

Clinical abstracts

Skin disorders

Management Of Psoriasis With Aloe Vera Extract In A Hydrophilic Cream: A Placebo-Controlled, Double-Blind Study

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Trop Med Int Health Vol 1, ISS 4, 1996, P505-9

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.

Antipruritic & Fungicidal Effects Of Aloe

Drs. Ruth Sims and Eugene Zimmermann, two research Ph.D.'s studying the effects of an 80% Aloe vera solution for its anti-pruritic and fungicidal effects against a number of common maladies such as sunburn, skin rashes, poison ivy, and pruritus ani and pruritus vulvae. An effective antipruritic stops itching and irritation, a fungicide as the name implies

effectively kills fungus, the Aloe solution accomplished both tasks to maximum positive effect.

Dr. Jean Setterstrom tested Aloe against the same microorganisms. In that test, using the same criteria, Dr. Setterstrom found Aloe vera gel even more effective than those of the Sims/Zimmermann tests. In fact, the Aloe killed the same microbes in lower concentrations on an even shorter time scale (16 hours versus 24 hours for the Sims/Zimmermann tests).

Dr. Setterstrom also tested Aloe against a strep bacteria strain called *Streptococcus mutans*. In her testings, Dr. Setterstrom allowed the Strep mutans to form a culture on the enamel then introduced the Aloe vera solution at a relatively low level of just 40%. Even at that level, after just a few hours, all the plaque formed by the Strep mutans had fallen to the bottom of the tubes – literally dropped off!

Dermabrasion-Loo-Punch-Excision Technique For Treatment Of Acne-Induced Osteoma Cutis

Fulton JE Jr

J Dermatol Surg Oncol 13(6):655-9 1987 Jun

Three patients with chronic osteoma cutis secondary to acne vulgaris were treated with the dermabrasion-Loo-punch-excision technique. Under regional nerve block with lidocaine-bupivacaine (50:50) a uniform dermabrasion was performed across the entire face, including the hairline and 1 cm below the jawline. This exposed the foci of osteoma cutis. Then the appropriate sized Loo punch (usually the 2.0- or the 2.5-mm punch) was used to excise the bluish-gray miliary lesions. The majority of the foci were removed in one operation. Following excision, the lesions were closed with 7-0 prolene suture. To pre-vent crust formation postoperatively, Aloe-vera-soaked polyethylene oxide gel dressings (Vigilon) were changed twice daily following an ice water compress. Sutures were removed rapidly in 5 to 7 days to prevent the appearance of suture lines. Although one patient required an additional procedure, the cosmetic results were excellent. Only a few small residual blue “dot” lesions remained in these three cases.

Study Of Possible Pharmacological Actions Of Aloe Arborescens Miller On Mouse, Hamster & Human Skin

Yamamoto M; Sugiyama K; Yokota M; Maeda Y; Inaoka Y

Sch. Pharmaceutical Sci., Univ. Shizuoka

Japanese Journal of Toxicology and Environmental Health 39 (5). 1993. 409-414

Aloenin is a major constituent of Aloe arborescens Miller which has been utilized in Japan as a folk remedy for burns, insect bites, and skin reaction. In the present study, the effects of aloenin on sebaceous gland size, hair growth and damaged skin were investigated. Aloenin significantly promoted hair growth in depilated mice, but did not affect sebaceous gland function in the hamster ear. Aloenin also had recuperative effects on tape-stripped human skin as determined from parameters such as the shape factor of corneocytes, thick abrasion, nuclear ghosts and cellular arrangement of corneocytes. Since aloenin is effective in healing damaged skin, it may be useful for the treatment of dermatological conditions in the future.

Purification, Glucose-6-Phosphate Dehydrogenase Inhibition, & HPLC Analysis Of Four 1,8-Dihydroxyanthrones

Rychener M; Steiger W

Pharm Acta Helv 64(1):8-15 1989

With regard to the examination of their antipsoriatic properties, four 1,8-dihydroxyanthrones were prepared in a purity greater than 99%: Dithranol (1, anthralin) by chromatographic purification, chrysarobin (2) either by work-up from commercial chrysarobin or by an oxidative cleavage (FeCl_3) of aloin, followed by a reduction (SnCl_2/HCl) of the produced anthraquinone derivative (6), Aloe emodin anthrone (3) by the action of aqueous sodium tetraborate on aloin and frangula emodin anthrone (4) by the SnCl_2/HCl -reduction of frangula emodin (7) isolated from the dry extract of the bark of alder buckthorn. UV/VIS, IR, $^1\text{H-NMR}$ and mass spectra confirmed the structures of the four anthrones which all distinctly inhibited G-6-P dehydrogenase (0.05 mmol, desactivation in 6 h). For clinical studies the anthrones were incorporated into white petrolatum with exclusion of oxygen (under Ar). The anthrone content of the preparations was determined by HPLC (LiChrosorb RP-18, 7 microns [280 x 4 mm]; 1.5 ml/min MeOH/water/HOAc [80:20:0.2]) after extraction with CH_2Cl_2 (tR = 1: 10.4 min, 2: 15.3 min, 3: 4.7 min, 4: 7.7 min).

Allergic Contact Dermatitis To Compound Tincture Of Benzoin

James WD; White SW; Yanklowitz B

J Am Acad Dermatol 11(5 Pt 1):847-50 1984 Nov

Nineteen cases of allergic contact dermatitis to compound tincture of benzoin are described. Patch testing to individual components revealed positive reactions to all ingredients except Aloe. An alternative preparation, Mastisol, was successfully used without primarily inducing allergy. It should be considered for use before benzoin because once allergy to benzoin exists, cross-reactions to Mastisol usually occur. This is probably due to the presence of a common ingredient, styrax gum.

Collagen Biosynthesizing

Prof. Stachow

A report of research presented in 1984 by Prof. Stachow at Medical College of Warsaw, Poland showed that Aloe vera extract is quite effective to improve collagen biosynthesizing.

The External Use Of Aloes

Crewe JE

Minnesota Journal of Medicine October 1937. Vol. 20. pp. 538-539

In 1937 and again in 1938, Dr. J.E. Crewe reported (in the *Minnesota Journal of Medicine*) a broader spectrum application of Aloe vera in treating chronic ulcers, eczema, thermal burns, scalding, sunburn, pruritus vulvae, minor injuries, and certain allergies including poison ivy. As the Collinses before him, Crewe had also tried using both the fresh leaf gel and an ointment made from it. In almost all cases treated, Dr. Crewe was able to record healing that ranged from effective to remarkable. And in all instances mentioned healing was complete, and tissue regenerated without scarring.

Effects Of Prednisolone, Indomethacin, & Aloe Vera On Tissue Culture Cells

Brasher, James; Zimmermann, Eugene; Collings CK

Federa Dental Services 1969. pp. 1220-125

In 1960 an independent study was conducted by E.R. Zimmermann, D.D.S., chief oral pathologist at Baylor Dental Center, Dr. James Brasher of Brooke General Hospital, and Dr. C.K. Collings. The three doctors tested Aloe on tissue cultures extracted from rabbit kidney fibroblasts. This rabbit tissue simulates the response sensitivity of human tissue to toxic reaction with an added characteristic – the response takes place about ten times as quickly.

In the Brasher/Zimmermann tests, Aloe vera was tested against indomethacin a non steroid drug and against prednisolone, a potent corticosteroid. Like Aloe vera, indomethacin was purported to possess strong analgesic and antipruritic properties. Prednisolone, like Aloe vera, was an acknowledged anti-inflammatory agent. Against certain anti-inflammatory criteria, tests were carried out on tow levels. First, the three were tested on the (rabbit tissue culture) He la Cells for their ability to stimulate cell division and promote healing. In a 72 hour period, Aloe vera had far outstripped both the prednisolone and the indomethacin in this tissue growing ability. Furthermore, under an electronic microscopic amplification of 500,000/1, the Brasher/Zimmermann group was able to observe an accelerated yet normal growth of tissue, one with no trace of carcinoma.

More important for our studies in toxicology, even on the highly sensitive He la Cells, Aloe vera exhibited negligible levels of toxicity while the indomethacin and (especially) prednisolone levels were proportionately quite high.

Uses Of Aloe In Treating Leg Ulcers & Dermatitis

El Zawahry, M; Rashad M Hegazy; Helal M

Dermatology Jan-Feb., 1973. p. 70

In 1973, three Egyptian doctors, El Zawahry, Hegazy, and Helal concluded that the active healing principle existed not only in the anthranols (basic members of the anthraquinone

complex) but also in the mucopolysaccharides and through the activity of the enzymes in the plant.

Potential Reversal Of Chronological & Photo-Aging Of The Skin By Topical Application Of Natural Substances

Danhof IE

North Texas Res. Lab.

Phytother Res. (1993),7 (Spec. Issue, Proceedings of the International Congress of Phytotherapy, 1991), S53-S56

A review with 17 refs. Aging changes in the skin, in which degenerative changes exceed regenerative changes, are characterized by thinning and wrinkling of the epidermis together with the appearance of lines, creases, crevices and furrows, esp. accentuated in lines of facial expression. These changes are brought about both by chronol. (genetically detd.) and photo (solar radiation-detd.) factors. The reason for the readily apparent surface morphol. alterations is found in changes in the underlying dermis characterized by the loss of fascicular and sol. collagen and elastin fibers, with lessened support of epidermal layers, and lessened circulatory perfusion. Many so-called 'antiaging' actions of topically-applied materials are nothing more than transient hydrational/moisturizing effects, which, while lessening the prominence of undesirable surface defects and blemishes, do nothing to change the dermal losses. True 'antiaging' actions would require evidence for the return toward normal of the regenerative/degenerative balance exemplified by increased collagen and elastin synthesis. Evidence is accruing that four groups of topically applied substances, namely, (a) non-saponifiable fractions of avocado and soybean oils, (b) vitamin A derivs., (c) alpha-hydroxy acids (AHAs), and (d) exts. of Aloe vera, possess activities which reverse the degenerative skin changes seen with aging by stimulating the synthesis of collagen and elastin fibers, thereby restoring toward normal the regenerative/degenerative equil.

Effect Of Aloe Vera On Herpes Simplex & Herpes Virus (Strain Zoster) **Sims, Ruth J; Zimmermann ER**

In 1970 Simms and Zimmermann performed a series of tests to determine the bactericidal potentials of Aloe vera. In testing the effect of Aloe vera gel on mycotic organisms (fungi), Sims and Zimmermann found that Aloe vera gel in percentages of 80% to 90% killed *Tinea pedis* (a causal agent in athlete's foot) and *Tinea unguium* (a causal agent in ringworm of the nails) each in about five hours time. Later, in the same year, Sims and Zimmermann tested the cytopathology of Aloe vera gel against 100 tissue cultures of both herpes simplex and herpes zoster strains of virus. The test, conducted on primary hamster kidney cultures, showed that in all 100 tissue doses Aloe vera provided virucidal against both strains within 72 hours.

Aloe Emodin & Other Anthraquinones & Anthraquinone-Like Compounds From Plants Virucidal Against Herpes Simplex Viruses Sydiskis RJ; Owen DG, 1987

Microbiology Abstracts A Industrial and Applied Microbiology - A method is described of treating type 1 or type 2 herpes simplex virus comprising the successive steps of topically applying to the virus-affected areas of a person suffering from said virus, a topically effective amount of an anthraquinone-containing plant extract, said extract obtained from the group consisting of the gel, sap or leaves of Aloe vera, the bark of Rhamnus frangula, the bark of Phramnus purshiana, the leaves of Cassia angustifolia, and the rhizomes of Rheum rhaponticum; and repeating said topical application as required until the desired anti-viral effect is observed.

Report Of Effect Of Aloe Vera On Certain Micro-Organisms Sims, Ruth M; Zimmermann ER

Dr. E. R. Zimmermann and Dr. Ruth Sims of Dallas Microb tested Aloe vera for its germicidal potentials against a number of organisms, including one fungal and two viral agents. The viral agents were staphylococcus aureus (the most virulent strain of staph infection), and Strep viridans (a highly pathogenic strain of strep virus). The fungal agent was the now infamous Candida albicans, a monilial fungus that infects the mucous membranes, most notably the mouth, throat and vaginal areas. Additionally, Aloe vera was tested against Corynebacterium xerosis, a parasitic bacteria present in such skin pathologies as seborrhea. The organisms were tested in culture mediums ranging from solutions containing 25% Aloe vera Gel to solutions containing 90% Aloe vera gel. After thorough testing, Sims and Zimmermann offered the following conclusions:

“Incorporation of Aloe vera at a concentration of 70% would appear highly efficient at reducing skin contaminants *S. aureus*, *S. viridans*, and *C. zerosis*. And an even lower concentration (50%) is sufficient to greatly diminish the population of yeast cells (*C. albicans*).”

A Bacteriological Study Shupe-Ricksecker, Kathleen

In 1994 a biologist and assistant professor at the University of Dallas, Dr. Shupe recently undertook a series of in vitro bacteriological examinations testing various percentages of Aloe vera solutions against tissue cultures of four common pathogens – Streptococcus pyogenes, Staph aureus, Pseudomonas aeruginosa (pseudomonas) and Eschericha coli (more popularly known as E. coli). Strep pyogenes are particularly known to be present in cross-infections and side-infections from improper wound healing, as are pseudomonas. Pseudomonas aeruginosa are also present in a number of secondary urinary tract infections in men and is commonly found as a second microorganism present in prostatitis. E. coli is a potent bacteria common to the rectal cavity of every living mammal. Well behaved in that singular context, once it is released and exposed to outside air it can wreak absolute havoc especially when exposed to

wounds, mucous membranes or adjacent to foodstuffs such as meat. Uncaught and untreated, E. coli can be one of the most dangerous bacteria known to medicine.

In her findings, Dr. Shupe noted that all these microorganisms were killed within twenty four hours of exposure to high levels of Aloe vera (85%). The Strep pyogenes and Staph aureus strains were virtually killed (99.5%) within the twenty four hour period. The more resistant strains, E. Coli and pseudomonas, were killed upon an increase of Aloe percentages to 90%, and at that there was a 90% bactericidal ratio in the same period of time.

Dr. Shupe studies the germicidal effects of Aloe vera on Propionibacterium acnes (ATCC strain 6919). This is a causal agent in the formation of acne, often resulting from the introduction of a comedogenic agent such as an improper oil-base ingredient to the skin. In vitro testing with samples using various percentages of Aloe vera revealed that a 100% killing ratio against the bacteria could be achieved within that twenty four hour period.

Tissue Therapy In Cutaneous Leishmaniasis

Filatove VP

American Review Of Soviet Medicine 1945. pp. 484-489

Reported in 1945, Aloe vera gel was effective in combating cutaneous leishmaniasis. Cutaneous leishmaniasis is also known as the oriental sore or the Delhi sore and is a skin disease spread by sandflies that produces crusty, papular lesions. The infection is apparently brought on by a pernicious strain of protozoan, but Filatov was able to determine that its progress had been arrested by Aloe vera.

Effect Of Aloe Vera Gel On Mycotic Organisms

Sims R; Zimmermann ER

In 1970, a set of tests were performed on the effect of Aloe vera gel on Mycotic organisms (fungi). In these experiments, the organisms tested were Trichophyton mentagrophytes (also known as tinea pidea, the prime cause of athlete's foot), and Trichophyton rubrum or Tinea unguim (the cause of nail fungus and ringworm of the nails). Testing in agar plate samples, Sims and Zimmermann found that Aloe vera gel in percentages of 85% or more killed these persistent and difficult to treat fungi.

Additional Studies Showing Anti-Viral Effects

In addition to culture studies done outside the body on HIV-1, studies done at the Fort Worth Medical Complex demonstrated Aloe vera mucopolysaccharides were anti-viral against herpes, measles and rhinotracheitis when used at the correct dose.

Anti-Inflammatory Activity Of Aloe Vera Against A Spectrum Of Irritants

Davis RH; Leitner MG; Russo JM; Byrne ME

J Am Podiatr Med Assoc Vol 79, ISS 6, 1989, P263-76

The authors have evaluated the spectrum of anti-inflammatory activity of A. vera in a number of models of inflammation in the hind paw of the experimental rat induced by kaolin, carrageenan, albumin, dextran, gelatin, and mustard. Croton oil was used in a topical model of inflammation to determine the oral activity and time-dependent dosing of A. vera. The authors found that A. vera was active in all models of inflammation. Of the various irritants tested, A. vera was especially active against gelatin-induced and kaolin-induced edema and, in contrast, had minimal activity when tested against dextran-induced edema. Oral activity of A. vera was demonstrated to be dependent on the presence of anthraquinones. The various irritant-induced edema models provided a broad spectrum of anti-inflammatory activity for A. vera.

Pharmacological Studies On A Plant Lectin Aloctin A. II. Inhibitory Effect Of Aloctin A On Experimental Models Of Inflammation In Rats

Saito H; Ishiguro T; Imanishi K; Suzuki I

Jpn J Pharmacol 32(1):139-42 1982 Feb

A glycoprotein, Aloctin A, which was isolated from *Aloe arborescens* Mill, markedly inhibits adjuvant arthritis in rats and carrageenin-induced edema in rats.

1934 - Dr. C. E. Collins, a Maryland physician, and his son, Creation Collins. In several cases of roentgen (radium) dermatitis, the Collinses found that by treating ulcerated skin tissue of their patients with packs of fresh Aloe vera leaves split and wrapped around the wounds, they were able to witness a markedly improved rate of healing. Additionally, they formulated a compound from fresh Aloe vera gel which also netted effective results in the same patterns of usage. In a medical journal in 1935, Creston Collins offered this summary of his report: "Since April 1934, we have treated more than fifty cases of x-ray and radium burns with Aloe vera leaf and an ointment known as 'Alvigel' made from the leaf. While they have not all been perfect cures, the results as a whole have been most gratifying."

Studies On Chemical Protectors Against Radiation XXXI. Protection Effects Of Aloe Arborescens On Skin Injury Induced By X-Irradiation

Sato Y; Ohta S; Shinoda M

Faculty Of Pharmaceutical Sciences, Hoshi University

Yakugaku Zasshi 110(11):876-84 1990 Nov

Protective effects of *Aloe arborescens* (AA) on mouse skin injury induced by soft X-irradiation were examined. The mechanisms on radiation protection by measuring scavenge activity of activated oxygen, protective effects of nucleic acid, induction of antioxidative protein and so on were further investigated. Consequently a significant protective effect of skin injury was observed in AA S6-3-b. As the mechanisms of radiation protection in AA, the

following matters were found. AA S6-3-b showed scavenge activity of hydroxyl radicals generated by Haber-Weiss reaction. AA S6-3-b suppressed the changes of activity in superoxide dismutase and glutathione peroxidase at 7d after soft X-irradiation. Metallothionein was induced in the skin and liver against normal mice at 24 h after administration of AA S6-3-b.

Aloe Vera - Anti-Edemic & Analgesic Activity In Diabetes

Davis R

A 1988 study by the Davis, Leitner group established a criteria to test Aloe vera as an anti-edemic, analgesic and wound healing agent against opportunistic infections in the presence of diabetes, and to prove that Aloe vera works effectively even in “an abnormal physiological state.”

In this study, mice were divided into five groups. One control group of non-diabetic mice, and one control and three test groups of mice subjected to a diabetes induction agent (streptozotocin in this case), and given time for the diabetes to set in place. After 48 hours lapsed time, wounds were induced on all groups. Afterward, the control group was administered no Aloe vera while the two test groups were administered decolorized Aloe vera in varying and incrementally higher dosages – 1 milligram per kilogram, 10 mg/kg and 100 mg/kg. Then the five groups were tested at intervals of four and seven days to determine what effect, if any, the introduction of Aloe vera had on pain, edema, and the treatment of wounds.

Not only did increased doses of Aloe vera help accelerate healing and aid in the rapid healing of the wounds. The percentage of wound reduction increased in direct proportion to the amount of Aloe vera administered during treatment. On day four, no significant difference in healing was noticed in the non-diabetic group and the control group of mice (about 18% versus 20%, allowing for a margin of error factor of 3). But by day 7, the wound healing in the normal group had increased to 30 versus only 28% in the untreated diabetic mice.

Test groups given the dosages of Aloe vera showed increased wound healing abilities on both day 4 and day 7. By day 4, the Aloe test groups had shown wound healing ranging from 32% (for the 1 mg/kg group) to 43% for the 100 mg/kg group. On day seven the average level of healing had increased to 43% for the 1mg/kg group all the way to 56.6% for the 100 mg/kg group. That marked a jump of nearly 30 percentage points for the test group of diabetic mice treated with large doses of Aloe vera.

When the mice were tested for analgesic effects and blood edema tests, the Aloe vera test groups showed equally dramatic positive results in exhibiting lessened inflammation and improved pain response.

1989, In a follow-up study by Dr. Robert Davis and Nicholas P. March, Aloe vera was measured again for its anti-inflammatory activity in diabetes. This time, it was tested in combination with gibberellin. Gibberellin is a naturally occurring glycoside and growth hormone found in plants, including the complex chemistry of the Aloe plant.

Again the diabetes was adjuvant induced with the diabetic agent, streptozotocin, on adult male mice in control and test groups. In fact when tested individually and in context with the Aloe over the properly apportioned number of days, the gibberellin did show almost identical anti-

inflammatory results. So the evidence, in this test, seemed to point to the fact that the glycoside, gibberellin, might indeed hold the key to the healing plant's anti-inflammatory powers.
