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Product Scientific Abstracts

Beta Glucan Abstracts (the ingredient found in Betammune):

COMPARATIVE TUMOR-INHIBITORY AND ANTI-BACTERIAL ACTIVITY OF SOLUBLE AND PARTICULATE GLUCAN

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A soluble fraction of particulate glucan was prepared and evaluated for its anti-tumor and anti-bacterial activity. Thin-layer ‘,chromatographic analysis indicated that the soluble preparation was composed of a variety of polyglucoses. Intravenous administration of soluble or particulate glucan resulted in significant reductions in the growth of a syngeneic anaplastic mammary carcinoma and melanoma B16. Survival data demonstrated that intravenous administration of soluble or particulate glucan prolonged survival of A/J and C57BL/6J mice with subcutaneous tumor implants. As regards to bacterial infections, soluble and particulate glucan decreased renal necrosis in S. aureus challenged mice as compared to control mice. Although the exact nature of the active soluble fraction(s) of glucan remains to be delineated, these studies demonstrate that a soluble glucan preparation exhibits significant anti-tumor and anti-staphylococcal activity. The active soluble fraction of particulate glucan may be preferable to particulate glucan in view of the inherent ease of parenteral administration. *J. Cancer: 24,* 773-779 (l979).

Protective Effect of Glucan Against Systemic *Staphylococcus aureus* Septicemia in Normal and Leukemic Mice

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The reticuloendothelial stimulant glucan, a beta-l,3-polyglucose component of the cell wall of *Saccharomyces cerevisiae,* was evaluated for its ability to modify *Staphylococcus aureus-induced* lethality in normal and leukemic mice. In normal mice the intravenous injection of glucan (0.45 mg per mouse) 7 and 4 days prior to intravenous challenge with S. *aureus* (1.0×10^9) resulted in a significantly increased survival. Histological examination of the kidneys revealed that glucan significantly inhibited renal necrosis associated with systemic staphylococcal diseases. Further studies indicated that glucan administration not only enhanced survival of leukemic mice, but also increased survival of leukemic mice with experimentally induced staphylococcal septicemia. These data denote that glucan enhances nonspecific resistance to *S. aureus* sepsis, promotes survival during leukemic episodes, and increases survival time of leukemic mice with experimentally induced staphylococcal infection. *INFECTION AND IMMUNITY*, June 1978. p. 804-810.

Macrophage-Mediated Destruction of Human Malignant Cells In Vivo

P.W.A. Mansell, H. Ichinose, R. J. Reed, E. T. Krementz, R. McNamee, *and* N. R. Di Luzio

SUMMARY-Macrophages require a plasma component, designated “recognition factor” (RF), for the expression of optimal function. The RF activity was profoundly depleted in plasma from patients with malignant disease, and the degree of depletion and the severity of the malignant state seemed to be related. Since experiments demonstrated that an active RF significantly inhibited tumor growth, clinical studies were initiated to investigate the influence of intratumor administration of an active RF fraction. Glucan, a potent macrophage activator, was also employed alone or combined with RF. These studies were undertaken to enhance the recognition of malignant cells by macrophages and to mobilize and activate macrophages intra-lesionally. The initial 9 patients studied had malignant melanoma, adenosquamous carcinoma of the lung, or carcinoma of the breast. Control and experimental lesions were injected; subsequently biopsies were performed at varying intervals for histologic evaluation. Always when glucan or glucan and RF fraction were administered intra-lesionally, the size of the lesion was strikingly reduced in as short a period as 5 days. This reduction was associated with necrosis of the tumor and a monocytic infiltrate. In small lesions, resolution was complete, whereas in large lesions, resolution was partial. The amount of glucan injected and the quantity of residual tumor appeared to be related. The induced necrosis of the tumor nodule was associated with an increase in plasma levels of circulating RF activity. *-J Natl Cancer Inst 54: 571-580, 1975.*

INFECTION PREVENTION IN PATIENTS WITH SEVERE MULTIPLE TRAUMA WITH THE IMMUNOMODULATOR BETA 1-3 POLYGLUCOSE (GLUCAN)

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In a effort to prevent nosocomial pneumonia and sepsis, we treated patients with severe multiple trauma with an immunomodulator—beta 1-3 polyglucose (glucan). Forty-one patients with no infection at admission were stratified using Trauma Score and included in a randomized double-blind controlled trial. They were divided into a control group (n=20) and a glucan group (n=21). Pneumonia occurred in 11 of 20 patients in the control group and in two of 21 recipients of glucan ($p<0.01$). Sepsis occurred in seven of 20 patients in the control group and in two of 21 patients treated with glucan ($p<0.05$). Considering patients with pneumonia and sepsis, a decrease was observed in nosocomial infection from 65.0 to 14.4 percent ($p< 0.001$). The mortality rate related to infection was 30.0 percent in patients in the control group and 4.8 percent in the group treated with glucan ($p<0.05$). The general mortality rate, cerebral deaths excluded, was 42.1 percent in the control group and 23.5 percent in the glucan group. *Surg.* Gynecol. O*bstet.,* 1993, 177: 383-388.

B-Glucan, a "Specific" Biologic Response Modifier That Uses Antibodies to Target Tumors for Cytotoxic Recognition by Leukocyte Complement Receptor Type 3 (CD11b/CD18)[1]

Jun Yan,2* Vaclav Vetvicka,* Yu Xia,* Angela Coxon, Michael C. Carroll,§ Tanya N. Mayadas, and Gordon D. Ross3*t

ß-Glucans were identified 36 years ago as a biologic response modifier that stimulated tumor rejection. In vitro studies have shown that ß-glucans bind to a lectin domain within complement receptor type 3 (CR3; known also as Mac-I, CD11b/CDI8, or $\alpha_M ß_2$- integrin, that functions as an adhesion molecule and a receptor for factor I-cleaved C3b, i.e., iC3b) resulting in the priming of this iC3b receptor for cytotoxicity of iC3b-opsonized target cells. This investigation explored mechanisms of tumor therapy with soluble ß-glucan in mice. Normal mouse sera were shown to contain low levels of Abs reactive with syngeneic or allogeneic tumor lines that activated complement, depositing C3 onto tumors. Implanted tumors became coated with IgM, IgG, and C3, and the absent C3 deposition on tumors in SCID mice was reconstituted with IgM or IgG isolated from normal sera. Therapy of mice with glucan- or mannan-rich soluble polysaccharides exhibiting high affinity for CR3 caused a 57-90% reduction in tumor weight. In young mice with lower levels of tumor-reactive Abs, the effectiveness of ß-glucan was enhanced by administration of a tumor- specific mAb, and in SCID mice, an absent response to ß-glucan was reconstituted with normal IgM or IgG. The requirement for C3 on tumors and CR3 on leukocytes was highlighted by therapy failures in C3- or CR3-deficient mice. Thus, the tumoricidal function of CR3-binding polysaccharides such as ß-glucan in vivo is defined by natural and elicited Abs that direct iC3b deposition onto neoplastic cells, making them targets for circulating leukocytes bearing polysaccharide-primed CR3. Therapy fails when tumors lack iC3b, but can be restored by tumor-specific Abs that deposit iC3b onto the tumors. *The Journal of Immunology,* 1999, 163: 3045-3052.

Beta-1,4 Acetylated Glycomannan / Aloe Abstracts (the ingredient found in Veramannan):

A beta-linked mannan inhibits adherence of Pseudomonas aeruginosa to human lung epithelial cells

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Department of Biochemistry, University of Texas Health Science Center, Tyler 75710, USA.

Adherence through carbohydrate-binding adhesions is an early step in colonization of the lung by gram-negative organisms, and because published data indicate that binding involves mannose groups, we tested the ability of a beta-linked acetyl-mannan (acemannan) to inhibit adherence of Pseudomonas aeruginosa to cultures of human lung epithelial cells. Adherence of radiolabelled P.aeruginosa to A549 cells (a type II-like pneumocyte line) increased linearly with the duration of the incubation. Acemannan inhibited adherence of bacteria, and the extent of inhibition was related to the concentration of the mannan. Inhibition required continued contact between acemannan and the target epithelial cells; cells washed free of acemannan no longer discouraged bacterial binding. Comparison of binding between seven different strains of P. aeruginosa indicated that fewer mucoid than non-mucoid bacteria adhered, but binding of either phenotype was inhibited by acemannan. Mannose, methyl alpha-D-mannopyranoside, methyl beta-D- mannopyranoside and dextran did not affect adherence of any of the non- mucoid strains. Mannose inhibited adherence by one mucoid strain, but not the other, indicating differences between strains of the same phenotype. Since prior treatment of epithelial cells with concanavalin A did not affect acemannan-induced inhibition of bacterial adherence, we concluded that the inhibitory effect of acemannan probably does not involve mannose-containing receptors.
Glycobiology, Vol 5, 39-44.

Hematopoietic augmentation by a ß -(1,4)-linked mannan

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Abstract CARN 750 (injectable acemannan) is a polydispersed ß-(1,4)-linked acetylated mannan isolated from the Aloe barbadensis plant. It has multiple therapeutic properties including activity in wound repair and as a biological agent for the treatment of neoplasia in animals as well as the ability to activate macrophages. We report herein that CARN 750 directly or indirectly has significant hematoaugmenting properties. We observed that the subcutaneous administration of CARN 750 significantly increases splenic and peripheral blood cellularity, as well as hematopoietic progenitors in the spleen and bone marrow as determined by the interleukin-3-responsive colony-forming unit culture assay and the high-proliferative-potential colony-forming-cell (HPP-CFC) assay (a measure of primitive hematopoietic precursors) in myelosuppressed (7 Gy) C_{57}BL/6 mice. The greatest hematopoietic effect was observed following sublethal irradiation in mice receiving 1 mg CARN 750/animal, with less activity observed at higher or lower doses. Further, CARN 750, following daily injection, has activity equal to or greater than the injection of an optimal dose of granulocyte-colony-stimulating factor (G-CSF) in myelosuppressed mice. In this comparison, significantly greater activity was observed in the splenic and peripheral blood cellularity, and in the frequency and absolute number of splenic HPP-CFC as compared to the mice receiving G-CSF at 3 7g/animal. CARN 750, when administered to myelosuppressed animals decreased the frequency of lymphocytes with a concomitant significant increase in the frequency of polymorphonuclear leukocytes (PMN). However, owing to the increased cellularity, a significant increase in the absolute number of PMN, lymphocytes, monocytes and platelets was observed, suggesting activity on multiple cell lineages. The latter is the primary difference in activity as compared to G-CSF which has activity predominantly on PMN.

Studies on optimal dose and administration schedule of a hematopoietic stimulatory ß-(1,4)-linked mannan

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Several complex carbohydrates have been found to significantly stimulate hematopoiesis. CARN 750, a polydispersed -(1,4)-linked acetylated mannan isolated from the *Aloe vera* plant, has been shown to have activity in wound repair, to function as a antineoplastic, and to activate macrophages. We report, herein, the hematoaugmenting properties of CARN 750 and its optimal dose and timing of administration in an animal model of irradiation-induced myelosuppression. We observed that subcutaneous injections of 1 mg/animal of CARN 750 had equal or greater stimulatory activity for white blood cell (WBC) counts and spleen cellularity as well as on the absolute numbers of neutrophils, lymphocytes, monocytes and platelets than did higher or lower doses of CARN 750 or an optimal dose of granulocyte-colony stimulating factor (G-CSF). Hematopoietic progenitors, measured as interleukin-3-supported colony forming units-culture (CFU-C) and high proliferative potential colony-forming cells (HPP-CFC) assays, were similarly increased by CARN 750 in the spleen but not in the bone marrow. The frequency of splenic HPP-CFCs and absolute number of splenic HPP-CFCs and CFU-Cs were optimally increased by 1 mg/animal of CARN 750. In contrast, bone marrow cellularity, frequency and absolute number of HPP-CFCs and CFU-Cs had as a dosage optimum 2 mg/animal of CARN 750. These parameters were similarly increased by G-CSF. In studies to determine the optimal protocol for the administration of CARN 750 we found that the hematopoietic activity of CARN 750 increased with the frequency of administration. The greatest activity in myelosuppressed mice was observed for all hematopoietic parameters except the platelet number in mice receiving daily administration of 1 mg/animal of CARN 750 with activity equal to or greater than G-CSF.

Upregulation of phagocytosis and candidicidal activity of macrophages exposed to the immunostimulant, acemannan

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Previous studies by these investigators have shown that mannosylated bovine serum albumin (m-BSA) enhances the respiratory burst (RB), phagocytosis, and killing of *Candida albicans* by resident murine peritoneal macrophages (MØ). Upregulation of the above MØ functions was associated with binding of m-BSA to the MØ-mannose receptor. The present study was done to determine if the immunostimulant, acemannan prepared from aloe vera, could stimulate MØ in a similar manner. Resident peritoneal MØ collected from C57BL/6 mice were exposed to acemannan for 10 min. The RB was measured using chemiluminescence and demonstrated approximately a two-fold increase above the media controls. In studies involving phagocytosis, MØ were exposed to acemannan, washed and exposed to Candida at a ratio of 1:5. The percent phagocytosis and Candida killing were determined using fluorescence microscopy. There was a marked increase in phagocytosis in the treated cultures (45%) compared to controls (25%). Macrophages exposed to acemannan for 10 min resulted in *ca* 38% killing of *Candida albicans* compared with 0-5% killing in controls. If MØ were incubated with acemannan for 60 min, 98% of the yeast were killed compared to 0-5% in the controls. The results of the present study indicate that short term exposure of MØ to acemannan upregulates the RB, phagocytosis and candidicidal activity. Further studies are needed to clarify the potential use of this immunostimulant as an anti-fungal agent.

CD4 and CD8 lymphocyte levels in acemannan (ACM)-treated HlV-1 infected long-term survivors

McDaniel HR, Rosenberg LJ, McAnalley BH

Experimental Study: A 6th year analysis was done on 5 survivors of a 1986 open- label clinical pilot to evaluate the potential efficacy of oral acemannan (ACM) in the treatment of symptomatic HIV-1 infected patients. In addition to existing medication, patients consumed each day a beverage which contained 500-800 mg acemannan. CD4 and CD8 levels and clinical status of these 5 patients and clinical deterioration of 10 deceased study patients closely paralleled their compliance for the daily intake of ACM. Deceased patients had lived 18-24 months after voluntarily ceasing the ACM intake. The survival of these 5 patients may be due to the expansion of cytotoxic CD8 lymphocyte population through complex leukocyte interactions essential for host defense. The induction of cytokines synthesis, as well as expansion of the CD8 population with maintenance of CD4 levels, may provide a rational basis for long-term survival of these 5 HIV-l infected patients. *Int Conf AIDS 9(1):498[abstract no. PO-B29-2179],* 1993).

An increase in circulating monocytelmacrophages (MM) is induced by oral acemannan (ACE-M) in HlV-1 patients

McDaniel HR et al.

Experimental Study: 14 HIV pts. prescribed oral acemmanan (800 mg/day) demonstrated significant increases in circulating monocytes/macrophages. In particular, there were significant increases in the number of large circulating monocytes indicating improvement in phagocytizing, processing, and presenting cells in the blood. *Am J Clin Pathol 94:516-7, 1990.*

Extended survival and prognostic criteria for acemannan (ACE-M) treated HIV-1 patients

McDaniel HR et al.

Experimental Study: 15 AIDS pts. receiving an oral dose of acemannan (800 fig/day) demonstrated significant improvement in the average scores of Modified Walter Reed Clinical (MWR) scoring, absolute T-4, absolute T-8, and p24 core antigen levels. Respectively, pretreatment values of 6.5, 322/mm3, 469/mm3, and 5 out of 15 positive improved to the following values at the end of 900 days: MWR 2.0, absolute T-4 324, absolute T-8 660, and positive p24 core antigen values in 4 out of 12. Two patients died of AIDS; another committed suicide. It has been suggested that prognostic criteria to determine the most responsive patients are those with an absolute T-4 count greater than l50/mm3 and p24 levels less than 300. *Antiviral Res 13 (Suppl.1):117, 1990).*

Acemannan may potentiate the antiviral drug azidothymidine (AZT). Researchers believe that the use of acemannan may reduce the amount of AZT required by as much as 90%. As AZT is very expensive and its use is often associated with serious side effects, confirmation of the efficacy of acemannan in clinical settings would be an important therapeutic advance. Werbach, Melvyn R., M.D., and Murray, Michael T., N.D. (B*otanical Influences on Illness.* Tarzana, CA: Third Line Press, 1994.)

In vitro evaluation of the synergistic antiviral effects of acemannan in combination with azidothymidine and acyclovir *Kahlon JB et al.*

In vitro study: Acemannan demonstrated significant antiviral activity against several viruses including the human immunodeficiency virus type 1 (HIV-l), influenza virus, and measles virus. Although acemannan demonstrated some direct antiviral activity against HIV-1 by inhibiting glycosylation of viral glycoproteins, its main promise in treating AIDS and HIV is to enhance the action of AZT. When acemannan is combined with suboptimal noncytotoxic concentrations of AZT or acyclovir it acts synergistically to inhibit the replication of HIV and herpes simplex type 1 (HSV-1). *Mol Biother* 3:214-23, 1991).

In vitro stndy: *Kahlon JB et al.. Inhibition of AIDS virus replication by acemannan in vitro.. Mol Biother* 3:127-35,1991

In vitro study: *Kemp* MC. *In-vitro evaluation of the antiviral effects of acemannan on the replication and pathogenesis of HlV-l and other enveloped viruses: Modification of the processing of glycoprotein precursors. Antiviral Res 13(Suppl 1):83.1990*

Comparative cancer chemopreventive effects of plant polysaccharides

(Aloe barbadensis Miller, Lentinus edodes, Ganoderma lucidum , and Coriolus vesicolor)

Byung Mu Lee, Sam Kacew and Hyung Sik Kim

We previously reported that Aloe polysaccharide (APS) had an inhibitory effect on benzo[a]pyrene-DNA adduct formation in vitro and in vivo (Carcinogenesis, 18:771-776, 1997). Hence, chemopreventive effects of plant polysaccharides (Aloe barbadensis Miller (APS), Lentinus edodes (LPS), Ganoderma lucidum (GPS), and Coriolus vesicolor (CPS)) were compared using in vitro short-term methods associated with both initiation and promotion processes in carcinogenesis. In benzo[a]pyrene-DNA adduct formation, APS (180µ g/ml) was the most effective in the inhibition of B[a]P binding to DNA in mouse liver cells. Oxidative DNA damage (8-OHdG) was significantly decreased by APS (180µ g/ml) and CPS (180µ g/ml). In glutathione S-transferase (GST) activity induction, GPS was found to be the most effective among plant polysaccharides. In anti-tumor promoting effects, APS (180µ g/m) significantly inhibited PMA-induced ornithine decaroxylase (ODC) activity in Balb/3T3 cells. In addition, APS significantly inhibited PMA-induced tyrosine kinase (TK) activity in human leukemic (HL-60) cells. APS and CPS significantly iinhibited superoxide anion formation. These results suggest that among anticarcinogenic plant polysaccharides, APS produced most effective antigenotoxic and antitumor promoting activities in in vitro modes; and therefore, it should be considered as a promising potential agent for cancer chemoprevention.

Activation of a mouse macrophage cell line by acemannan: The major carbohydrate Fraction from Aloe vera gel

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Acemannan is the name given to the major carbohydrate fraction obtained from the gel of the *Aloe vera* leaf. It has been claimed to have several important therapeutic properties including acceleration of wound healing, immune stimulation, anti-cancer and anti-viral effects. However, the biological mechanisms of these activities are unclear. Because of this wide diversity of effects, it is believed that they may be exerted through pluripotent effector cells such as macrophages. The effects of acemannan on the mouse macrophage cell line. RAW 264.7 cells were therefore investigated. It was found that acemannan could stimulate macrophage cytokine production, nitric oxide release, surface molecule expression, and cell morphologic changes. The production of the cytokines IL-6 and TNF-a were dependent on the dose of acemannan provided. Nitric oxide production, cell morphologic changes and surface antigen expression were increased in response to stimulation by a mixture of acemannan and IFN—y. These results suggest that acemannan may function, at least in part through macrophage activation. Immunopharmacology *35 (1996) (119 – 128).*

Beta-1,4 Acetylated Glycomannan / Aloe Abstracts (the ingredient found in MannanAloe):

Aloe vera and gibberellin. Anti-inflammatory activity in diabetes

RH Davis and NP Maro
Journal of the American Podiatric Medical Association, Vol 79, Issue 1 24-26, Copyright © 1989 by American Podiatric Medical Association

Aloe vera inhibits inflammation and adjuvant-induced arthritis. The authors' laboratory has shown that A. vera improves wound healing, which suggests that it does not act like an adrenal steroid. Diabetic animals were used in this study because of their poor wound healing and anti-inflammatory capabilities. The anti-inflammatory activity of A. vera and gibberellin was measured in streptozotocin-induced diabetic mice by measuring the inhibition of polymorphonuclear leukocyte infiltration into a site of gelatin-induced inflammation over a dose range of 2 to 100 mg/kg. Both Aloe and gibberellin similarly inhibited inflammation in a dose-response manner. These data tend to suggest that gibberellin or a gibberellin-like substance is an active anti-inflammatory component in A. vera.

Anti-inflammatory effects of aloe vera gel in human colorectal mucosa in vitro

L. Langmead, R. J. Makins & D. S. Rampton
Alimentary Pharmacology & Therapeutics, Volume 19 Issue 5 Page 521 -March 2004 doi:10.1111/j.1365-2036.2004.01874.x

Summary:

Background: Oral aloe vera gel is widely used by patients with inflammatory bowel disease and is under therapeutic evaluation for this condition.

Aim: To assess the effects of aloe vera *in vitro* on the production of reactive oxygen metabolites, eicosanoids and interleukin-8, all of which may be pathogenic in inflammatory bowel disease.

Methods: The anti-oxidant activity of aloe vera was assessed in two cell-free, radical-generating systems and by the chemiluminescence of incubated colorectal mucosal biopsies. Eicosanoid production by biopsies and interleukin-8 release by CaCo2 epithelial cells in the presence of aloe vera were measured by enzyme-linked immunosorbent assay.

Results: Aloe vera gel had a dose-dependent inhibitory effect on reactive oxygen metabolite production; 50% inhibition occurred at 1 in 1000 dilution in the phycoerythrin assay and at 1 in 10-50 dilution with biopsies. Aloe vera inhibited the production of prostaglandin E2 by 30% at 1 in 50 dilution ($P = 0.03$), but had no effect on thromboxane B2 production. The release of interleu kin-8 by CaCo2 cells fell by 20% ($P < 0.05$) with aloe vera diluted at 1 in 100, but not at 1 in 10 or 1 in 1000 dilutions.

Conclusion: The anti-inflammatory actions of aloe vera gel *in vitro* provide support for the proposal that it may have a therapeutic effect in inflammatory bowel disease.

Randomized, double-blind, placebo-controlled trial of oral aloe vera gel for active ulcerative colitis

L. Langmead, R. M. Feakins, S. Goldthorpe, H. Holt, E. Tsironi, A. De Silva, D. P. Jewell & D. S. Rampton
Alimentary Pharmacology & Therapeutics, Volume 19 Issue 7 Page 739 -April 2004 doi:10.1111/j. 1365-2036.2004.01902.x

Summary:

Background: The herbal preparation, aloe vera, has been claimed to have anti-inflammatory effects and, despite a lack of evidence of its therapeutic efficacy, is widely used by patients with inflammatory bowel disease.

Aim: To perform a double-blind, randomized, placebo-controlled trial of the efficacy and safety of aloe vera gel for the treatment of mildly to moderately active ulcerative colitis.

Methods: Forty-four evaluable hospital out-patients were randomly given oral aloe vera gel or placebo, 100 mL twice daily for 4 weeks, in a 2 : 1 ratio. The primary *outcome* measures were *clinical* remission *(Simple* Clinical Colitis Activity Index d" 2), sigmoidoscopic remission (Baron score d" 1) and histological remission (Saverymuttu score d" 1). Secondary outcome measures included changes in the Simple Clinical Colitis Activity Index (improvement was defined as a decrease of e" 3 points; response was defined as remission or improvement), Baron score, histology score, haemoglobin, platelet count, erythrocyte sedimentation rate, C-reactive protein and albumin.

Results: Clinical remission, improvement *and* response *occurred in nine* (30%), 11 (37%) and 14 (47%), respectively, of 30 patients given aloe vera, compared with one (7%) [P = 0.09; odds ratio, 5.6 (0.6-49)1, one (7%) [P = 0.06; odds ratio, 7.5 (0.9-66)] and two (14%) [P < 0.05; odds ratio, 5.3 (1.0-27)], respectively, of 14 patients taking placebo. The Simple Clinical Colitis Activity Index and histological scores decreased significantly during treatment with aloe vera (P = 0.01 and P = 0.03, respectively), but not with placebo. Sigmoidoscopic scores and laboratory variables showed no significant differences between aloe vera and placebo. Adverse events were minor and similar in both groups of patients.

Conclusion: Oral aloe vera taken for 4 weeks produced a clinical response more often than placebo; it also reduced the histological disease activity and appeared to be safe. Further evaluation of the therapeutic potential of aloe vera gel in inflammatory bowel disease is needed.

The protective and healing effects of a natural antioxidant formulation based on ubiquinol and Aloe vera against dextran sulfate-induced ulcerative colitis in rats

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BioFactors Issue: Volume 18, Numbers 1-4/ 2003 Pages: 255 -264. Special Issue: The Third Conference of the International CoQ10 Association

Abstract:
Oxygen/nitrogen reactive species (ROS/RNS) are currently implicated in the pathogenesis of ulcerative colitis, drawing attention on the potential prophylactic and healing properties of antioxidants, scavengers, chelators. We evaluated the possible protective/curative effects of a natural antioxidant preparation based on Aloe vera and ubiquinol, against intestinal inflammation, lesions, and pathological alterations of the intestinal electrophysiological activity and motility, in a rat model of DSS-induced colitis. 5% dextrane sulfate (DDS) (3 days), followed by 1% DSS (4 days) was administered in drinking water. The antioxidant formulation (25 mg/kg) was delivered with a pre-treatment protocol, or simultaneously or post-colitis induction. Spontaneous and acetylcholine-stimulated electrical activity were impaired in the small intestine and in distal colon, upon exposure to DSS only. Severe inflammation occurred, with increased myeloperoxidase activity, and

significant alterations of the oxidant/antioxidant status in colonic tissue and peritoneal cells. Lipoperoxidation, superoxide production, glutathione peroxidase and glutathione-S-transferase activities, and reduced glutathione content increased, whilst superoxide dismutase and catalase activities were .sharply suppressed in colon tissue. ROS/RNS formation in peritoneal cells was strongly inhibited. Inflammation, electrical/mechanical impairment in the gut, and a great majority of oxidative stress parameters were improved substantially by pre-treatment with the antioxidant preparation, but not by simultaneous administration or post-treatment.

Prevention of Atheromatous Heart Disease

O.P. Agarwal, M.D., F.I.C.A.

ANGIOLOGY*The Journal of Vascular Diseases* WESTMINSTER PUBLICATIONS, INC. Vol.36, Number 8, AUGUST 1985 UTTAR PRADESH, INDIA

Abstract:

Five thousand patients of atheromatous heart disease, presented as angina pectoris, were studied over a period of five years. After adding the 'HusR of Isabgol' and 'aloe vera' (an indigenous plant known as ghee-guar-ka-paththa) to the diet, a marked reduction in total serum cholesterol, serum triglycerides, fasting and post parandial blood sugar level in diabetic patients, total lipids and also increase in HDL were noted. Simultaneously the clinical profile of these patients showed reduction in the frequency of anginal attacks and gradually, the drugs, like verapamil, nifedipine, beta-blockers and nitrates, were tapered. The patients, most benefitted, were diabetics (without adding any antidiabetic drug). The exact mechanism of the action of the above two substances is not known, but it appears, that probably they act by their high fibre contents. Both these substances need further evaluation. The most interesting aspect of the study was that no untoward side effect was noted and all the five thousand patients are surviving till date.

The biological activities of mannans and related complex carbohydrates

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Mol. Biother., 1989, Vol. 1, no. 6.

Complex polymers containing mannose (mannans) possess significant biological activity when administered to mannals. When given orally, they inhibit cholesterol absorption and induce hypocholesterolemia. If administered by other routes, they bind to mannose-binding proteins and induce macrophage activation and interleukin-I release, inhibit viral replication, stimulate bone marrow activity, promote wound healing, and inhibit tumor growth. This range of activities makes the mannans, potentially important biological-response modifiers and therapeutic agents.