



ALOE

Also Known As:

Aloe Capensis, Aloe Latex, Aloe Perfoliata, Aloe Vera Barbenoids, Aloe Vera Gel, Aloes, Barbados Aloe, Burn Plant, Cape Aloe, Chritkumari, Curacao Aloe, Elephant's Gall, Ghee-Kunwar, Ghi-Kuvar, Ghrita-Kumari, Gvar Patha, Hsiang-Dan, Indian Aloe, Jafarabad Aloe, Kanya, Kumari, Lily of the Desert, Lu-Hui, Miracle Plant, Plant of Immortality.

CAUTION: See separate listings for *Gymnema* (Miracle Plant), *Jiaogulan* (Miracle Grass), and Miracle Fruit.

Scientific Name:

Aloe vera, synonyms *Aloe barbadensis*, *Aloe indica*; *Aloe africana*; *Aloe arborescens*, synonyms *Aloe natalensis*, *Aloe frutescens*, *Aloe ucriae*; *Aloe ferox*, synonym *Aloe supralaevis*; *Aloe perryi*; *Aloe spicata*.

Family: *Aloaceae* or *Asphodelaceae*.

People Use This For:

Orally, aloe is used for osteoarthritis, inflammatory bowel diseases including ulcerative colitis, fever, itching and inflammation, and as a general tonic. Aloe is also used orally for gastroduodenal ulcers, diabetes, asthma, and radiation-related mucositis. Aloe latex is used orally as a laxative for constipation, epilepsy, asthma, colds, bleeding, amenorrhea, colitis, depression, diabetes, glaucoma, multiple sclerosis, hemorrhoids, varicose veins, bursitis, osteoarthritis, and vision problems. Topically, aloe is used for burns, wound healing, psoriasis, sunburn, frostbite, inflammation, osteoarthritis, and cold sores. It is also applied topically as an antiseptic and as a moisturizer.

Safety:

LIKELY SAFE ...when aloe gel is used topically and appropriately (101, 11982, 12096, 12098, 12159, 12160, 12163, 12164).

POSSIBLY SAFE ...when aloe gel is used orally and appropriately (11982, 11984, 12164).

POSSIBLY UNSAFE ...when aloe latex is used orally. There is some evidence that anthraquinones in the latex are carcinogenic or promote tumor growth, although data are conflicting (6138, 16387, 16388). In 2002, the FDA banned the use of aloe latex in laxative products due to the lack of safety data (8229).

LIKELY UNSAFE ...when aloe latex is used orally in high doses. Ingesting aloe latex 1 gram/day for several days can cause nephritis, acute renal failure, and death (8, 8961).

CHILDREN: POSSIBLY UNSAFE ...when aloe latex and aloe whole leaf extracts are used orally in children. Children younger than 12 years may experience abdominal pain, cramps, and diarrhea (4).

PREGNANCY: POSSIBLY UNSAFE ...when used orally. Anthraquinones present in aloe latex and aloe whole leaf extracts have irritant, cathartic, and possible mutagenic effects (4, 16387, 16388). There are also anecdotal reports that anthraquinones might induce abortion and stimulate menstruation; avoid using (4, 8, 19).

LACTATION: POSSIBLY UNSAFE ...when aloe preparations are used orally. Cathartic and mutagenic anthraquinones present in aloe latex and aloe whole leaf extracts might pass into breast-milk; avoid using (4, 19).

Effectiveness:

POSSIBLY EFFECTIVE

Constipation. Taking aloe latex orally as a stimulant laxative seems to relieve constipation due to the cathartic effects of the anthraquinones in the aloe (4, 5, 8).

Psoriasis. Applying aloe extract 0.5% cream topically 3 times daily for 4 weeks significantly improves and increases the resolution of psoriatic plaques compared to placebo (101, 12096). Aloe extract cream seems to reduce desquamation, erythema, and infiltration (12096).

INSUFFICIENT RELIABLE EVIDENCE to RATE

Burns. Applying aloe gel topically seems to improve healing of partial thickness burns (101).

Diabetes. Preliminary evidence suggests that taking one tablespoon (15 mL) of aloe gel daily for 42 days can significantly decrease blood glucose levels in women with type 2 diabetes (12164).

Frostbite. Applying aloe gel topically seems to enhance tissue survival following frostbite injury (101).

Herpes simplex. There is some evidence that applying aloe extract 0.5% cream 3 times daily increases healing rates compared to aloe gel or placebo. Some patients heal within 5 days of use compared to 12 days with placebo (12164).

Hyperlipidemia. Preliminary evidence suggests that taking 10 mL or 20 mL of aloe orally daily for 12 weeks can reduce total cholesterol by about 15%, low-density lipoprotein (LDL) cholesterol by about 18%, and triglycerides by about 25% to 30% in patients with hyperlipidemia (12164).

Pressure ulcers. Preliminary evidence suggests that applying aloe gel does not improve the healing rate of pressure ulcers compared to management with moist saline gauze (12160).

Radiation-induced skin toxicity. Radiation therapy for cancer often causes erythema, skin desquamation, and itching. Applying 98% aloe gel three times daily throughout radiation treatment and after treatment does not seem to reduce these radiation-related side effects in patients being treated for breast cancer (12098, 12163). Applying 100% aloe gel 6-8 times per day also does not seem to reduce these radiation related side effects in people treated for other cancers. Some evidence suggests that aloe gel might prolong the time before radiation-related side effects occur (12159).

Ulcerative colitis. Preliminary evidence suggests that some patients with mild to moderate ulcerative colitis who take aloe gel 25-50 mL twice daily have significantly reduced symptoms (11984).

Wound healing. Applying an aloe gel extract (Carrington Dermal Wound Gel) to surgical wounds might actually delay wound healing (11982).

More evidence is needed to rate aloe for these uses.

Mechanism of Action:

The applicable parts of aloe are the gel and latex.

Aloe gel is the clear, jelly-like substance obtained from the thin-walled mucilaginous cells in the center of the leaf (8224, 12164). Aloe latex is an intensely bitter, yellow sap or juice produced in the peripheral bundle sheath cells just beneath the leaf skin (12164). It drains from cut leaves and dries to form solid granules, sometimes referred to as "aloes" (4). In some studies, a homogenized total leaf extract has been used which will contain constituents of both the gel and the latex (4, 8224, 12164).

Aloe latex contains up to 30% anthraquinones, including glycosides such as barbaloin (aloin), isobarbaloin, and emodin; and free anthraquinones (aglycones) such as aloe-

emodin, anthranol, and chrysophanic acid (4, 12164). It also contains resins and aloesin (4). Anthraquinones contain a tricyclic anthracene nucleus and are cleaved to form anthrones in the colon which are responsible for the potent laxative effects (16). Anthrones irritate mucous membranes, causing increased mucous secretion and peristalsis. They also increase fluid and electrolyte secretion into the lumen, causing a feeling of distention. The cathartic effects occur within 10 hours. Water and electrolyte reabsorption are inhibited (8). Aloe latex causes a loss of potassium from cells paralyzing the intestinal muscles. With continued use, increasing doses are needed for a laxative effect, and electrolyte depletion can occur (4, 8). Preliminary data suggest that anthraquinones may have mutagenic and carcinogenic effects, and may promote tumor growth, although some data are conflicting (4, 6138, 16387, 16388). Possible mechanisms include intercalation of the tricyclic anthraquinone structure into DNA, inhibition of topoisomerase II, and induction of cell signaling and growth (16387, 16388).

Aloe gel contains mono- and polysaccharides, tannins, sterols, enzymes (including cyclooxygenase, amylase, lipase, alkaline phosphatase, and carboxypeptidase), amino acids, saponins, salicylic acid, arachidonic acid, lipids, vitamins, and minerals (4, 12164). The carboxypeptidase and salicylate components of aloe gel can inhibit bradykinin, a pain-producing agent. Magnesium lactate present can inhibit histamine, which may reduce itching (101). A C-glucosyl chromone component appears to reduce topical inflammation (8223).

Aloe gel might inhibit the synthesis of thromboxane A₂, a potent vasoconstrictor and thereby increase microcirculation and prevent ischemia in wounds. This may speed the healing of burns and frostbite (101, 8224, 12161, 12162). Aloe gel also seems to have antibacterial and antifungal properties (101).

In vitro, aloe gel seems to have an antioxidant effect, and decreases levels of colorectal prostaglandin E₂ and interleukin-8. These effects may explain why aloe gel seems to help some patients with inflammatory bowel disease (12158).

Preliminary research suggests that aloe gel might also have hypoglycemic effects (11983).

In animal models, aloe seems to prevent the inhibition of wound contraction caused by silver sulfadiazine (SSD). SSD is often applied to wounds, especially burn wounds, to prevent infection. But SSD seems to slow wound healing by inhibiting contraction and epithelialization. Applying aloe in conjunction with SSD seems to improve the speed of wound healing compared to SSD alone (12097). However, there is also evidence SSD improves the rate of wound healing better than aloe when each product is used alone (12161). This suggests that there might be a synergistic effect when SSD and aloe are used together.

In animal models of frostbite, aloe gel seems to be more effective for improving tissue survival than pentoxifylline. The combination of pentoxifylline plus aloe gel seems to be better than either agent alone (12162).

When applied to psoriatic plaques, aloe extract cream seems to reduce cellular desquamation, erythema, and infiltration. This results in reduction or resolution of the plaques (12096).

Adverse Reactions:

Orally, aloe gel is well-tolerated (11984).

Aloe latex can cause abdominal pain and cramps. Long-term use or abuse of aloe latex can cause diarrhea, sometimes with blood; potassium depletion; albuminuria; hematuria; muscle weakness; weight loss; heart disturbance; and pseudomelanosis coli (pigment spots in intestinal mucosa) (4, 6138). Pseudomelanosis coli is believed to be harmless, and usually reverses with discontinuation of aloe. It is not directly associated with an increased risk of developing colorectal adenoma or carcinoma (6138). Prolonged use of high doses (1 gram/day or more) can cause hemorrhagic gastritis, nephritis, and acute renal failure (4, 8961).

Cases of acute hepatitis have been reported after ingestion of aloe leaf extracts for between 3 weeks and 5 years. This is thought to be a hypersensitivity reaction (15567, 15569, 16386).

Topically, aloe gel is generally well-tolerated (11982). Occasionally it has been associated with burning, itching, and contact dermatitis (12164).

Interactions with Herbs & Supplements:

CARDIAC GLYCOSIDE-CONTAINING HERBS: Theoretically, overuse of aloe latex can increase the risk of cardiac glycoside toxicity due to potassium depletion. Watch for possible interactions with herbs that contain cardiac glycosides such as black hellebore, Canadian hemp roots, digitalis leaf, hedge mustard, figwort, lily of the valley roots, motherwort, oleander leaf, pheasant's eye plant, pleurisy root, squill bulb leaf scales, and strophanthus seeds (19).

HERBS AND SUPPLEMENTS WITH HYPOGLYCEMIC POTENTIAL: Preliminary research suggests aloe gel might lower blood glucose levels (11983) and have additive effects when used with other herbs and supplements that also lower glucose levels. This might increase the risk of hypoglycemia in some patients. Some herbs and supplements with hypoglycemic effects include alpha-lipoic acid, bitter melon, chromium, devil's claw, fenugreek, garlic, guar gum, horse chestnut, Panax ginseng, psyllium, Siberian ginseng, and others.

HORSETAIL: Theoretically, concomitant use of aloe latex with horsetail increases the risk of potassium depletion.

LICORICE: Theoretically, concomitant use of aloe latex with licorice increases the risk of potassium depletion.

STIMULANT LAXATIVE HERBS: Theoretically, concomitant use of aloe latex with other stimulant laxative herbs may increase the risk of potassium depletion and hypokalemia. Stimulant laxative herbs include aloe, alder buckthorn, black root, blue flag, butternut bark, colocynth, European buckthorn, fo ti, gamboge, gossypol, greater bindweed, jalap, manna, Mexican scammony root, rhubarb, senna, yellow dock (19).

Interactions with Drugs:

ANTIDIABETES DRUGS

Interaction Rating = **Moderate** Be cautious with this combination
Severity = Moderate • Occurrence = Possible • Level of Evidence = D

Preliminary research suggests aloe gel might lower blood glucose levels (11983) and have additive effects when used with antidiabetes drugs. This might increase the risk of hypoglycemia in some patients. Monitor blood glucose levels closely. Some antidiabetes drugs include glimepiride (Amaryl), glyburide (DiaBeta, Glynase PresTab, Micronase), insulin, metformin (Glucophage), pioglitazone (Actos), rosiglitazone (Avandia), and others.

DIGOXIN (Lanoxin)

Interaction Rating = **Major** Do not use this combination
Severity = High • Occurrence = Probable • Level of Evidence = D

Theoretically, overuse of aloe latex increases the risk of adverse effects from the cardiac glycoside drugs due to potassium depletion. Overuse of aloe, along with cardiac glycoside drugs, can increase the risk of toxicity (19).

DIURETIC DRUGS

Interaction Rating = **Moderate** Be cautious with this combination
Severity = High • Occurrence = Possible • Level of Evidence = D

Overuse of aloe latex might compound diuretic-induced potassium loss, increasing the risk of hypokalemia (19). Initiation of potassium supplementation or an increase in potassium supplement dose may be necessary for some patients. Some diuretics that can deplete potassium include chlorothiazide (Diuril), chlorthalidone (Thalitone), furosemide (Lasix), hydrochlorothiazide (HCTZ, HydroDIURIL, Microzide), and others.

ORAL DRUGS

Interaction Rating = **Moderate** Be cautious with this combination
Severity = Moderate • Occurrence = Possible • Level of Evidence = D

Aloe latex can reduce drug absorption of some drugs due to decreased GI transit time (19).

SEVOFLURANE (Ultane)

Interaction Rating = **Moderate** Be cautious with this combination
Severity = High • Occurrence = Possible • Level of Evidence = D

There is a case of excessive intraoperative blood loss in a patient who took aloe 4 tablets/day for 2 weeks prior to surgery for hemangioma. The specific dose of aloe is unknown. Sevoflurane inhibits thromboxane A₂ and therefore might decrease platelet aggregation and prolong bleeding time. Aloe vera also seems to inhibit thromboxane A₂, prostaglandins, and therefore might also decrease platelet aggregation. Taking Aloe vera preoperatively might have contributed to excessive intraoperative bleeding (12181). Advise patients to avoid taking Aloe vera tablets at least 2 weeks prior to elective surgery.

STIMULANT LAXATIVES

Interaction Rating = **Moderate** Be cautious with this combination
Severity = High • Occurrence = Possible • Level of Evidence = D

Due to cathartic laxative effects of aloe latex, concomitant use with other stimulant laxatives might compound fluid and electrolyte loss (19).

WARFARIN (Coumadin)

Interaction Rating = **Moderate** Be cautious with this combination
Severity = High • Occurrence = Possible • Level of Evidence = D

Aloe latex has stimulant laxative effects. In some people aloe latex can cause diarrhea. Diarrhea can increase the effects of warfarin, increase international normalized ratio (INR), and increase the risk of bleeding. Advise patients who take warfarin not to take excessive amounts of aloe vera.

Interactions with Foods:

None known.

Interactions with Lab Tests:

BLOOD GLUCOSE: Preliminary research suggests aloe gel might lower blood glucose levels (11983).

COLORIMETRIC DIAGNOSTIC TESTS: Aloe latex discolors alkaline urine (red) and can interfere with diagnostic tests that depend on a color change (4).

Interactions with Diseases or Conditions:

DIABETES: Preliminary research suggests aloe gel might lower blood glucose levels (11983). Monitor blood glucose levels closely.

GASTROINTESTINAL (GI) CONDITIONS: Aloe latex is contraindicated in individuals with intestinal obstruction, acute intestinal inflammation (Crohn's disease, ulcerative colitis, appendicitis), ulcers, abdominal pain of unknown origin, nausea, and vomiting due to the irritating effect of anthranoid aloins (19).

HEMORRHOIDS: Aloe latex is contraindicated in hemorrhoids due to the possibility of stenosis, thrombosis or prolapse (19).

KIDNEY DISORDERS: High doses of aloe latex have been linked to nephritis and renal failure (8961). Theoretically, taking aloe latex orally might exacerbate kidney disorders.

SURGERY: Aloe might affect blood glucose levels. Theoretically, aloe might interfere with blood glucose control during and after surgical procedures. Tell patients to discontinue aloe at least 2 weeks before elective surgical procedures.

Dosage/Administration:

ORAL: For ulcerative colitis, 100 mL of a 50% solution has been used twice daily (11984).

For constipation, the typical dose is 100-200 mg aloe or 50 mg aloe extract taken in the evening (8).

TOPICAL: For psoriasis, aloe extract 0.5% cream applied 3 times daily has been used (12096).

Editor's Comments:

Aloe of the Bible is an unrelated fragrant wood used as incense (5).

The FDA required manufacturers to remove or reformulate all over-the-counter (OTC) laxative products containing aloe from the US market by November 5th, 2002.

The FDA previously requested safety data, but the manufacturers decided it was not worth the expense of conducting studies (8229, 8443).

The **Natural Medicines Comprehensive Database** disclaims any responsibility related to medical consequences of using any medical product. Every effort is made to ensure that the information contained in this sheet is accurate at the time it was published. Consumers and medical professionals who consult this sheet are cautioned that any medical or product related decision is the sole responsibility of the consumer and/or the health care professional.

Your legal License Agreement sets limitations on printing pages from this Database. Please refer to your License Agreement for specifics. Copyright © 1995-2009 Therapeutic Research Faculty. All rights reserved. No reproduction of this document permitted without written permission from publisher. Unlawful to download, store, or distribute content from this site.



www.naturaldatabase.com
mail@naturaldatabase.com
P.O. Box 8190, Stockton, CA 95208
PH (209) 472-2244 - Fax (209) 472-2249