Dr. rer nat. Joachim Schulze
Im Auftrag der Fleser-Pharma GmbH, Ratingen

Fachinformationen zu Atlantia Aloe Vera Produkten

Inhalt

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Grundlagen Aloe Vera

Das hervorstechende Merkmal von Atlantia Aloe Vera Produkten ist die hundertprozentige Reinheit. Mit einem neuartigen Verfahren wird das reine Aloe Vera Gel in Teneriffa aus den Blättern extrahiert und kaltstabilisiert nach Deutschland verschickt. Damit sind befürchtete Wirkungen von Anthrachinonen, die in den äußeren Blattschichten enthalten sind, ausgeschlossen. Warnungen, die in einer Publikation des Bundesinstituts für Risikobewertung enthalten sind, treffen also auf Atlantia Aloe Vera Produkte nicht zu.

[siehe Bundesinstitut für Risiko für Risikobewertung (2017), Nahrungsergänzungsmittel mit anthranoidhaltigen Aloe-Ganzblattzubereitungen bergen gesundheitliche Risiken, Stellungnahme Nr. 032/2017 des BfR vom 2. November 2017, DOI 10.17590/20171102-133629]

Der Aloe Vera werden verschiedene Wirkungen wie regenerierend, entzündungshemmend, feuchtigkeitsspendend, keimtötend, schmerzstillend zugeschrieben. Im Folgenden werden diese Eigenschaften anhand von wissenschaftlichen Studien vertieft diskutiert. Viele Marketing-Publikationen beschreiben diese Eigenschaften eindrucksvoll. Ziel der hier vorliegenden Publikation ist jedoch die Darstellung wissenschaftlicher Ergebnisse.

Dabei ergibt sich das Problem, dass die Fallzahlen in einer wissenschaftlichen Studie niedrig sein können, wenn die Wirkung stark ist. Da Aloe Vera häufig als adjuvante Therapie eingesetzt wird und damit häufig geringere Wirkungen hat als die der Haupttherapie, sind die statistisch erforderlichen Fallzahlen relativ hoch. Diese hohen Fallzahlen zu erreichen, d.h. eine hohe Zahl von Probanden zu beobachten, ist schwieriger als bei einer Studie der Haupttherapie. Daher kommt es in wissenschaftlichen Publikationen (peer reviewed papers) vor, dass die Aussagen auf einer schwachen statistischen Basis beruhen. Das bedeutet nicht, dass die Wirkung nicht da ist, sondern nur, dass die harten Bedingungen einer wissenschaftlich fundierten Studie im vorliegenden Fall nicht ganz erfüllt werden konnten.

Unmissverständlich besagen die Studien für dieses hochreine Aloe Vera, dass schädliche Nebenwirkungen nicht festgestellt werden konnten.

Atlantia | Productos Naturales de Canarias S.L.

2002 wurde in Santa Cruz de Tenerife die Firma Productos Naturales de Canaras S.L. gegründet, *ATLANTIA*® ist ihr eingetragenes Warenzeichen. Vertriebsvereinbarungen mit Apothekergesellschaften und mit Fachhändlern auf internationaler Ebene haben den Schwerpunkt Gesundheit in den Fokus gebracht. Nach der 2003 gestarteten Produktlinie Schönheit wurde 2015 die Produktlinie Gesundheit auf den Markt gebracht. Diese Produktlinie wird untermauert durch den Kontakt zu Krankenhäusern. Atlantia ist einer der Pioniere beim Einsatz von Aloe Vera-Produkte in der onkologischen Behandlung. Abteilungen für Onkologie empfehlen Atlantia Aloe Vera Produkte zur Pflege und Behandlung der Nebenwirkungen von Strahlentherapie auf der Haut. Atlantia nimmt an Ärztekongressen teil und verfolgt und initiiert Studien zur Wirksamkeit von Atlantia Aloe Vera Produkten. Die Internationalisierung und Handelsabkommen mit Vertragspartnern im Ausland werden abgeschlossen. In Deutschland hat Fleser-Pharma die Exklusivvertretung.

Aloe Vera Produkte von Atlantia

Die gerade im medizinischen Bereich besonders gewünschten Produkte von Atlantia sind Reines Aloe Vera Gel, Regestimul, Superdefense und Bialoe. Neben dem reinen Aloe Vera Gel sind die anderen Produkte mit Zusätzen versehen, die ohne Nebenwirkung sind, sich aber in der medizinischen Anwendung, insbesondere bei topisch anzuwendenden dermatologischen Salben, bewährt haben. So ist bei Regestimul zum Aloe Vera Gel ein Wildrosenöl und Sheabutter zugesetzt, bei Superdefense Sheabutter und Avocadoöl und bei Bialoe ein Ananasgeschmack.

Für alle Produkte von Atlantia gilt: Sie enthalten kein Parabene.

Bialoe

Vor kurzem hat die Marke an mehreren Beobachtungsstudien mit BIALOE Aloe Vera Saft teilgenommen, um ihren klinischen Nutzen bei Patienten mit Kopf-, Hals- und Lungenkrebs wissenschaftlich zu belegen. Die klinischen Studien wurden u.a. vom Hospital 12 de Octubre in Madrid sowie der Klinik von Barcelona durchgeführt [es liegen noch nicht alle Ergebnisse vor].

Die Ergebnisse zeigen, dass die Patienten, denen BIALOE verabreicht wurde, eine höhere Lebensqualität dokumentierten als die Kontrollgruppe, denen ein Placebo verabreicht wurde. Zum einen trug BIALOE dazu bei, die Gewichtsabnahme der Patienten zu vermeiden oder zu beenden. Zum anderen wurden bei den Patienten unter anderem Verbesserungen bei

Schmerzen, Speichelfluss, Kauen, Schlucken, Geschmackssinn, Aussprache oder Stimmung (Stimmung und Angst) dokumentiert.

Seit Jahren empfehlen die onkologischen Abteilungen renommierter Krankenhäuser in Spanien wegen ihrer regenerierenden und schmerzstillenden Eigenschaften auf der Haut und den Schleimhäuten die Nutzung (topisch und/oder oral) von Aloe.

Dr. rer.nat. Joachim Schulze 25.Oktober 2019

Indikation, Wirkung und Dosierung von Atlantia Aloe Vera Produkten

Reines Aloe Vera Gel
Indikation: Radio- bzw. Strahlendermatitis

Wirkung: Antioxidans, das die freien Radikale neutralisiert. Feuchtigkeitsspendend, regenerierend, schmerzstillend, keimtötend, entzündungshemmend.

Dosierung/Anwendung: So oft wie notwendig auf der sauberen und trockenen Haut auftragen.

Regestimul
Indikation: Tiefenreparatur von Narben nach Brustkrebsoperation, Wunden und Verbrennungen nach OP und/oder Strahlentherapie

Wirkung: Aloe Vera-Saft trägt durch die erhöhte Verflechtung von Kollagenfasern zur Hautregeneration und Angiogenese bei. Hagebuttenöl ist reich an all-trans-Retinsäuren und wichtigen Fettsäuren (Linol-,Linolen-,Ölsäuren) zur Wundheilung und Wiederherstellung der Haut. Sheabutter mit einem hohen Gehalt an Vitamin F spendet Feuchtigkeit und Geschmeidigkeit und schützt Gewebe.

Dosierung/Anwendung: Auf der sauberen Haut mit einer sanften kreisförmigen Massage auftragen bis die Regestimul Creme komplett eingezogen ist. Nicht auf offene Wunden auftragen.

Superdefense
Indikation: Adjuvans bei der Behandlung mit Strahlentherapie

Wirkung: Bessere Hydratation und Elastizität der Haut der Brüste

Dosierung/Anwendung: Auf der Haut mit einer sanften Massage morgens und abends auftragen bis die Superdefense Creme eingezogen ist. Zwei bis drei Stunden vor Beginn einer Strahlentherapie sollte die Haut mit Neutralseife gereinigt werden. Nach der Radiotherapie wird die Creme wieder morgens und abends aufgetragen, auch weiterhin wenn die Behandlung.nach 2-3 Wochen abgeschlossen ist.

Bialoe
Indikation: Vorbeugen und Behandeln von Entzündungen von Gewebe wie Ösophagitis und Mukositis

Wirkung: Antioxidans, das die Regenerierung von Gewebe erleichtert. Bialoe beruhigt die Speiseröhre und beugt einer Reizung vor, es wirkt schmerzstillend. Acemannan-Gehalt >1700 mg/l. Hoher Gehalt an Vitaminen stärkt die Abwehrkräfte, regt die Produktion der Darmflora an und bekämpft so die Begleitschäden von Antibiotika.

Dosierung/Anwendung: Die normale Dosis ist 20 ml. Sie kann pur oder mit Wasser oder Saft verdünnt eingenommen werden. Bei der Strahlentherapie wird empfohlen 60 ml Bialoe ohne Wasser oder Saft einzunehmen oder die vom Arzt verordnete Dosis. Nach dem Öffnen der Verpackung im Kühlschrank aufbewahren.

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Text der Interview Videos spanischer Ärzte zur Wirkung von Atlantia Aloe Vera

Dr. Ana Manas Rueda, Onkologin, Strahlentherapeutin
Clinica La Milagrosa

Die Bestrahlung erzeugt Läsionen ähnlich einem Sonnenbrand. Dadurch wird die Haut irritiert, ein Erythem entsteht und wird rot. Die Haut pigmentiert und schält sich wie von der Sonne. Je nachdem wie intensiv oder weniger intensiv die Wirkung ist, tritt dieser Effekt auf. Was ist das Resultat? Ein brennendes Gefühl, Jucken, ein verspanntes Gefühl, weil die Hautschicht sich ablösen wird. Ein Gefühl mangelnder Elastizität entsteht. All das kann mit Cremes gelöst werden.

Dr. Francesc Casas, Onkologe, Strahlentherapeut
Hospital Clinic de Barcelona

Das Hospital Clínic de Barcelona gilt als eines der besten in Spanien und wurde 1906 gegründet. Es ist ein Universitätskrankenhaus des Netzwerks der öffentlichen Krankenhäuser Kataloniens (XHUP), das medizinische Versorgung in den meisten Fachgebieten anbietet medizinisch und chirurgisch. Aufgrund seiner Effizienz und der Qualität seines Managements sowie seiner Berufung, eine humanisierte und avantgardistische Medizin anzubieten, erhielt das Klinikum vor Jahren die sogenannte C-Akkreditierung, was bedeutet, ein "High-Tech- und Referenzkrankenhaus" zu sein.

Bialoe verzögert das Auftreten einer Ösophagitis, die bei 80% der Patienten unvermeidlich ist. Dadurch wird die Lebensqualität während der Behandlung verbessert. Dadurch werden sehr viel seltener die Behandlungen abgebrochen und damit werden die Chancen auf Heilung nicht reduziert.

Dr. Ignacio Toscas
Clinica Teknon de Barcelona

Empfehlung vor einer Behandlung:

2-3 Stunden keine Hautcremes auftragen und neutrale Seifen verwenden, Kleidung aus Baumwolle tragen und Kunstfasern vermeiden.

Empfehlung nach einer Behandlung:

Cremes in der Regel zwischen 2- und 3-mal täglich verwenden und auch weiterverwenden, wenn die Behandlung nach 2-3 Wochen abgeschlossen ist, d.h. zu dem Zeitpunkt, zu dem die Toxizität

der Strahlentherapie im Prinzip normalerweise verschwindet. Die Radiodermatitis an der Brust stellt mit einer Häufigkeit von fast 100% eine inhärente Toxizität der Strahlentherapie dar. Was passiert, ist, dass nur ein kleiner Prozentsatz (15-20%) dieser Toxizität ernst oder schwerwiegend sein wird, aber es ist eine Toxizität, die mit fast allen Strahlentherapiebehandlungen verbunden ist, in diesem Fall auch in der Brust. Es ist ein Faktor, der eindeutig in der medizinischen Literatur veröffentlicht wurde und der sich darauf auswirken kann, ob Patientinnen die Strahlentherapie unterbrechen. Dies wiederum wirkt sich direkt auf den Erfolg der Behandlung aus. Daher ist es wichtig, die Toxizität zu kontrollieren, um solche Behandlungsabbrüche zu vermeiden. Die Wirksamkeit der Strahlentherapie basiert u.a. auf der Kontinuität der Behandlung. Je häufiger Sie die Behandlung aussetzen, desto geringer sind die Erfolgsaussichten. Außerdem wirkt sich eine schwere Hauttoxizität auf die Lebensqualität des Patienten aus, da sie Symptome von Unbehagen, Juckreiz, Brennen sowie Verspannungen in der Brust hervorruft und daher bei diesen Patientinnen eine wichtige Rolle spielt.

Dr. José E. Pérez Regadera, Onkologe, Strahlentherapeut Hospital 12 de Octobre de Madrid (Universitätshospital)

Wir haben eine Doppelblindstudie bei Patienten mit Kopf- und Halstumoren durchgeführt.

Die Hälfte der Patienten bekamen Bialoe, die andere Hälfte ein Placebo. Die Person, die wusste, wer Bialoe und wer das Placebo eingenommen hat, ist nicht Teil des normalen Dienstbetriebs. Das Ergebnis ist eindeutig: Die Patienten mit Bialoe hatten die gleiche Schleimhautentzündung, aber weniger Schmerzen und verloren weniger Gewicht. Gewicht ist wichtig, denn wenn man viel Gewicht verliert, benötigt man eher einen Krankenhausaufenthalt. Ein Krankenhausaufenthalt erhöht grundsätzlich das Infektionsrisiko aufgrund der Umgebung. Auch Veränderungen der enterokutanen Barrieren durch einen starken Gewichtsverlust können Infektionen auslösen.

Juan Chico Medrino, Co-Gründer von Atlantia und Laboratorios Kosei

Die Aloe von den Kanarischen Inseln hat eine Reihe von Vorteilen, die vor allem auf die Orographie des Terrains und auf das Klima zurückzuführen sind. Bedingungen, die zu einer hohen Konzentration an Wirkstoffen in der Pflanze selbst führen. Je nach Kulturpflanze können wir eine höhere oder niedrigere Konzentration an Wirkstoffen erreichen. Klimatische Bedingungen auf den Kanarischen Inseln begünstigen diese hohe Konzentration und der anschließende Prozess ermöglicht es, die Wirkstoffe alle so zu nutzen, dass sie die größtmögliche Funktionalität haben.

Dr. Mercedes Herrero, Gynäkologin
Hospitales HM de Madrid (große Privatklinik)

Wenn bei einer Frau Brustkrebs diagnostiziert wird, muss sie keine gute Hautqualität haben. Sie kann trockene Haut oder Haut mit einer Art Erosion haben. Es ist jedoch sehr wichtig, ein gutes ästhetisches Ergebnis der Operation zu erzielen, damit die Haut genährt wird. Ich empfehle den Patientinnnen immer, eine Feuchtigkeitscreme zu verwenden, damit sie die Operation besser vertragen. Heutzutage werden viele Tumore nicht zuerst mit einer Operation entfernt, sondern erst einmal mit einer Chemotherapie behandelt, was u.a. zu Schädigungen der Schleimhaut im Rachen führt. Die Haut der Brust leidet und anschließend wird eine Chemotherapie durchgeführt. Daher ist es sehr wichtig, dass im Rahmen der Pflege gute Feuchtigkeitsspender verwendet werden, um sicherzustellen, dass die Haut in einem guten Zustand bleibt. Es ist notwendig, sich um die Narben zu kümmern, denn obwohl wir viel Mühe in alle chirurgischen Aspekte zu stecken, heilt jede Haut auf eine andere Art und Weise. Wenn Sie dann zusätzliche Nährstoffe für die Narben wie kombinierte Aloe oder Aloe mit Hagebutte (Regestimul) bereit stellen, kann die Sichtbarkeit der Narben reduziert werden, so dass diese weniger stören. Im Laufe der Jahre verändern sich die Narben und dringen möglicherweise nach innen ein. Dann kann das ästhetische Ergebnis verbessert werden, indem durch das Einmassieren der Cremes auf der Narbe die Haut gedehnt wird und das Kollagen mehr regeneriert.

Dr. Rafael Dambrosi, Onkologe, Stahlentherapeut
Hospital 12 de Octobre de Madrid

Im Prinzip gibt es für die Patienten, die Bialoe einnehmen, keine Kontraindikation. Was sie beachten müssen, ist, dass Bialoe keinem anderen Aloe Vera Nahrungsergänzungsmittel entspricht, das in Supermärkten oder dergleichen erhältlich ist, weil die Konzentration des Wirkstoffs höher ist. Frühere Studien ergaben, dass Patienten, die möglicherweise an einer Lebererkrankung leiden, vorsichtig mit anderen Medikamenten sein sollten, aber wir haben gesehen, dass es sich um eine völlig sichere Nahrungsergänzung handelt, die für die Patienten kein Risiko und keine Kontraindikation für andere Medikamente darstellt, die sie normalerweise einnehmen, oder die die normale Behandlung für die Strahlentherapie oder für deren Behandlungsunterstützung stören können. Was wir gesehen haben, ist, dass Patienten, die Bialoe einnehmen, weniger Gewichtsverluste hatten, was sich in einer besseren Lebensqualität und weniger Gewichtsverlust während der Behandlung niederschlug. Wenn Patienten die Schmerzen besser kontrollieren können, weniger Beschwerden beim Essen haben, weniger Gewicht verlieren, sinkt auch das Risiko, ins Krankenhaus zu müssen, um unterstützende Behandlungen durchzuführen, sie zu hydratisieren und zu ernähren. Dies kommt auch dem Krankenhaus und unserer normalen Praxis zugute, und zwar mit dem geringsten Risiko.

Überblick der Wirkungen von Aloe Vera

Antientzündliche Wirkungen

Die Aloe Vera Pflanze hat ein reiches Wirkungspotential. Insbesondere aufgrund ihrer antientzündlichen Wirkung scheint es denkbar, sie auf diesem Gebiet alternativ zu den Kortikosteroiden einzusetzen. ... In der vorliegenden Studie konnten keine schwerwiegenden Nebenwirkungen durch das topisch applizierte Aloe Vera Gel festgestellt werden.

[Stamp, J. (2006) Antiinflammatorische Wirkung von Aloe vera Gel (97,5%) im UV-Erythemtest, eine monozentrische, randomisierte, placebokontrollierte Doppelblindstudie. Inaugural Dissertation Universitätshautklinik Freiburg.]

Antimikrobielle Wirkungen

...Bei der Untersuchung von fluoridfreien Zahnpasten innerhalb der vorgelegten Studie wurde bei der einzigen Zahnpasta mit Aloe Vera als Wirkstoff eine antimikrobielle Wirkung auf die Referenzstämme sichtbar. Somit kann in Übereinstimmung mit Dillip et al. (2009) eine anti-bakterielle Wirkung von Aloe Vera untermauert werden....

Siekmann, C., Zur antimikrobiellen Wirkung von Zahnpasten, (2013), Inaugural Dissertation Friedrich-Schiller-Universität Jena, S.83

Dillip G, Sham SB, Beena A. 2009. Comparative evaluation of the antim-icrobial efficacy of aloe vera tooth gel and two popular commercial toothpastes: an in vitro study. General Dent, May/June:238-241.

Aphten

Aloe Vera 2% Gel senkt bei Patienten mit RAS den Schmerz-Score und verkürzt die Ausheilungszeit Babaee et al.,2012

AWMF Leitlinie Report Aphten

Feuchtigkeitsspendende Wirkung

Aloe Vera Gel ist stark wasserhaltig und wird seit Jahrhunderten (6000 v.Chr. kann man lesen) in der Kosmetik benutzt mit der feuchtigkeitsspendenden Wirkung, so dass auf diesem Gebiet Studien sehr schwer zu finden sind, falls es welche gibt. Die feuchtigkeitsspendende Wirkung des Aloe Vera Gels ist einfach unstrittig. Diese Wirkung hilft auch vor, während und nach einer Strahlentherapie die Haut geschmeidig zu halten.

Regenerierende Wirkung

Diese Wirkung ist medizinisch besonders wichtig und wird zum Beispiel bei Nebenwirkungen der Strahlentherapie von führenden onkologischen Abteilungen vieler Kliniken (z. B. medizinische Hochschule Hannover, Klinikum Hanau) empfohlen. Kliniken in Spanien, u.a. die Universitätskliniken Madrid und Barcelona, sind gewechselt von anderen Medikamenten zu Atlantia Aloe Vera.

Cochrane Studien

Aloe vera for prevention and treatment of infusion phlebitis

Cochrane Systematic Review - Intervention Version published: 04 June 2014 *see what's new*

https://doi.org/10.1002/14651858.CD009162.pub2

View article information

Guo Hua Zheng, Liu Yang, Hai Ying Chen, Jian Feng Chu, Lijuan Mei

View authors' declarations of interest

The available evidence suggests that external application of fresh Aloe vera alone or combined with other non-Aloe vera treatment may be effective for the prevention and treatment of infusion phlebitis resulting from the intravenous therapy.

Interventions for preventing oral mucositis for patients with cancer receiving treatment

Cochrane Systematic Review - Intervention Version published: 13 April 2011 *see what's new*

https://doi.org/10.1002/14651858.CD000978.pub5

Used in 8 guidelines *View article information*

Helen V Worthington, Jan E Clarkson, Gemma Bryan, Susan Furness, Anne-Marie Glenny, Anne Littlewood, Martin G McCabe, Stefan Meyer, Tasneem Khalid,

View authors' declarations of interest

Excerpt from this study:

...Sucralfate is effective in reducing the severity of mucositis, and a further seven interventions, aloe vera, amifostine, intravenous glutamine, granulocyte-colony stimulating factor (G-CSF), honey, laser and antibiotic lozenges containing polymixin/tobramycin/amphotericin (PTA) showed weaker evidence of benefit....

Interventions for erosive lichen planus affecting mucosal sites

Cochrane Systematic Review - Intervention Version published: 15 February 2012 see what's new

https://doi.org/10.1002/14651858.CD008092.pub2

View article information

Suzanne Cheng, Gudula Kirtschig, Susan Cooper, Martin Thornhill, Jo Leonardi-Bee, Ruth Murphy

View authors' declarations of interest

In a study involving 45 ELP participants, aloe vera gel was 6 times more likely to result in at least a 50% improvement in pain symptoms compared to placebo.

Studien zitiert auf der Website von Atlantia

Anregende Wirkung auf das Immunsystem

Beschreibung von Aloeride, einem neu entdeckten Polysaccharid der Aloe Vera mit hohem Molekulargewicht (4-7 Mio. Da) und einer starken immunstimuierenden Wirkung.

J Agric Food Chem 2001 Feb, 49 (2) 1030-4

Characterization of Aloeride, a new high-molecular-weight polysaccharide from Aloe vera with potent immunostimulatory activity.

Pugh N[1], *Ross SA*, *ElSohly MA*, *Pasco DS*.

Author information

Abstract

We have characterized a new immunostimulatory polysaccharide called Aloeride from commercial aloe vera (Aloe barbadensis) juice. Aloeride is between 4 and 7 million Da, and its glycosyl components include glucose (37.2%), galactose (23.9%), mannose (19.5%), and arabinose (10.3%). At 0.5 microg/mL Aloeride increased NF-kappa B directed luciferase expression in THP-1 human monocytic cells to levels 50% of those achieved by maximal concentrations (10 microg/mL) of LPS. Aloeride induced the expression of the mRNAs encoding IL-1beta and TNF-alpha to levels equal to those observed in cells maximally activated by LPS. Acemannan, the major carbohydrate component from aloe, used at 200 microg/mL in the macrophage assay resulted in negligible NF-kappa B activation. Analysis of acemannan and Aloeride using size-exclusion chromatography suggests that the low activity of acemannan is due to trace amounts of Aloeride. Although Aloeride comprises only 0.015% of the aloe juice dry weight, its potency for macrophage activation accounts fully for the activity of the crude juice.

PMID:

11262067

DOI:

10.1021/jf001036d

[Indexed for MEDLINE]

Gewöhnliche Akne

Anregung der Wundheilung nach einer Dermabrasion mit stabilisiertem Polyethylenoxid und Aloe Vera Gel.

J Dermatol Surg Oncol 1990 May, 16(5), 460-7

The stimulation of postdermabrasion wound healing with stabilized aloe vera gel-polyethylene oxide dressing.

Fulton JE Jr[1].

Author information

Abstract

Full-face dermabrasion provided an ideal opportunity to document the effects of dressings on wound healing management. Following the procedure, the abraded face was divided in half. One side was treated with the standard polyethylene oxide gel wound dressings. The other side was treated with a polyethylene oxide gel dressing saturated with stabilized aloe vera. The polyethylene oxide dressing provided an excellent matrix for the release of aloe vera gel during the initial 5 days of wound healing. By 24-48 hours there was dramatic vasoconstriction and accompanying reduction in edema on the aloe-treated side. By the third to fourth day there was less exudate and crusting at the aloe site, and by the fifth to sixth day the reepithelialization at the aloe site was complete. Overall, wound healing was approximately 72 hours faster at the aloe site. This acceleration in wound healing is important to reduce bacterial contamination, subsequent keloid formation, and/or pigmentary changes. The exact mechanism of acceleration of wound healing by aloe vera is unknown.

PMID:

2341661

DOI:

10.1111/j.1524-4725.1990.tb00065.x

[Indexed for MEDLINE]

Brandwunden

Die Wirksamkeit der Aloe Vera bei der Heilung von Brandwunden – eine systematische Überprüfung

Burns 2007 Sep, 33,869: 713-8 Epub 2007 May 17

The efficacy of aloe vera used for burn wound healing: a systematic review.

Maenthaisong R[1], *Chaiyakunapruk N*, *Niruntraporn S*, *Kongkaew C*.

Author information

Abstract

Aloe vera has been traditionally used for burn healing but clinical evidence remains unclear. We conducted a systematic review to determine the efficacy of topical aloe vera for the treatment of burn wounds. We electronically searched relevant studies in MEDLINE, CINAHL, Cochrane Library, HealthSTAR, DARE, South-East Asia Database, Chinese Databases, and several Thai local Databases (1918-June 2004). Only controlled clinical trials for burn healing were included. There were no restrictions on any language of publication. Two reviewers independently extracted data on study characteristics, patient characteristics, intervention, and outcome measure. Four studies with a total of 371 patients were included in this review. Based on a meta-analysis using duration of wound healing as an outcome measure, the summary weighted mean difference in healing time of the aloe vera group was 8.79 days shorter than those in the control group (P=0.006). Due to the differences of products and outcome measures, there is paucity to draw a specific conclusion regarding the effect of aloe vera for burn wound healing. However, cumulative evidence tends to support that aloe vera might be an effective interventions used in burn wound healing for first to second degree burns. Further, well-designed trials with sufficient details of the contents of aloe vera products should be carried out to determine the effectiveness of aloe vera.

PMID:

17499928

DOI:

10.1016/j.burns.2006.10.384

[Indexed for MEDLINE]

Schuppenflechte

Behandlung der Psioriasis mit Aloe Vera Extrakt in einer hydrophilen Salbe: Eine mit Placebo kontrollierte Doppelblindstudie

Trop Med Int Health 1996 Aug; 1(4) 505-9

Management of psoriasis with Aloe vera extract in a hydrophilic cream: a placebo-controlled, double-blind study.

Syed TA[1], Ahmad SA, Holt AH, Ahmad SA, Ahmad SH, Afzal M.

Author information

Abstract

The purpose of this double-blind, placebo-controlled study was to evaluate the clinical efficacy and tolerability of topical Aloe vera extract 0.5% in a hydrophilic cream to cure patients with psoriasis vulgaris. Sixty patients (36M/24F) aged 18-50 years (mean 25.6) with slight to moderate chronic plaque-type psoriasis and PASI (Psoriasis Area and Severity Index) scores between 4.8 and 16.7 (mean 9.3) were enrolled and randomized to two parallel groups. The mean duration of the disease prior to enrollment was 8.5 years (range 1-21). Patients were provided with a precoded 100g tube, placebo or active (with 0.5% Aloe vera extract), and they self-administered trial medication topically (without occlusion) at home 3 times daily for 5 consecutive days per week (maximum 4 weeks active treatment). Patients were examined on a weekly basis and those showing a progressive reduction of lesions, desquamation followed by decreased erythema, infiltration and lowered PASI score were considered healed. The study was scheduled for 16 weeks with 12 months of follow-up on a monthly basis. The treatment was well tolerated by all the patients, with no adverse drug-related symptoms and no dropouts. By the end of the study, the Aloe vera extract cream had cured 25/30 patients (83.3%) compared to the placebo cure rate of 2/30 (6.6%) ($P < 0.001$) resulting in significant clearing of the psoriatic plaques (328/396 (82.8%) vs placebo 28/366 (7.7%), $P < 0.001$) and a decreased PASI score to a mean of 2.2. The findings of this study suggest that topically applied Aloe vera extract 0.5% in a hydrophilic cream is more effective than placebo, and has not shown toxic or any other objective side-effects. Therefore, the regimen can be considered a safe and alternative treatment to cure patients suffering from psoriasis.

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Hämorrhoidektomie

Wirkung der Aloe Vera Creme auf den Schmerz nach der Hämorroidektomie und auf die Wundheilung – Ergebnisse einer mit Placebo kontrollierten randomisierten Doppelblindstudie

J Altern Complement Med 2010 Jun; 16(6) 647-50 doi: 10.1089/acm.2009.0428

Effects of Aloe vera cream on posthemorrhoidectomy pain and wound healing: results of a randomized, blind, placebo-control study.

Eshghi F[1], Hosseinimehr SJ, Rahmani N, Khademloo M, Norozi MS, Hojati O.

Author information

Abstract

OBJECTIVE:

Aloe vera is an herbal medicine, which has wound healing effects in burn injury. This study assessed the effects of Aloe vera cream in reducing postoperative pain, postdefection pain, and its promotion of wound healing after open hemorrhoidectomy.

DESIGN:

A prospective, randomized, double-blind, placebo-controlled trial was conducted comparing the effects of a cream containing Aloe vera versus a placebo cream on posthemorrhoidectomy pain. The study preparations were applied by patients to the surgical site 3 times per day for 4 weeks after hemorrhoidectomy. Pain was assessed with a visual analog scale immediately postoperatively and at hours 12, 24, and 48 after surgery and at weeks 2 and 4. Wound healing was examined and evaluated at the end of 2 and 4 weeks. The use of analgesics was recorded.

RESULTS:

Forty-nine (49) patients were randomly assigned to receive aloe (n = 24) or placebo (n = 25). Patients in the topical aloe cream group had significantly less postoperative pain at hours 12, 24, and 48 hours and at 2 weeks. Aloe cream reduced the pain after defecation in 24 and 48 hours postsurgery ($p < 0.001$). Wound healing at the end of the second postoperative week was significantly greater in the aloe group compared with the placebo group ($p < 0.001$). Patients required fewer additional analgesics posthemorrhoidectomy ($p < 0.001$).

CONCLUSIONS:

Application of Aloe vera cream on the surgical site is effective in reducing postoperative pain both on resting and during defecation, healing time, and analgesic requirements in the patients compared with the placebo group.

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Bestrahlung und Verbrennungen

Radiodermatitis mit Aloe Vera Gel behandelt

(Eine umfassende Darstellung aus einem Handbuch)

Herbal Medicine: Biomolecular and Clinical Aspects. 2nd edition.

< PrevNext >

Chapter 3Evaluation of the Nutritional and Metabolic Effects of Aloe vera

Meika Foster, Duncan Hunter, and Samir Samman.

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3.1. INTRODUCTION

Aloe vera has a long history of popular and traditional use. It is used in traditional Indian medicine for constipation, colic, skin diseases, worm infestation, and infections (Heber 2007). It is also used in Trinidad and Tobago for hypertension (Lans 2006) and among Mexican Americans for the treatment of type 2 diabetes mellitus (DM; Coronado et al. 2004). In Chinese medicine, it is often recommended in the treatment of fungal diseases (Heber 2007). In Western society, *Aloe vera* is one of the few herbal medicines in common usage, and it has found widespread use in the cosmetic, pharmaceutical, and food industries. In the case of health, the therapeutic claims for the topical and oral application of *Aloe vera* cover a wide range of conditions, but few claims have been the subject of robust clinical investigation. The conditions for which clinical trials of *Aloe vera* have been conducted include skin conditions, management of burn and wound healing, constipation, DM, and gastrointestinal disorders.

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3.2. TAXONOMY AND TRADITIONAL ORIGINS

Aloe vera is one of approximately 420 species of the genus *Aloe* (Dagne et al. 2000), which is variously classified as belonging to the Asphodelaceae, Liliaceae, or Aloaceae families. Commonly known as *Aloe barbadensis* Miller, its legitimate name according to the international rules of botanical nomenclature is *A. vera (L.) Burm.f*. (Grindlay and Reynolds 1986). The geographic origin of *Aloe vera* is believed to be in Sudan, with the plant subsequently being introduced in the Mediterranean region and most other warm areas of the world (Grindlay and Reynolds 1986).

Aloe has been used extensively by the Egyptians, Assyrians, Mediterranean civilizations and in Biblical times (Grindlay and Reynolds 1986). The first authentic record of *Aloe* as a plant with healing properties is accredited to a Mesopotamian clay tablet dated at ca 2100 bce. However, the first detailed depiction of the plant's medicinal value is found in the Papyrus Ebers, an Egyptian document dated at ca 1550 bce, which sets out multiple Aloe-containing preparations for the treatment of external and internal ailments. The *Aloe vera* plant is described in detail in

the Greek Herbal of Dioscorides (ca 70 ad), and its use promoted for the treatment of wounds, hair loss, genital ulcers, and hemorrhoids (Davis 1997). *Aloe vera* was officially listed as a purgative and skin protectant by the U.S. pharmacopoeia in 1820 (Park and Lee 2006) and was clinically used in the 1930s for the treatment of radiotherapy burns to the skin and mucous membranes (Collins and Collins 1935; Manderville 1939). Until today, *Aloe* is an important traditional medicine in many countries, including China, India, the West Indies, South Africa, and Japan (Grindlay and Reynolds 1986).

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3.3. CURRENT USAGE

Aloe vera is one of the few herbal medicines widely used in Western society, with the manufacturing of *Aloe vera* extracts being one of the largest botanical industries worldwide (Grindlay and Reynolds 1986; Eshun and He 2004). In 2004, the value of the *Aloe* industry was estimated to be US$125 million for the cost of the raw *Aloe* material and US$110 billion for finished *Aloe*-containing products (International Aloe Science Council 2004). *Aloe vera* is used in the cosmetic, food, and pharmaceutical industries. In the cosmetic and toilet industry, it is used as a base material for skin moisturizers, soaps, shampoos, sun lotions, makeup creams, perfumes, shaving creams, bath aids, and many other products (Eshun and He 2004; Boudreau and Beland 2006). The food industry uses *Aloe* in the manufacture of functional foods, especially health drinks, and as a bitter agent (Saccu, Bogoni, and Procida 2001). Pharmaceutical products are available for topical applications (gels and ointments) and oral use (tablets and capsules; Hamman 2008).

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3.4. STRUCTURE AND CHEMICAL CONSTITUENTS

Aloe vera is a perennial succulent xerophyte; it has elongated and pointed leaves that are joined at the stem in a rosette pattern and that grow to about 30–50 cm in length and 10 cm in breadth at the base in the adult plant (World Health Organization 1999). The leaf is protected by a thick, green epidermis layer (skin or rind), which surrounds the mesophyll. Immediately beneath the rind are located the vascular bundles, which are composed of three types of tubular structures: the xylem (transports water and minerals from roots to leaves), the phloem (transports starch and other synthesized products to the roots), and the large pericyclic tubules (contains the yellow leaf exudate commonly referred to as “aloes,” “sap,” or “latex”; Boudreau and Beland 2006). The pericyclic portion of the vascular bundle is adherent to the rind, whereas the remainder of the vascular bundle protrudes into the mesophyll layer (Danhof 1987). The mesophyll can be differentiated into chlorenchyma cells and thinner-walled parenchyma cells. The parenchyma (filet or pulp), which is the major part of the leaf by volume, contains a clear mucilaginous gel (known as *Aloe vera* gel; Femenia et al. 1999; Femenia et al. 2003).

Aloe vera is considered to be the most biologically active of the *Aloe* species (World Health Organization 1999). More than 75 potentially active constituents have been identified in the plant (Table 3.1) including vitamins, minerals, saccharides, amino acids, anthraquinones, enzymes, lignin, saponins, and salicylic acids. The leaf exudate contains anthraquinones,

particularly barbaloin (Figure 3.1), which appear to be responsible for its bitter taste and cathartic effect (Dagne et al. 2000; Boudreau and Beland 2006). Barbaloin and other products of the phenylpropanoid pathway are commonly referred to as polyphenolic compounds. These are derived from the precursor phenolic acids, and they may act as antioxidants to inhibit free radical–mediated cytotoxicity and lipid peroxidation (Cook and Samman 1996). *Aloe vera* also contains products of the isoprenoid pathway, including carotenoids, steroids, terpenes, and phytosterols (Samman 1998). Isoprenoids can be regarded as sensory molecules because they contribute to the color and fragrance of the products in which they exist.

Class	
Anthraquinones/anthrones	Aloe-emodin, aloetic-acid, collectively known as barl ester of cinnamic acid
Carbohydrates	Pure mannan, acetylated r glucogalactomannan, gala arabinogalactan, galactog substance, xylan, and cell
Chromones	8-C-glucosyl-(2′-O-cinnam glucosyl-(S)-aloesol, 8-C-g

TABLE 3.1

Classes and Selected Examples of Phytochemicals in Aloe vera.

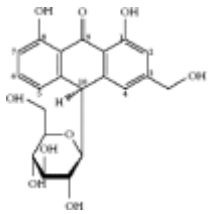

FIGURE 3.1

Structure of barbaloin (aloin), a glucoside of loe-emodin.

Aloe vera gel is rich in polysaccharides, including acemannan (partially acetylated glucomannans; Figure 3.2), which has been reported as the primary active substance in the parenchyma (t'Hart et al. 1989). However, given the number of other potentially active compounds in the plant, it is possible that the biological activities of *Aloe vera* result from the synergistic action of a variety of compounds, rather than from a single defined component (Dagne et al. 2000; Hamman 2008). Equally, the potential for constituents to exhibit antagonistic and competitive activities also influences the overall biological activity of particular *Aloe vera* preparations (Hamman 2008).

FIGURE 3.2

Structure of acemannan, a mucopolysaccharide that is extracted from *Aloe vera* leaves.

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3.5. EFFECT OF CULTIVATION AND PROCESSING

The composition of *Aloe vera* extracts differs according to the plant variety, climatic and seasonal variations, and the age of the plant (Eshun and He 2004). However, the processing method has the largest effect on the number and amount of active ingredients in a product (Wang and Strong 1995). The commercial production process of *Aloe vera* products typically involves crushing, grinding, or pressing of the whole *Aloe vera* leaf to produce juice, followed by various steps of filtration and stabilization to achieve the desired extract (Eshun and He 2004). This method provides ease of processing and higher efficiency in the recovery of the solids (Agarwala 1997), but it can result in a product that contains little or no active ingredients (Eshun and He 2004). In an analysis of 18 commercial *Aloe vera* products, only 9 exhibited quantifiable amounts of mucilaginous polysaccharide (Ross, Elsohly, and Wilkins 1997). Only three of the nine commercial *Aloe vera* gel powders sourced from leading international suppliers demonstrated satisfactory amounts of the polysaccharide Acemannan (Bozzi et al. 2007). Variable polysaccharide content in *Aloe vera* has been attributed particularly to heating the plant extract to >60°C, which results in significant changes in molecular weight (Turner et al. 2004). A further issue with the commercial production process is that during the commercial extraction of *Aloe vera* gel, it is virtually impossible to prevent the contamination by leaf exudates (Eshun and He 2004). Finally, the adulteration of *Aloe vera* products using fillers such as maltodextrin, glucose, glycerin, and malic acid represents a major concern for the *Aloe vera* market (Bozzi et al. 2007). As a counter to such misrepresentations in the industry, the International Aloe Science Council developed a certification program that validates the quality and quantity of *Aloe vera* in approved commercial products.

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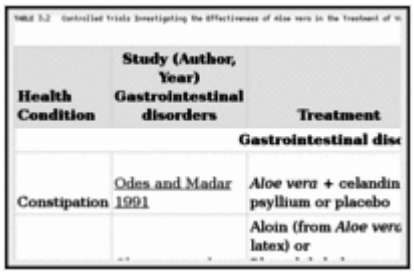
3.6. HEALTH EFFECTS: THE SCIENTIFIC EVIDENCE

The therapeutic claims for *Aloe vera* cover a broad range of conditions. It is commonly used topically in the treatment of dermatological and wound healing conditions. The oral application of the *Aloe vera* latex is promoted as a laxative, whereas gel and whole-leaf oral preparations have been variously recommended for use as an adjunct to chemotherapy treatment and to ameliorate diverse disorders such as DM, infectious diseases, metastatic cancer, and ulcerative colitis. The clinical use of *Aloe vera* is supported primarily by anecdotal evidence and case reports. The number of clinical trials exploring its effectiveness has begun to increase (Table 3.2); however, a standardization of methodological trial quality has yet to be achieved.



Health Condition	Study (Author, Year) Gastrointestinal disorders	Treatment
		Gastrointestinal dis
Constipation	Odes and Madar 1991	*Aloe vera* + celandin psyllium or placebo
		Aloin (from *Aloe vera* latex) or

TABLE 3.2

Controlled Trials Investigating the Effectiveness of *Aloe vera* in the Treatment of Various Health Conditions in Humans.

3.6.1. Topical Applications

The first case report of the beneficial effects of *Aloe vera* in the treatment of skin and wound healing was published in 1935, with fresh whole-leaf extract reported to provide rapid relief from the itching and burning associated with severe roentgen (radiation) dermatitis and complete skin regeneration (Collins and Collins 1935). Numerous subsequent reports have explored the role of topical *Aloe vera* administration in skin conditions and wound healing management, including psoriasis, dermatitis, oral mucositis, burn injuries, and surgical wounds.

3.6.1.1. Dermatological Conditions

Results of a number of clinical trials suggest that *Aloe vera* is positively indicated in the treatment of skin disorders. A trial of wound healing management after the full-faced dermabrasion of patients with acne vulgaris demonstrated that the saturation of a standard polyethylene wound gel dressing with *Aloe vera* significantly reduced time to reepithelization compared to use of the standard dressing alone (Fulton 1990). In a randomized, double-blind, controlled trial of *Aloe vera* or placebo cream in 60 patients with chronic psoriasis, the cure rate in the *Aloe vera* group was 83% (with no relapses at 12 months of follow-up) compared to only 7% in the placebo group (Syed et al. 1996). Converse results were reported in a later trial examining the efficacy of a commercial *Aloe vera* gel preparation in the treatment of slight to moderate psoriasis vulgaris. The *Aloe vera* or placebo gel was applied twice daily for 4 weeks to symmetrical test lesions using an intraindividual right/left comparison study design. The sum score of erythema, infiltration, and desquamation significantly favored the placebo treatment (Paulsen, Korsholm, and Brandrup 2005).

Further, despite case reports (Loveman 1937) and animal studies (Rowe 1940) to the contrary, *Aloe vera* extracts have either no effect or less effect than other topical treatments in acute radiation dermatitis. In the first of two randomized controlled trials in 194 women receiving radiation therapy for breast cancer, the topical self-administration of *Aloe vera* gel to radiation-exposed skin produced no difference in the severity of the dermatitis compared to a placebo gel. In the second study, the placebo group was replaced with a “no-treatment” group to account for any unintended beneficial effects of the inert carrier gel used as the placebo in the first trial. The results failed to show any benefit of the *Aloe vera* gel in preventing radiation-induced dermatitis (Williams, Burk, and Loprinzi 1996). Similarly, in 70 radiation

therapy patients who were randomized to receive either commercially available *Aloe vera* gel or no treatment (other than mild soap), *Aloe vera* did not significantly protect against radiation-induced skin changes (Olsen et al. 2001). In a study involving 225 patients undergoing radiation therapy, the topical application of *Aloe vera* gel thrice a day throughout the treatment and for an additional 2 weeks after the completion of radiation therapy was significantly less efficacious in reducing the treatment-related side effects than aqueous cream (Heggie et al. 2002). In the pediatric setting, 45 patients undergoing radiation therapy for various diagnoses were treated with either an *Aloe* vera–based gel or a anionic polar phospholipid (APP)-based cream applied symmetrically within the irradiated field after each session. The authors reported statistically significant results favoring the APP-based cream on a number of skin assessment variables, including dryness, comfort, erythema, and peeling. The study was limited by a lack of description of randomization and blinding and the inclusion of patients with varied diagnoses, radiotherapy sites, and cancer treatment regimes (Merchant et al. 2007).

A 20 mL "swish and swallow" of *Aloe vera* solution (94.5% aloe juice) four times daily in addition to conventional treatment (baking soda mouth rinse, Benadryl and nystatin combination mouth-washes, and viscous lidocaine, as needed) did not improve radiation-related mucositis in patients with head-and-neck neoplasms. Study limitations included a small sample size, patient heterogeneity, a large distribution of primary cancer sites, and an inability to monitor compliance (Su et al. 2004).

3.6.1.2. Burn Injuries

Aloe vera has long been associated with the treatment of burns. With the advent of nuclear power, the U.S. government conducted research on the ability of *Aloe vera* to treat thermal and radiation burns with the aim of introducing its use into the military (Ashley et al. 1957). In 1959, the U.S. Food and Drug Administration approved the use of *Aloe vera* ointment as an over-the-counter medication for healing burns on the skin (Park and Lee 2006).

Heck et al. (1981) randomly assigned 18 patients with second-degree burns to be treated, after debridement, with gauze containing either *Aloe vera* cream or Silvadene ointment. The *Aloe vera* group had a mean healing time of 13 days compared to 16 days in the Silvadene group; however, the difference did not reach statistical significance. In a recent meta-analysis, a statistically significant benefit of *Aloe vera* for the treatment of burns was demonstrated. Using the duration of wound healing as an outcome measure, the meta-analysis of the efficacy of *Aloe vera* in burn wound healing concluded that *Aloe vera* treatments reduced healing time by approximately 9 days compared to conventional treatment groups (p = .006; Maenthaisong et al. 2007). Four controlled clinical trials (with a total of 371 subjects) met the inclusion criteria for the review. The four studies differed in their study design, intervention, and reported outcomes. The *Aloe vera* preparations included fresh *Aloe vera* mucilage (Thamlikitkul et al. 1991), gauze saturated with 85% *Aloe vera* gel (Visuthikosol et al. 1995), *Aloe vera* cream (Akhtar and Hatwar 1996), and 1% *Aloe vera* powder wrapped with Vaseline gauze (Sun et al. 1994). None of the studies standardized the amount of active *Aloe vera* ingredients administered. The outcomes measured were wound healing time, described as time to complete epithelization (Visuthikosol et al. 1995) or not defined (Akhtar and Hatwar 1996); the success rate of wound healing (Thamlikitkul et al. 1991); and epithelization rate (Sun et al. 1994). Maenthaisong et al. (2007)

note that, due to differences in *Aloe vera* products and outcome measures used, it is difficult to draw a specific conclusion regarding the effect of *Aloe vera* on burn healing. Nonetheless, the results of the review combined with other evidence suggest that *Aloe vera* preparations at a range of different doses are beneficial in the treatment of burn wounds.

3.6.1.3. Surgical Wound Healing

Aloe vera has been reported to accelerate postoperative wound healing in periodontal flap surgery (Payne 1970). Conversely, a randomized controlled trial involving women with complications of wound healing after gynecological surgery found that the mean healing time in the conventional care group (53 days) was significantly shorter ($p < .003$) than in the *Aloe vera* gel group (83 days; Schmidt and Greenspoon 1991). The results of the trial must be interpreted with caution, as only 21 of 40 women completed the study and more patients were lost to follow-up from the gauze group ($n = 12$) than the *Aloe vera* group ($n = 5$). An intention-to-treat analysis was not performed (meaning that patients lost to follow-up were excluded from the analysis), which potentially introduces significant bias into the results.

3.6.2. Oral Applications

Therapeutic claims promote the use of oral *Aloe vera* in the treatment of a wide range of conditions, such as alopecia, Alzheimer's disease, congenital heart failure, depression, glaucoma, hemorrhoids, hepatitis, multiple sclerosis, and varicose veins; however, scientific investigations of such claims are limited. Claims that have been the subject of clinical trials include the oral application of *Aloe vera* preparations in the treatment of constipation, DM, metastatic cancer, and ulcers and inflammation of the gastrointestinal tract.

3.6.2.1. Laxative

Aloe vera latex is commonly used in the treatment of constipation (de Witte 1993); the laxative effect of the anthraquinone glycosides found in *Aloe vera* latex is well established (Ulbricht et al. 2008). In a double-blind, randomized, controlled trial of 28 healthy adults, aloin was reported to have a laxative effect compared to a placebo that was stronger than the stimulant laxative phenolphthalein (Chapman and Pittelli 1974). In subjects with chronic constipation, a novel preparation containing *Aloe vera*, celandine, and psyllium was found to improve a range of constipation indicators (bowel movement frequency, consistency of stools, and laxative dependence) in a 28-day double-blind trial; however, the effect of *Aloe vera* alone was not investigated in this study (Odes and Madar 1991). *Aloe vera* laxative preparations have been approved by the German Commission E governmental regulatory agency for use in the treatment of constipation as a second-line agent; however, *Aloe* latex is no longer recognized as an over-the-counter drug by the U.S. Food and Drug Administration due to a lack of sufficient data to establish its safety for use as a laxative.

3.6.2.2. Diabetes Mellitus

Aloe vera is a traditional remedy for diabetes mellitus (DM) in many parts of the world, including Latin America (Coronado et al. 2004) and the Arabian Peninsula (Yeh et al. 2003). Some evidence in humans and animals suggests that *Aloe vera* is able to alleviate the chronic hyperglycemia and

perturbed lipid profile that are characteristic of DM, which are major risk factors for cardiovascular complications in the disease.

Agarwal (1985) reported hypoglycemic and hypolipidemic effects from the long-term dietary administration of 100 g of an *Aloe vera* gel preparation combined with 20 g of psyllium seed husks. The study involved 5000 patients aged 35–65 years with atheromatous heart disease, a population that included 3167 noninsulin-dependent diabetic patients. Marked reductions were noted in serum cholesterol, triglycerides, and total lipid levels, along with an increase in high-density lipoprotein (HDL) cholesterol. All but 177 of the diabetic patients demonstrated a normalization of fasting and postprandial blood glucose levels that necessitated the withdrawal of all oral hypoglycemic agents by the end of 2 months of therapy. A beneficial effect of *Aloe vera* gel alone on blood glucose and lipid parameters in diabetic subjects also has been demonstrated. In the first of two related clinical trials, 72 diabetic women without drug therapy were administered one tablespoon of *Aloe vera* gel or placebo for 6 weeks. Blood glucose and serum triglyceride levels were significantly decreased with *Aloe vera* treatment, although cholesterol concentrations were unaffected (Yongchaiyudha et al. 1996). In the second trial, the effects of *Aloe vera* gel or placebo in combination with glibenclamide (a commonly prescribed antidiabetic medication) were investigated, similarly resulting in significant reductions in blood glucose and serum triglyceride concentrations in the *Aloe vera* group (Bunyapraphatsara et al. 1996).

In addition to gel preparations, *Aloe vera* latex has been shown to lower fasting blood glucose levels in case studies of five patients with noninsulin-dependent DM (Ghannam et al. 1986). Further, the whole-leaf *Aloe vera* extract administered to 60 patients with hyperlipidemia in a 12-week controlled clinical trial resulted in significantly decreased levels of total serum cholesterol, triglycerides, and low-density lipoproteins (LDLs; Nasiff, Fajardo, and Velez 1993). However, although studies in humans provide promising preliminary data that denote a beneficial effect of *Aloe vera* in diabetes and associated cardiovascular complications, effects have yet to be confirmed by controlled clinical trials that are both randomized and blinded to subjects and investigators.

Animal studies exploring the effects of *Aloe vera* on blood glucose and lipids have demonstrated less consistent results likely due to different combinations of animal models and *Aloe vera* preparations used. In rodent models, both the chronic administration of *Aloe vera* latex to alloxan-induced diabetic mice (Ajabnoor 1990) and *Aloe vera* gel to streptozotocin (STZ)-induced diabetic rats (Rajasekaran et al. 2004) resulted in significant reductions in fasting blood glucose. Conversely, *Aloe vera* gel was reported to increase plasma glucose levels in alloxan-induced diabetic rats (Koo 1994). More recently, the antidiabetic effects of processed *Aloe vera* gel were investigated in mice exhibiting diet-induced obesity (DIO), an animal model that has been shown to demonstrate metabolic abnormalities that closely resemble those found in human noninsulin-dependent DM, including hyperglycemia, obesity, and insulin resistance (Kim et al. 2009). Oral administration of the gel reduced circulating blood glucose concentrations to a normal level, significantly decreased plasma insulin, and lowered triglyceride levels in the liver and plasma of the DIO mice. Similarly, *Aloe vera* gel extract has been shown to normalize the fasting blood glucose and plasma insulin levels and reduce the concentrations of cholesterol,

triglycerides, and free fatty acids in the plasma, liver, and kidney of STZ-induced diabetic rats (Rajasekaran et al. 2006).

3.6.2.3. Metastatic Cancer

The concomitant oral administration of 1 mL twice a day of *Aloe vera* tincture (10% *Aloe vera* and 90% alcohol) and 20 mg/day of melatonin compared to melatonin alone was studied in 50 patients with locally advanced or metastatic solid tumors for whom no other effective standard therapy was available. In the group treated with *Aloe vera* and melatonin combined, 12 of 24 patients had their disease stabilized compared to only 7 of 26 patients in the melatonin-only group. In addition, the percentage of individuals surviving 1 year was significantly higher with *Aloe vera* plus melatonin compared with melatonin treatment alone (Lissoni et al. 1998).

3.6.2.4. Ulcers and Inflammation of the Gastrointestinal Tract

Aloe vera preparations are widely promoted for the treatment of gastrointestinal disorders, including ulcers and inflammatory bowel disease, but evidence of their effectiveness is inconsistent. In 1963, clinical evidence of the successful use of *Aloe vera* gel (administered in a heavy liquid petrolatum emulsion) was reported for the treatment of 12 patients with peptic ulcers (Blitz, Smith, and Gerard 1963). In a 3-month randomized controlled trial of 58 patients with irritable bowel syndrome, no evidence was found to suggest that *Aloe vera* has any beneficial effect (Davis et al. 2006).

A recent attempt to formally evaluate the efficacy and safety of *Aloe vera* gel in the treatment of ulcerative colitis produced encouraging, although not conclusive, results. In a randomized controlled trial of 44 subjects with mild to moderately active ulcerative colitis, the oral administration twice daily of 100 mL *Aloe vera* gel to 30 subjects for 4 weeks generated clinical remission and improvement more often than in the placebo group (14 subjects); however, despite positive trends the results failed to reach statistical significance. The simple clinical colitis activity index and histological scores showed small statistically significant improvements in the *Aloe vera* group. Six patients (20%) who were given *Aloe vera* gel and three patients (21%) who were given placebo withdrew from the study because of deterioration or a failure to improve sufficiently but were included in the statistical analyses. The *Aloe vera* preparation used in this study was reported to contain a high proportion (>95%) of *Aloe vera* pulp, and the dose administered was the maximum recommended by the manufacturers. No adverse effects were observed during the trial, and the authors note that a higher dose may have been more efficacious and suggest the need for further, larger controlled trials of *Aloe vera* gel in active ulcerative colitis and in the maintenance of remission (Langmead et al. 2004).

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3.7. ACTIVE INGREDIENTS AND MECHANISMS OF ACTION

A large number of biological activities have been ascribed to *Aloe vera* to explain its purported health benefits, including antimicrobial, anti-inflammatory, lipid and glucose lowering, antiproliferative, immunostimulatory, and antioxidant functions. A number of potentially active ingredients in the latex and gel of *Aloe vera* have been identified; however, much has yet to be determined about their mechanisms of action. Further studies are also required to determine

the active properties of numerous other *Aloe vera* constituents and to explore the competitive or synergistic actions of particular combinations of ingredients.

3.7.1. Active Latex Constituents

The major C-glycosides, barbaloin (Figure 3.1) and isobarbaloin, have been shown to be the principal agents responsible for cathartic and other effects of *Aloe vera* latex in humans and animals. Both barbaloin and isobarbaloin undergo decomposition in the large intestine to form the active metabolites aloe-emodin-9-anthrone and aloe-emodin (Figure 3.3), which induce laxation via multiple mechanisms. In vitro and in vivo studies in rats demonstrated that aloe-emodin-9-anthrones reduce the absorption of water from the intestinal lumen by inhibiting the activity of Na^+, K^+-adenosine triphosphatase (ATPase) and stimulate water secretion by increasing the paracellular permeability across the colonic mucosa (Ishii, Tanizawa, and Takino 1990). Secretion of water into the lumen by a prostaglandin-dependent mechanism has also been reported (Capasso et al. 1983). The net result is a reduction in water absorption and the formation of softer stools (Boudreau and Beland 2006). Aloe-emodin has been suggested to have antiangiogenic properties; it has been demonstrated to be a potent inhibitor of urokinase secretion and tubule formation of endothelial cells, both key events in angiogenesis (Cárdenas, Quesada, and Medina 2006).

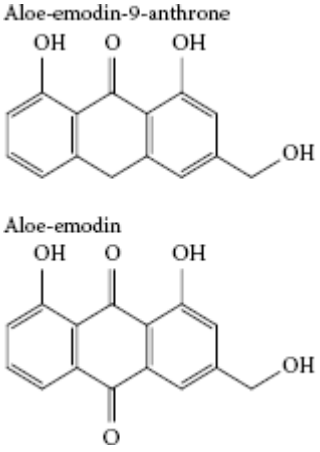

FIGURE 3.3

Aloe-emodins (anthraquinones) isolated from *Aloe vera*.

3.7.2. Active Gel Constituents

Polysaccharides, particularly mannose-containing polysaccharides, cellulose, and pectic polysaccharides, comprise the major part of *Aloe vera* gel. Acetylated glucomannan is primarily responsible for the gel's mucilaginous properties (Hamman 2008) and has been found in vitro and in animal studies to modulate immune function (through macrophage activation and cytokine production) and accelerate wound healing (Ulbricht et al. 2008). Veracylglucan B and veracylglucan C (Figure 3.4), two maloyl glucans isolated from *Aloe vera* gel, have been demonstrated in vitro to have potent anti-inflammatory effects, although their effects on cell proliferation appear antagonistic (Esua and Rauwald 2006).

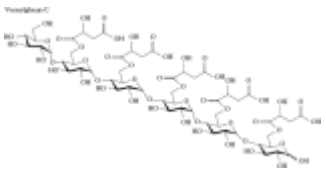

FIGURE 3.4

Veracylglucan C: a maloyl glucan isolated from *Aloe vera*.

Among the nonpolysaccharide gel constituents, salicylic acid and other antiprostaglandin compounds may contribute to the local anti-inflammatory activity of *Aloe vera* via the inhibition of cyclooxygenase (Ulbricht et al. 2008). Potent antioxidant effects, including the ability to scavenge superoxide anions, have been attributed to the caffeoyl group of isorabaichromone, a derivative of aloesin (C-glycosylated 5-methylchromone). Five phytosterols have been isolated from *Aloe vera* gel based on their ability to decrease the HbA1c level in a mouse model (*db/db*) of type 2 DM. Each of the phytosterols, namely lophenol, 24-methyl-lophenol, 24-ethyl-lophenol, cycloartanol, and 24-methylene-cycloartanol, was shown to significantly decrease fasting blood glucose levels in the *db/db* mice compared to controls at a dose of 1 μg/day (Tanaka et al. 2006). Phytosterols are not extensively absorbed from the intestine but can bind cholesterol and prevent it from being absorbed (Ralph and Provan 2000). Phytosterols have been shown to lower plasma cholesterol concentrations, including the atherogenic LDL fraction (Moghadasian and Frohlich 1999). The mechanisms of action by which *Aloe vera* modulates blood glucose are unknown, but it has been suggested that it may interact with insulin. It has been hypothesized that *Aloe* stimulates insulin synthesis or its release from pancreatic β cells (Ajabnoor 1990). Processed *Aloe vera* gel was found to suppress the expression of the adipogenic genes *SREBP-1a, FAS*, and *GPAT*, suggesting that the gel improves insulin resistance by the reducing toxic effects of lipids in the liver (Kim et al. 2009).

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3.8. SAFETY AND EFFICACY

Determining the safety and efficacy of *Aloe vera* is difficult due to the lack of standardization of commercially available *Aloe vera* preparations. Similarly, the need for a more detailed understanding of the plant's active components makes it difficult to evaluate the optimal doses of particular *Aloe vera* preparations for the treatment of specific disorders.

Despite these challenges, a recent systematic review of *Aloe vera* by the Natural Standard Research Collaboration concluded that topical application of *Aloe vera* gel or extract is safe for the treatment of mild to moderate skin conditions, burns, wounds, and inflammation (Ulbricht et al. 2008). In terms of efficacy, reasonable evidence in humans supports the topical use of *Aloe vera* for the treatment of burn wounds. Evidence for its use in psoriasis, dermatitis, and surgical wound healing is conflicting.

The Natural Standard Research Collaboration further concluded that the oral use of *Aloe vera* gel for its potential hypoglycemic effects and the short-term use of oral *Aloe* latex as a laxative are possibly safe; however, prolonged use of the latex is likely to be unsafe due to a theoretical risk

of dehydration and electrolyte imbalance (Ulbricht et al. 2008). The cathartic properties of anthraquinone glycosides found in *Aloe vera* latex are well established. However, given the potential safety concerns with its use, there is a need for further clinical trials to investigate the benefits of latex administration over conventional laxative treatments. Although inconclusive, there is some preliminary evidence of a favorable effect of *Aloe vera* gel taken orally in type 2 DM, ulcerative colitis and the stabilization of metastatic cancer.

3.8.1. Toxicology

Until now there are no published controlled in vivo toxicology studies of *Aloe vera* in humans (Steenkamp and Stewart 2007). In animal studies, *Aloe vera*-derived ingredients were not found to be toxic in acute oral studies using mice and rats. In mice, the LD_{50} was >200 mg/kg and >80 mg/kg in parenteral and intravenous studies, respectively, whereas in rates the corresponding LD_{50} values were >50 mg/kg and >15 mg/kg, respectively. No significant toxicity was seen with acemannan given intravenously or intraperitoneally at 4-day intervals over 30 days at maximum dose levels of 200 mg/kg in mice and 50 mg/kg in rats (Cosmetic Ingredient Review Expert Panel 2007). The no observed adverse effect level (NOAEL) for whole-leaf *Aloe vera* powder was 87.7 and 109.7 mg/kg/day in male and female rats, respectively (Matsuda et al. 2007). Life-long *Aloe vera* gel ingestion (contributing 1% of total diet) in rats was demonstrated to produce no harmful effects or deleterious changes (Ikeno et al. 2002). In contrast, chronic ingestion of 100 mg/kg *Aloe vera* (extracted in ethanol) given orally in rats produced reproductive toxicity, significant sperm damage, inflammation, and mortality compared to control animals (Shah et al. 1989). In a recent safety assessment of *Aloe*, the Cosmetic Ingredient Review Expert Panel (2007) concluded that *Aloe* latex, but not the polysaccharide material derived from the inner gel, is cytotoxic.

3.8.2. Carcinogenicity

Tumor-promoting and antimutagenic activities have been ascribed to the latex of *Aloe vera* (Boudreau and Beland 2006). Multiple in vitro studies have demonstrated the potential genotoxicity of anthraquinones; however, anthraquinones in *Aloe vera* do not appear to be well absorbed, and four in vivo studies resulted in no genotoxicity from aloe-emodin and emodin (Brusick and Mengs 1997). Anthranoid-containing laxatives such as aloe-emodin have been suggested to cause colorectal cancer (Siegers et al. 1993); however, recent research has not shown any correlation. A 2-year carcinogenicity study in rats reported that whole-leaf *Aloe* powder was not carcinogenic at nontoxic dose levels in the colon (Yokohira et al. 2009). In many large epidemiological studies in humans, long-term laxative abuse has not been associated with colorectal cancer (Nusko et al. 2000; Park et al. 2009).

3.8.3. Photoxicity

Phototoxicity of aloe-emodin has been demonstrated in animal studies; however, phototoxicity was not observed in several clinical studies in humans using amounts of aloe-emodin that are commonly found in commercially available *Aloe vera* preparations (Cosmetic Ingredient Review Expert Panel 2007).

3.8.4. Adverse Effecrs

In the reviewed clinical trials, no serious adverse reactions were reported following *Aloe vera* administration. Three patients experienced allergic reactions after the topical application of an *Aloe vera* preparation (Williams, Burk, and Loprinzi 1996). In case reports, hypersensitivity and allergic responses to *Aloe vera* are the most commonly described adverse effects of *Aloe vera* use. The topical application of *Aloe vera* gel has resulted in contact dermatitis, and oral use may cause diarrhea or vomiting (Morrow, Rapaport, and Strick 1980; Ernst 2000; Wang et al. 2003; Chinnusamy et al. 2009). Many of these reactions appear to be associated with anthraquinone contaminants of the gel product.

In rare cases, severe adverse effects have been associated with the oral application of *Aloe vera*. Induced acute toxic hepatitis has been observed in four instances of *Aloe vera* ingestion (Luyckx et al. 2002; Rabe et al. 2005; Kanat, Ozet, and Ataergin 2006). In one case, a 47-year-old man presented with acute oliguric renal failure and liver dysfunction after consuming high oral doses of *Aloe vera* (Luyckx et al. 2002). *Aloe vera* was also believed to be the cause of hypothyroidism in one female patient (Pigatto and Guzzi 2005) and Henoch–Schonlein purpura in another after an *Aloe vera* remedy juice was taken for back pain (Evangelos, Spyros, and Spyros 2005).

3.8.5. Contraindications and Drug Interactions

Allergy: Use of *Aloe vera* preparations should be avoided in individuals with a known allergy to plants of the Liliaceae family (garlic, onions, and tulips; Ulbricht et al. 2008).

Pregnancy: Use of *Aloe vera* as a laxative during pregnancy may pose potential teratogenic and toxicological effects on the embryo and fetus (World Health Organization 1999; Ulbricht et al. 2008).

Renal or cardiac disease: Prolonged use of *Aloe vera* latex has been associated with watery diarrhea resulting in electrolyte imbalance (Cooke 1981; Boudreau and Beland 2006), and anecdotal reports suggest that the increasing loss of potassium may lead to hypokalemia. Therefore, the *Aloe vera* latex is contraindicated in patients with a history of renal or cardiac disorders.

Drug interactions: Potential interactions have been suggested for *Aloe vera* and drugs that may alter electrolyte balance, such as thiazide diuretics and corticosteroids. Possible hypokalemia-related arrhythmia suggests a potential herb–drug interaction with cardiac glycosides. Caution is warranted in patients taking hypoglycemic agents as interactions with *Aloe vera* gel have been reported (Boudreau and Beland 2006). There exists a case report of a 35-year-old woman who lost 5 L of blood during surgery as a result of a possible herb-drug interaction between *Aloe vera* and sevoflurane, an inhibitor of thromboxane A_2 (Lee et al. 2004).

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3.9. DRUG/VITAMIN BIOAVAILABILITY

Aloe vera gel has been shown to enhance vitamin C and E's bioavailability in a double-blind, randomized, controlled trial (Vinson, Al Kharrat, and Andreoli 2005). The authors suggest that

Aloe vera gel protects against the degradation of vitamins in the intestinal tract and the gel polysaccharides may bind to vitamins and thereby slow down their absorption rate.

Aloe vera gel has been shown to significantly increase the transport of insulin in a cell model, and limited information suggests that if coadministered, it may also enhance the intestinal absorption of other poorly absorbed drugs (Hamman 2008).

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3.10. RESEARCH NEEDS

Analysis of the potential efficacy of *Aloe vera* in the treatment of particular disorders is complicated by differences in *Aloe vera* preparations, their means of administration, and the animal model or study design employed in individual studies. Research on standardized methodological quality is, therefore, needed to identify which *Aloe vera* components, individually or in combination, exhibit therapeutic properties and the exact mechanisms by which they act. Controlled in vivo toxicology and safety studies of *Aloe vera* preparations in humans are also required.

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3.11. CONCLUSIONS

Despite its long history of use, there remains a lack of consistent scientific evidence to support many of the therapeutic claims for *Aloe vera*. Evidence of efficacy is strongest for the laxative effects of *Aloe vera* latex, however, whether the latex is more efficacious than conventional laxative treatments has not yet been determined, and the anthraquinones in the latex are associated with considerable risks. The topical application of *Aloe vera* gel is likely safe and demonstrates overall efficacy in healing burn wounds, whereas some promising preliminary evidence suggests that the oral use of the gel may have beneficial effects in lowering blood glucose levels in type 2 DM, stabilizing metastatic cancer, and treating mild to moderate ulcerative colitis. Further research in humans is required to confirm these effects.

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