grams/kg body weight/day in dogs for 90 days, no significant adverse effects were seen on any parameter measured in either species; parameters evaluated detailed structure and function of biological systems, including blood, organs, and numerous other tissues.³⁹ In addition, no significant signs of toxicity occurred in animals (rats, mice, dogs) treated with a single injection of ACM at doses equivalent to as much as 5.6 grams/150-lb human given intravenously. On repeated injection, non-adverse effects consistent with the known immune stimulating activity of ACM were observed in some organs.⁴⁰ An

isolated instance of human hypersensitivity to aloe, manifested by skin reactions, was reported after 4 years of using oral and topical aloe.⁴¹

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