PLANT-BASED NUTRITION STRATEGIES for AUTOIMMUNE DISEASE

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www.DoctorKlaper.com

A common belief among **rheumatologists** about **inflammatory joint disease:**

"Diet doesn't matter."

"What the patient eats has no effect upon the course of the disease…"

"There have never been any studies that shows that diet makes any difference…"

WHAT FOSTERS THESE BELIEFS?

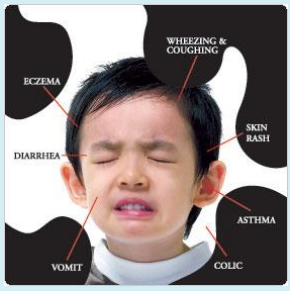
"Whole proteins don't make it out of the stomach."

"THEY ARE ALL DESTROYED BY STOMACH ACID AND PEPSIN."

"Whole proteins can't be absorbed into the bloodstream."

"THEY ARE TOO LARGE TO CROSS THE INTESTINAL MEMBRANE AND ALL BROKEN DOWN INTO INDIVIDUAL AMINO ACIDS."

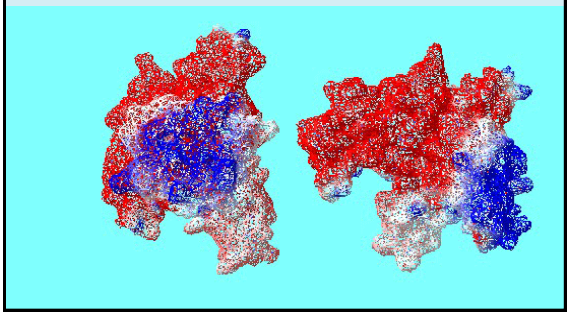
COW'S MILK ALLERGIES



Cow's milk allergy

- Pediatr Allergy Immunol. 2002 Aug;13(4):255-61.
- **Serum immunoglobulin E, IgA, and IgG antibodies to different cow's milk proteins in children with cow's milk allergy: association with prognosis and clinical manifestations.**
- Hidvegi E[1], Cserhati E, Kereki E, Savilahti E, Arato A.
- **Abstract:** Diverse pathogenic mechanisms elicit different clinical manifestations in cow's milk allergy (CMA). Our aim was to determine the concentration of serum immunoglobulin levels to different cow's milk proteins in patients with CMA and to determine how these values were related to clinical symptoms and prognosis. Fifty children (mean age 10.9 months, range: 1-34 months) with previously confirmed CMA were enrolled in this study. All had various clinical manifestations of CMA, including gastrointestinal, skin, and respiratory symptoms. At the diagnosis of CMA the serum total and the milk-specific immunoglobulin (Ig)E values were measured by enzyme immunoassay and fluoroimmunoassay, respectively, while the relative levels of serum IgA and IgG antibodies against different cow's milk proteins were determined by a sensitive enzyme-linked immunosorbent assay (ELISA). The results were compared to those of 30 non-atopic age-matched control children. On average, after 9.2 months (range 2-31 months) on a milk-free diet, a repeated challenge was performed in 38 children. At the re-challenge, 12 patients had clinical symptoms while the remaining 26 children were symptom-free. The IgG antibody level to bovine serum albumin (BSA) was significantly lower in the patients than in the controls (median: 0.36 vs. 2.94, $p < 0.01$). **There was a close correlation among all individual IgA and IgG antibodies to different cow's milk proteins. The anti-alpha-casein IgG level (of 2.10) in children with a positive reaction at the re-challenge was significantly higher than in those with a negative reaction (0.89) ($p < 0.05$). The total IgE serum concentration was also significantly higher in those who had symptoms at the re-challenge compared to those who did not have any reaction at this time (22.9 vs. 6.8 kU/l, geometric mean, $p < 0.02$).** There was no association between the clinical manifestations and the IgG and IgA antibody levels to the cow's milk proteins studied, except for the anti-BSA IgA level, which was higher in patients with gastrointestinal symptoms. The serum total IgE **and anti-alpha-casein IgG** levels could have prognostic values; their increase at the beginning of the disease may indicate the development of tolerance to cow's milk only at a later age and after a longer duration of CMA. However, as there is considerable overlap among the values observed in different groups of patients, there is a limitation of these tests for predicting the prognosis.

CASEIN
199 amino acids



Clin Exp Rheumatol. 1995 Mar-Apr;13(2):167-72.

Antibodies against dietary antigens in rheumatoid arthritis patients treated with fasting and a one-year vegetarian diet.

Kjeldsen-Kragh J[1], Hvatum M, Haugen M, Førre O, Scott H.

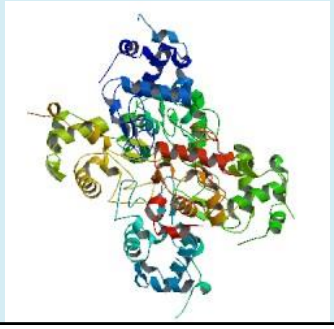
METHODS:

Serum IgG, IgA and IgM antibody activity against several food antigens was measured by an enzyme immunoassay. Abnormally high antibody activity was defined as values above the 90th percentile of the measurements in 30 healthy controls. Serum IgE antibody activity was measured by a radioallergosorbent test.

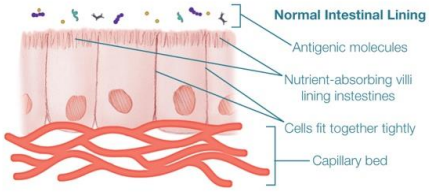
RESULTS:

During the trial 10 of 27 patients suspected that certain food items aggravated their arthritis symptoms. Elevated antibody activity against one or more of the dietary antigens was found in all RA patients, but these measurements could not be used to predict which food would aggravate the symptoms**. Elevated IgG and IgA antibody activity against alpha-lactalbumin was found in a significantly larger number of RA patients than in controls.** With the exception of one patient, there was no concordance between the clinical course and antibody activity against the various dietary antigens.

Alpha-lactalbumin
– 123 amino acids



HOW DO ANTIBODIES FORM AGAINST SUCH LARGE FOOD ANTIGENS?



HOW IMPERMEABLE A BARRIER?

EVIDENCE OF

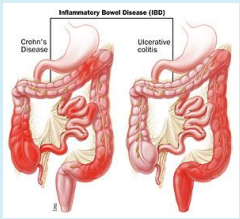
THE GUT-JOINT CONNECTION

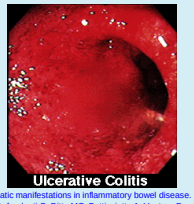
HAS BEEN PRESENT FOR DECADES

Known examples of "Gut – Joint connection"

INFLAMMATORY BOWEL DISEASE

Up to 40% of patients with Inflammatory Bowel Disease (IBD) have associate inflammatory arthritis.(1)





(1) Rheumatic manifestations in inflammatory bowel disease. Atzeni F, Defendenti C, Ditto MC, Batticciotto A, Ventura D, Antivalle M, Ardizzone S, Sarzi-Puttini P Autoimmun Rev. 2014 Jan;13(1):20-3.

Known examples of "Gut – Joint connection

REITER'S SYNDROME

"urethritis, conjunctivitis, arthritis"

Includes inflammatory arthritis after episode of infectious bowel inflammation.

(1) Rheumatic manifestations in inflammatory bowel disease.

Atzeni F, Defendenti C, Ditto MC, Batticciotto A, Ventura D, Antivalle M, Ardizzone S, Sarzi-Puttini P

Autoimmun Rev. 2014 Jan;13(1):20-3.

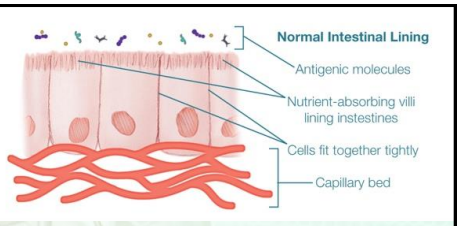
The "Gut-Joint Connection - Reactive Arthritis after acute GE

In 1984 in Ontario, Canada, an outbreak of Salmonella typhimurium food poisoning occurred among police officers who were serving as security guards during a papal visit.

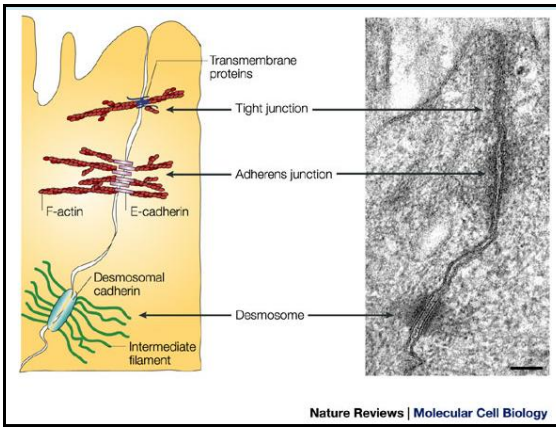
Of the 1,608 police officers involved, 432 had acute gastroenteritis.

Within three months following the outbreak, 27 of these officers had developed acute arthritis;

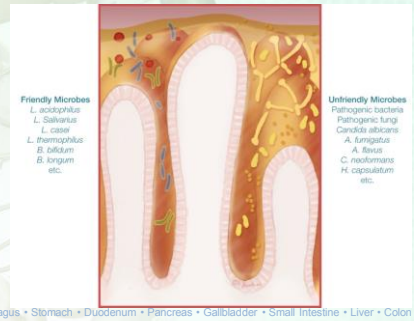
Thomson GT, DeRubeis DA, Hodge MA, Rajanayagam C, Inman RD. Post-Salmonella reactive arthritis: late clinical sequelae in a point source cohort. *Am J Med*. 1995;98:13–21



HOW IMPERMEABLE A BARRIER?



Bacterial balance is important!



Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

MICROBIAL FACTORS IN IBD

BENEFICIAL	DETRIMENTAL
Bacteroidetes sp.	Pseudomonas sp.
Bifidobacterium Longum	Clostridia dificile
B.breve and	Clostridia perfringens
B. Thetaiotaomicron	E. Coli
Clostridium coccoides	
Lactobacillus sp.	Mycobacterium avium
casei, plantarum, rhamnosus	paratuberculosis
salivarus, acidophilus	Enterococcus sp.

We used to refresh our "intestinal garden" through our connection with the natural world

Eating fresh from the garden

Drinking from streams

Drinking from wells

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

Modern life is an assault on our friendly intestinal bacteria

Chlorinated drinking water

Soft drinks with phosphoric acid

Coffee, tea, etc.

Foods with herbicides, etc.

Alcohol

Antibiotics – in animal foods and Rx's

+ then add sugar →

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

The problem is NOT with ½ tsp of sugar in one's tea as a FLAVORING

THE PROBLEM IS EATING SUGAR AS A

FOOD!

Mouth • Esophagus • Stomac … estine • Liver • Colon • Rectum

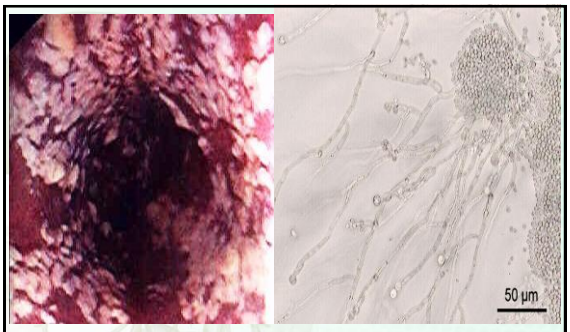
Disease-causing bacteria & yeasts

DYSBIOSIS

"dys" = "bad"

"biosis" = "life"

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum



Intestinal Candida yeast overgrowth

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

High-fat, high sugar diets increase *Clostridium innocuum*, *Catenibacterium mitsuokai and Enterococcus* spp.

Turnbaugh P.J., Ridaura V.K., Faith J.J., Rey F.E., Knight R., Gordon J.I. The effect of diet on the human gut microbiome: A metagenomic analysis in humanized gnotobiotic mice.

Gut. 1997 Jun;40(6):754-60.

Pre-illness dietary factors in inflammatory bowel disease.

Reif S, Klein I, Lubin F, Farbstein M, Hallak A, Gilat T.

Department of Gastroenterology, Tel Aviv Sourasky Medical Center, Israel.

Abstract: RESULTS: A high sucrose consumption was associated with an increased risk for IBD (OR 2.85 (p = 0.03) against population controls and 5.3 (p = 0.00) against clinic controls). Lactose consumption showed no effect while fructose intake was negatively associated with risk for IBD (NS). Similar trends were noted in UC and CD. **A high fat intake was associated with an increased risk for UC; this was particularly marked for animal fat (OR 4.09, p = 0.02) and cholesterol (OR 4.57, p = 0.02).** A high intake of fluids (p = 0.04), magnesium (p = 0.04), vitamin C, and fruits (NS) was negatively associated with the risk for IBD, while a positive association was found for retinol (p = 0.01). Most of the findings were similar in UC and CD except for potassium and vegetable consumption which showed a negative association only with risk for CD.

Protein-rich diets increase the activity of bacterial enzymes such as β-glucuronidase, azoreductase and nitroreductase, which produce toxic metabolites that trigger inflammatory responses.

Gorbach S.L. Bengt *E. gustafsson* memorial lecture. Function of the normal human microflora. Scand. J. Infect. Dis. Suppl. 1986;49:17–30.

High *n*-6 PUFA from safflower oil decreases beneficial Bacteroidetes spp.

De la Serre C., Ellis C.L., Lee J., Hartman A.L., Rutledge J.C., Raybould H.E. Propensity to high-fat diet-induced obesity in rats is associated with changes in the gut microbiota and gut inflammation. Am. J. Physiol. 2010;

Am J Clin Nutr. 1996 May;63(5):741-5.

Epidemiologic analysis of Crohn disease in Japan: increased dietary intake of n-6 polyunsaturated fatty acids and animal protein relates to the increased incidence of Crohn disease in Japan.

Shoda R, Matsueda K, Yamato S, Umeda N.

Abstract: We examined the correlation between the incidence of Crohn disease and dietary change in a relatively homogeneous Japanese population. The incidence and daily intake of each dietary component were compared annually from 1966 to 1985. The univariate analysis showed that the **increased incidence of Crohn disease was strongly (P < 0.001) correlated with increased dietary intake of total fat (r = 0.919), animal fat (r = 0.880), n-6 polyunsaturated fatty acids (r = 0.883), animal protein (r = 0.908), milk protein (r = 0.924), and the ratio of n-6 to n-3 fatty acid intake (r = 0.792).** It was less correlated with intake of total protein (r = 0.482, P < 0.05), was not correlated with intake of fish protein (r = 0.055, P > 0.1), and was inversely correlated with intake of vegetable protein (r = -0.941, P < 0.001). The multivariate analysis showed that increased intake of animal protein was the strongest independent factor with a weaker second factor, an increased ration of n-6 to n-3 polyunsaturated fatty acids. The present study in association with reported clinical studies suggests that increased dietary intake of animal protein and n-6 polyunsaturated fatty acids with less n-3 polyunsaturated fatty acids may contribute to the development of Crohn disease.

Am J Gastroenterol. 2010 Oct;105(10):2195-201. doi: 10.1038/ajg.2010.192. Epub 2010 May 11.

Animal protein intake and risk of inflammatory bowel disease: The E3N prospective study.

Jantchou P, Morois S, Clavel-Chapelon F, Boutron-Ruault MC, Carbonnel F.

INSERM, UMRS, Centre for Research in Epidemiology and Population Health, Institut Gustave Roussy, Université Paris Sud, Villejuif, France.

OBJECTIVES: Diet composition has long been suspected to contribute to inflammatory bowel disease (IBD), but has not been thoroughly assessed, and has been assessed only in retrospective studies that are prone to recall bias. The aim of the present study was to evaluate the role of dietary macronutrients in the etiology of IBD in a large prospective cohort.

- **RESULTS:** Among 67,581 participants (705,445 person-years, mean follow-up since completion of the baseline dietary questionnaire 10.4 years), we validated 77 incident IBD cases. High total protein intake, specifically animal protein, was associated with a significantly increased risk of IBD, (hazards ratio for the third vs. first tertile and 95% confidence interval being 3.31 and 1.41-7.77 (P trend=0.007), and 3.03 and 1.45-6.34 (P trend=0.005) for total and animal protein, respectively). Among sources of animal protein, high consumption of meat or fish but not of eggs or dairy products was associated with IBD risk.
- CONCLUSIONS: **High protein intake is associated with an increased risk of incident IBD in French middle-aged women.**

Infect Immun. 2000 Sep;68(9):5335-43.

Apically exposed, tight junction-associated beta1-integrins allow binding and YopE-mediated perturbation of epithelial barriers by wild-type Yersinia bacteria.

Tafazoli F, Holmström A, Forsberg A, Magnusson KE.

Abstract

Using polarized epithelial cells, primarily MDCK-1, we assessed the mode of binding and effects on epithelial cell structure and permeability of Yersinia pseudotuberculosis yadA-deficient mutants. Initially, all bacteria except the invasin-deficient (inv) mutant adhered apically to the tight junction areas. These contact points of adjacent cells displayed beta1-integrins together with tight junction-associated ZO-1 and occludin proteins. Indeed, beta1-integrin expression was maximal in the tight junction area and then gradually decreased along the basolateral membranes. Wild-type bacteria also opened gradually the tight junction to paracellular permeation of different-sized markers, viz., 20-, 40-, and 70-kDa dextrans and 45-kDa ovalbumin, as well as to their own translocation between adjacent cells in intimate contact with beta1-integrins. The effects on the epithelial cells and their barrier properties could primarily be attributed to expression of the Yersinia outer membrane protein YopE, as the yopE mutant bound but caused no cytotoxicity. Moreover, the apical structure of filamentous actin (F-actin) was disturbed and tight junction-associated proteins (ZO-1 and occludin) were dispersed along the basolateral membranes. **It is concluded that the Yersinia bacteria attach to beta1-integrins at tight junctions. Via this localized injection of YopE, they perturb the F-actin structure and distribution of proteins forming and regulating tight junctions. Thereby they promote paracellular translocation of bacteria and soluble compounds.**

J Bacteriol. 2008 Apr;190(8):2814-21. doi: 10.1128/JB.01567-07. Epub 2007 Dec 28.

The type III toxins of Pseudomonas aeruginosa disrupt epithelial barrier function.

Soong G, Parker D, Magargee M, Prince AS.

Department of Pediatrics and Pharmacology, College of Physicians & Surgeons, Columbia University, 650 West 168th Street, New York, NY 10032, USA.

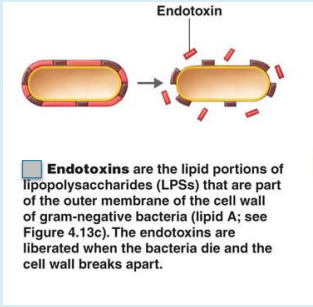
Abstract: The type III secreted toxins of Pseudomonas aeruginosa are important virulence factors associated with clinically important infection. However, their effects on bacterial invasion across mucosal surfaces have not been well characterized. One of the most commonly expressed toxins, ExoS, has two domains that are predicted to affect cytoskeletal integrity, including a GTPase-activating protein (GAP) domain, which targets Rho, a major regulator of actin polymerization; and an ADP-ribosylating domain that affects the ERM proteins, which link the plasma membrane to the actin cytoskeleton. The activities of these toxins, and ExoS specifically, on the permeability properties of polarized airway epithelial cells with intact tight junctions were examined. Strains expressing type III toxins altered the distribution of the tight junction proteins ZO-1 and occludin and were able to transmigrate across polarized airway epithelial monolayers, in contrast to DeltaSTY mutants. These effects on epithelial permeability were associated with the ADP-ribosylating domain of ExoS, as bacteria expressing plasmids lacking expression of the ExoS GAP activity nonetheless increased the permeation of fluorescent dextrans, as well as bacteria, across polarized airway epithelial cells. Treatment of epithelial cells with cytochalasin D depolymerized actin filaments and increased permeation across the monolayers but did not eliminate the differential effects of wild-type and toxin-negative mutants on the epithelial cells, suggesting that additional epithelial targets are involved. Confocal imaging studies demonstrated that ZO-1, occludin, and ezrin undergo substantial redistribution in human airway cells intoxicated by ExoS, -T, and -Y. **These studies support the hypothesis that type III toxins enhance P. aeruginosa's invasive capabilities by interacting with multiple eukaryotic cytoskeletal components.**

Evidence that Tight Junctions Are Disrupted Due to Intimate Bacterial Contact and Not Inflammation during Attaching and Effacing Pathogen Infection In Vivo

Julian A. Guttman1, Fereshte N. Samji1, Yuling Li1, A. Wayne Vogl2 and B. Brett Finlay1 *

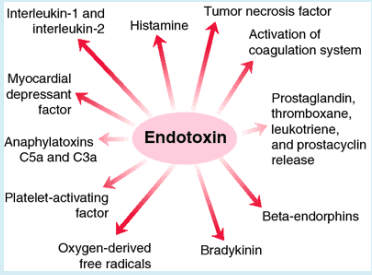
Infect. Immun. November 2006 vol. 74 no. 11 6075-6084

ENDOTOXIN



Endotoxins are the lipid portions of lipopolysaccharides (LPSs) that are part of the outer membrane of the cell wall of gram-negative bacteria (lipid A; see Figure 4.13c). The endotoxins are liberated when the bacteria die and the cell wall breaks apart.

ENDOTOXIN



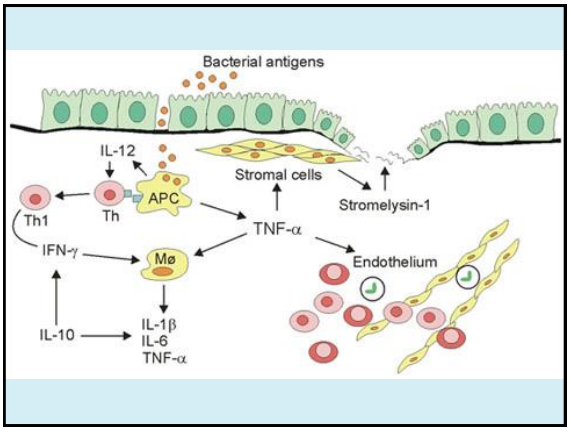
FATTY MEAL INCREASES ENDOTOXIN ABSORPTION

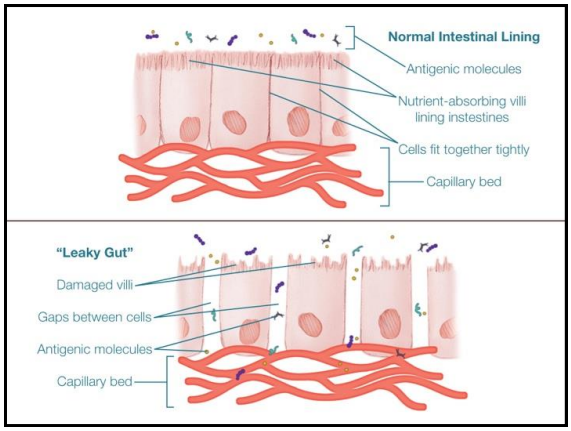
Erridge C, Attina T, Spickett CM, Webb DJ.

A high-fat meal induces low-grade endotoxemia: evidence of a novel mechanism of postprandial inflammation.

Am J Clin Nutr. 2007 Nov; 86(5):1286-92.

ENDOTOXIN IS HEAT-STABLE





How do you know if your patient has a "leaky gut?"

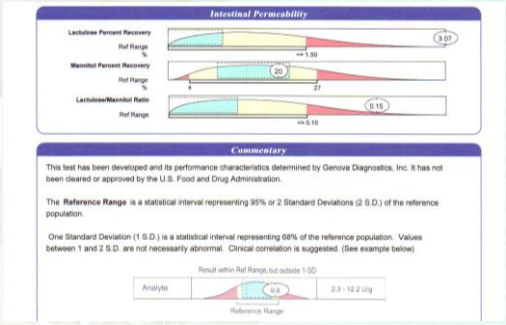
"INTESTINAL PERMEABILITY TEST"

LACTULOSE & MANNITOL RECOVERY

IN THE URINE

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

Intestinal permeability test: positive result!



DR KLAPER HAS NO FINANCIAL CONNECTION WITH ANY LABORATORY OR PRODUCT

Gravallese EM, Kantrowitz FG Am J Gastroenterol. 1988 Jul;83(7):703-9.

Arthritic manifestations of inflammatory bowel disease.

Rheumatologic conditions associated with inflammatory bowel disease may be divided into four clinical categories.

First, **a unique form of peripheral arthritis occurs in 15-20% of patients with inflammatory bowel disease. The incidence is higher in Crohn's disease than in ulcerative colitis.** This is a self-limited, nondeforming, seronegative arthritis that waxes and wanes with bowel flares. It characteristically involves knees and ankles. Persistent erosive monoarthritis is described.

Second, spondylitis clinically and radiographically indistinguishable from idiopathic ankylosing spondylitis occurs in 3-6% of patients with inflammatory bowel disease. HLA-B27 positivity occurs in 53-75% of cases, fewer than in idiopathic spondylitis.

Third, a bilateral, symmetrical sacroiliitis is seen in 4-18% of patients. This may not progress to clinical spondylitis.

The fourth category encompasses rheumatologic complications of inflammatory bowel disease. These include granulomas of bones and joints, granulomatous vasculitis, clubbing, periostitis, amyloidosis, osteoporosis, osteomalacia, septic arthritis, and complications of corticosteroid therapy

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

FOREIGN PROTEINS "LEAKING" INTO BLOOD STREAM

MAY INCITE AUTO-IMMUNE DISEASE

INFLAMMATORY ARTHRITIS ETC.

OTHER AUTOIMMUNE DISEASES

MAY INCITE ALLERGIC RESPONSES

ASTHMA

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

Arch Dis Child. 2004 Mar;89(3):227-9.

Intestinal permeability is increased in bronchial asthma.

Hijazi Z, Molla AM, Al-Habashi H, Muawad WM, Molla AM, Sharma PN.

Abstract Thirty two asthmatic children, and 32 sex and age matched controls were recruited. The dual sugar (lactulose and mannitol) test was used to evaluate intestinal permeability, and the percentage of ingested lactulose (L) and mannitol (M) in the urine, and the L:M ratio were determined. All patients were skin prick tested for common aeroallergens, and specific IgE to some food items was determined.

RESULTS: The median value of L in asthmatic children (2.29, IQR 0.91-4.07) was significantly higher than that in controls (0.69, IQR 0.45-1.08), and that of M was almost similar. The ratio L:M was significantly higher in asthmatic children (0.20, IQR 0.11-0.40) than in controls (0.06, IQR 0.04-0.09). Intestinal permeability did not correlate with eczema, inhaled steroids, positive skin prick test to aeroallergens, or severity of asthma.

CONCLUSIONS: Intestinal permeability is increased in children with asthma, suggesting that the whole mucosal system may be affected.

J Asthma. 1985;22(1):45-55.

Vegan regimen with reduced medication in the treatment of bronchial asthma.

Lindahl O, Lindwall L, Spångberg A, Stenram A, Ockerman PA.

PLANT-BASED DIETS in TREATMENT OF ASTHMA

Thirty-five patients who had suffered from bronchial asthma for an average of 12 yr, all receiving long-term medication, 20 including cortisone, were subject to therapy with **vegan food for 1 yr**. **In almost all cases, medication was withdrawn or drastically reduced**. **There was a significant decrease in asthma symptoms.** Twenty-four patients (69%) fulfilled the treatment. Of these, 71% reported improvement at 4 months and 92% at 1 yr. There was a significant improvement in a number of clinical variables; for example, vital capacity, forced expiratory volume at one sec and physical working capacity, as well as a significant change in various biochemical indices as haptoglobin, IgM, IgE, cholesterol, and triglycerides in blood.

FOREIGN PROTEINS "LEAKING" INTO BLOOD STREAM

MAY INCITE AUTO-IMMUNE DISEASE

INFLAMMATORY ARTHRITIS ETC.

OTHER AUTOIMMUNE DISEASES

MAY INCITE ALLERGIC RESPONSES

ASTHMA

URTICARIA

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

Ann Allergy. 1991 Feb;66(2):181-4.

Intestinal permeability in patients with chronic urticaria-angioedema with and without arthralgia.

Paganelli R, Fagiolo U, Cancian M, Scala E.

Abstract: We evaluated the clinical response to oligoallergenic dietary treatment and the intestinal absorption of a protein antigen, **cow milk beta-lactoglobulin (BLG)** in 24 patients with chronic urticaria/angioedema syndrome 13 of whom also suffered from joint symptoms. **Sixteen patients (77% of those with arthralgia) responded to diet (RD) with marked reduction of symptoms;** the others did not respond (NR). Ten (all but one RD with arthralgia) had increased permeability to BLG after oral administration of cow milk. **Four with high titers of IgG to BLG showed the highest absorption of BLG and the groups with arthralgia showed higher BLG levels than those without arthralgia.** In all cases, specific IgE to cow milk was absent. These data suggest that the symptoms of a subgroup of patients with chronic urticaria, and especially patients with joint complaints that subside with diet, are related to excess intestinal permeability. The measurement of gut permeability to food proteins may be useful to define those who may benefit from dietary restriction.

Eczema

Lancet. 1981 Jun 13;1(8233):1285-6.

Intestinal permeability in patients with eczema and food allergy.

Jackson PG, Lessof MH, Baker RW, Ferrett J, MacDonald DM.

Abstract

Polyethylene glycol (PEG) was used as a probe molecule to investigate intestinal absorption in eight patients with eczema and evidence of food allergy and ten with eczema alone. In both groups absorption of molecules of larger molecular weight was greater than in normal subjects but absorption of molecules of low molecular weight was normal. There was no difference in absorption between eczema patients with or without food allergy. These results suggest that there is an intestinal mucosal defect in eczema which exists whether or not there is coexistent food allergy. Half the patients with eczema alone and two of the eight with food allergy had more of the large molecular weight PEG recovered in their urine in the second 12 h after ingestion than in the first 12 h. This could be the result of abnormal permeability in the more distal small bowel or even in the colon.

ATOPIC DISEASES
Eczema, asthma, etc.

J Allergy Clin Immunol. 1991 Nov;88(5):737-42.

Identical intestinal permeability changes in children with different clinical manifestations of cow's milk allergy.

Jalonen T.

Abstract

To determine the relationship between clinical symptoms of cow's milk allergy (CMA) and intestinal permeability, 51 children (mean age, 13 months) were studied during a diagnostic milk provocation test. Intestinal permeability was assessed by orally administered lactulose (4 gm) and mannitol (0.8 gm) immediately before (day 0) the milk challenge and 3 days later (day 3). Twenty-four patients evinced cutaneous symptoms and 27, gastrointestinal symptoms. The mean (95% confidence interval) urinary lactulose/mannitol recovery ratios before the milk challenge were, in both groups of patients, comparable to the level of that of control patients, 0.02 (0.01 and 0.03). **A rise in lactulose/mannitol excretion ratios followed cow's milk administration by day 3 in patients with skin symptoms, 0.06 (0.03 and 0.13), as well as in patients with gastrointestinal symptoms, 0.08 (0.04, 0.17).** These levels were significantly different from the control level, $p = 0.003$, and the prechallenge level, $p = 0.01$. This difference was caused by a concomitant increase in urinary recovery of lactulose and a decrease of mannitol. These results indicate that the intestinal barrier is equally altered in patients with different clinical manifestations of CMA and further suggest that enhancement of mucous membrane permeability is not a primary defect in the pathogenesis of CMA but rather a secondary phenomen, possibly caused by a hypersensitivity reaction in the intestinal mucosa.

STRATEGIES for INFLAMMATORY JOINT DISEASE

+

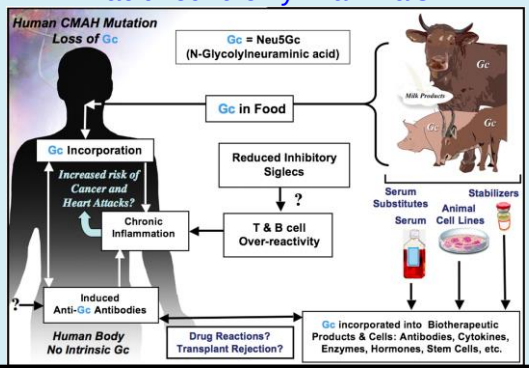
OTHER AUTO-IMMUNE CONDITIONS

IN RHEUMATIC/AUTOIMMUNE DISEASES with PLANT-BASED DIETS?

Possible Factors: **WHAT ISN'T THERE:**

Neu5Gc – a highly inflammatory sialic acid found only in animals

Neu5Gc – a highly inflammatory sialic acid found only in animals



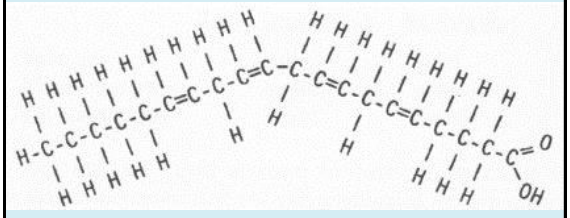
Neu5Cg incites antibody formation and inflammation and is implicated in auto-immune and inflammatory diseases

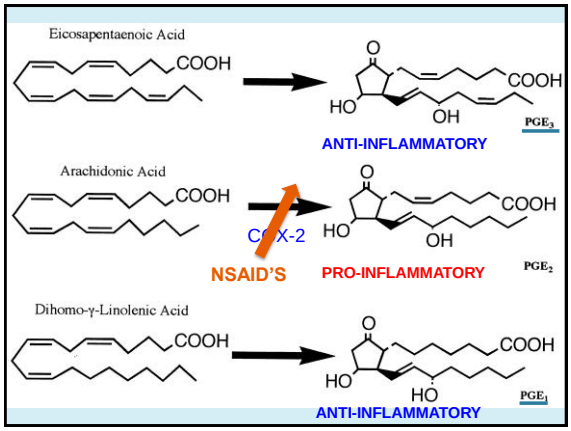
Neu5Gc – sialic acid found only in animals

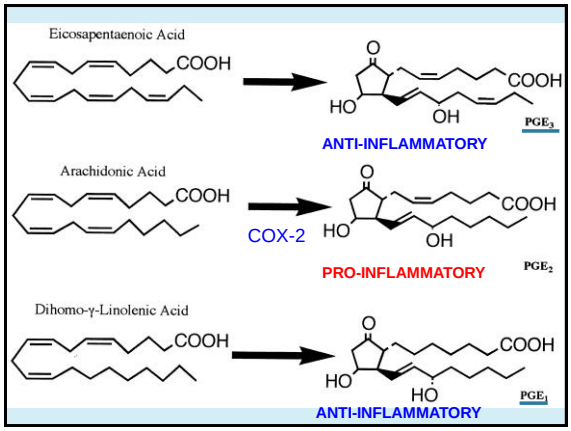
- *Varki A. Colloquium paper: uniquely human evolution of sialic acid genetics and biology. Proc Natl Acad Sci U S A. 2010 May 11;107 Suppl 2:8939-46.*
- *Tangvoranuntakul P, Gagneux P, Diaz S, Bardor M, Varki N, Varki A, Muchmore E. Human uptake and incorporation of an immunogenic nonhuman dietary sialic acid. Proc Natl Acad Sci U S A. 2003 Oct 14;100(21):12045-50.*
- *Padler-Karavani V, Yu H, Cao H, Chokhawala H, Karp F, Varki N, Chen X, Varki A. Diversity in specificity, abundance, and composition of anti-Neu5Gc antibodies in normal humans: potential implications for disease. Glycobiology. 2008 Oct;18(10):818-30.*
- *Varki, A.: Evolutionary Perspectives on the Origin of Diseases IN, Current Trends in Sciences (Invited Book Chapter), Ed. N. Mukunda. Indian Academy of Sciences, Bangalore, India, pp. 395-402, 2009*

ARACHIDONIC ACID OMEGA -6

PRO-INFLAMMATORY







(Omega-6) Arachidonic acid is

Found mostly in: Chicken, Eggs, Beef & Pork

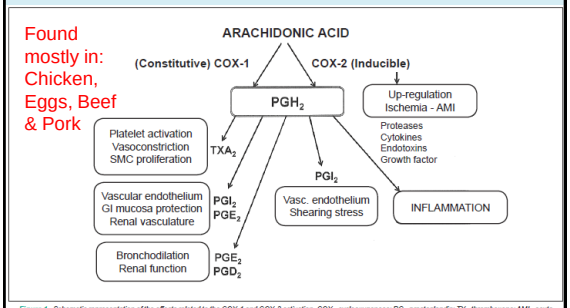


Figure 1 - Schematic representation of the effects related to the COX-1 and COX-2 activation. COX - cyclooxygenase; PG - prostaglandin; TX - thromboxane; AMI - acute myocardial infarction.

Harizi H, Corcuff JB, Gualde N. Arachidonic-acid-derived eicosanoids: roles in biology and immunopathology. Trends Mol Med. 2008 Oct;14(10):461-9.

Rheumatol Int. 2003 Jan;23(1):27-36.

Anti-inflammatory effects of a low arachidonic acid diet and fish oil in patients with rheumatoid arthritis.

Adam O[1], Beringer C, Kless T, Lemmen C, Adam A, Wiseman M, Adam P.

Sixty patients completed the study. In AID patients, but not in WD patients, the numbers of tender and swollen joints decreased by 14% during placebo treatment. In AID patients, as compared to WD patients, fish oil led to a significant reduction in the numbers of tender (28% vs 11%) and swollen (34% vs 22%) joints (P<0.01). Compared to baseline levels, higher **enrichment of eicosapentaenoic acid** in erythrocyte lipids (244% vs 217%) and **lower formation of leukotriene B(4)** (34% vs 8%, P>0.01), **11-dehydro-thromboxane B(2)** (15% vs 10%, P<0.05), and **prostaglandin metabolites** (21% vs 16%, P<0.003) were found in AID patients, especially when fish oil was given during months 6-8 of the experiment.

CONCLUSION:

A diet low in arachidonic acid ameliorates clinical signs of inflammation in patients with RA and augments the beneficial effect of fish oil supplementation.

REMOVAL OF ANIMAL TISSUE ANTIGENS AS TRIGGERS

CROSS REACTIVITY WITH CARTILAGE, LIGAMENT, ETC?

ANTIGEN-ANTIBODY COMPLEXES IN JOINTS?

Kutlu A, Oztürk S, Taşkapan O, Onem Y, Kiralp MZ, Ozçakar L. Meat-induced joint attacks, or meat attacks the joint: rheumatism versus allergy. Nutr Clin Pract. 2010 Feb; 25(1):90-1.

PUT THE FIRE OUT!

NSAID's
Methotrexate
Steroids
DMARD's
Biologics

BUT ALSO
WATER-ONLY FASTING

See **"Fasting"** at DoctorKlaper.com

Lancet. 1991 Oct 12;338(8772):899-902.

Controlled trial of fasting and one-year vegetarian diet in rheumatoid arthritis.

Kjeldsen-Kragh J, Haugen M, Borchgrevink CF, Laerum E, Eek M, Mowinkel P, Hovi K, Førre O.

Department of General Practice, University of Oslo, Norway.

27 patients were allocated to a four-week stay at a health farm. After an initial 7-10 day subtotal fast, they were put on an individually adjusted gluten-free vegan diet for 3.5 months.

After four weeks at the health farm the diet group showed a significant improvement in number of tender joints, Ritchie's articular index, number of swollen joints, pain score, duration of morning stiffness, grip strength, erythrocyte sedimentation rate, C-reactive protein, white blood cell count, and a health assessment questionnaire score. In the control group, only pain score improved score. In the control group, only pain score improved significantly. **The benefits in the diet group were still present after one year,** and evaluation of the whole course showed significant advantages for the diet group in all measured indices.

Fasting and vegetarian diets have potent anti-inflammatory effects in RA and other maladies

J Kjeldsen-Kragh. Rheumatoid arthritis treated with vegetarian diets. Am J Clin Nutr. 1999 Sep;70(3 Suppl):594S-600S.

…we tested the effect of fasting for 7-10 d, then consuming an individually adjusted, gluten-free, vegan diet for 3.5 mo,

For all clinical variables and most laboratory variables measured, the 27 patients in the fasting and vegetarian diet groups improved significantly compared with the 26 patients in the control group who followed their usual omnivorous diet throughout the study period. (and maintained 1 year later.)

Fasting is effective in initial therapy for inflammatory and autoimmune diseases

Scand J Rheumatol. 2001;30(1):1-10.

Fasting followed by vegetarian diet in patients with rheumatoid arthritis: a systematic review.

Müller H[1], de Toledo FW, Resch KL.

PUT THE FIRE OUT!

NSAIDS
Methotrexate
Steroids
DMARD's
Biologics

have a role, but
success depends upon preventing a flare-up as these drugs are tapered off.

APPLIED CLINICAL NUTRITION and MEDICAL THERAPY for IBD

Food

REMOVE: Meat, dairy, wheat, processed foods, oils, fried foods

OLD MODEL of NUTRITION

CARBOHYDRATES = ENERGY

(via KREBS CYCLE -> ATP, etc.)

PROTEIN = STRUCTURAL COMPONENTS and ENZYMES

FATS = ENERGY STORAGE

OLD MODEL of NUTRITION

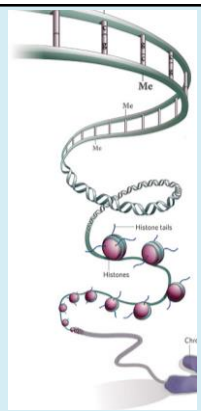
CARBOHYDRATES = ENERGY

(via KREBS CYCLE -> ATP, etc.)

PROTEIN = STRUCTURAL COMPONENTS and ENZYMES

FATS = ENERGY STORAGE

Our food is chemically "alive," and as it flows through every cell in our body, it interacts with us and plays our DNA like a piano – turning genes on and off that create and inhibit the protein enzymes in every cell that make us – us.

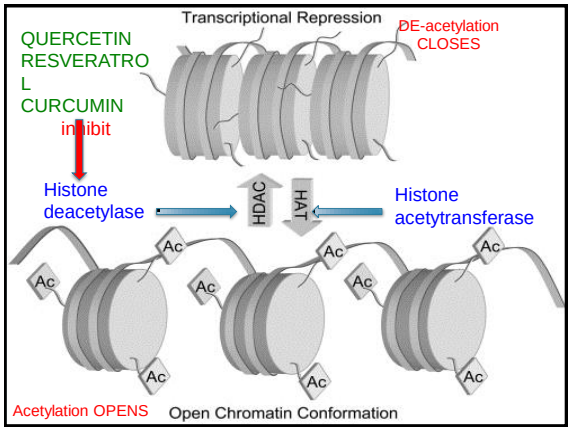


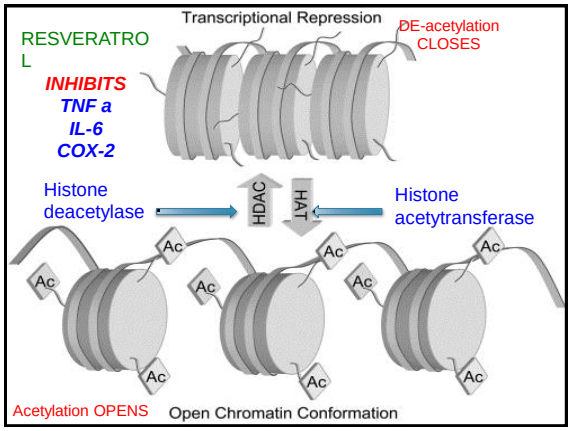
EPIGENETICS

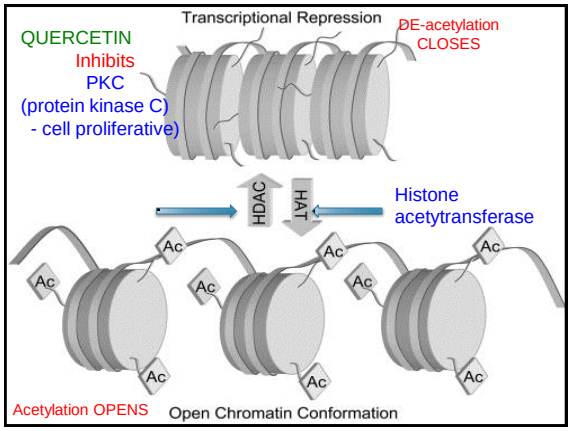
changes in gene expression or cellular phenotype, caused by mechanisms ***other than changes in the underlying DNA sequence.***

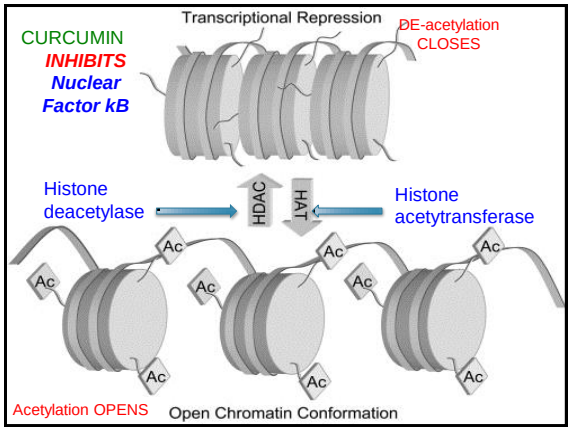
NUTRIGENOMICS

the study of the effects of foods and food constituents on gene expression.









THE STANDARD AMERICAN DIET "S.A.D."

Meat and Dairy-based meal

A WITCH'S BREW OF MEAT-SPECIFIC TOXINS

- Endotoxins
- Pro-inflammatory Neu5Gc
- Oxidized muscle proteins
- Bio-concentrated pesticides
- Herbicides and heavy metals
- Hormones and antibiotics
- Food chemicals – flavorings, colorings, etc.

The genes that will be turned on by this fuel mixture -and the protein/enzymes they create - will be much different than the proteins and enzymes created by this fuel mixture:

Meat and Dairy-based meal

Polyphenols, alkaloids, and phenolics: tea polyphenols, genistein, curcumin, resveratrol, sulforaphane, isothiocyanates, silymarin, diallyl sulfide, lycopene, rosmarinic acid, apigenin, and gingerol.

Therapeutic Dietary Program for RA:

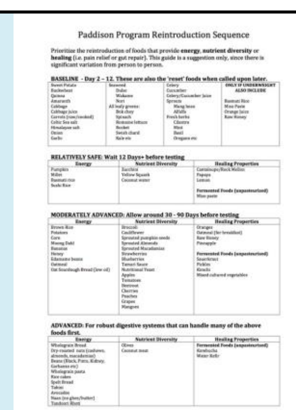
"The Paddison Program"

http://www.paddisonprogram.com/"

"The Paddison Program" dietary recommendations

2-3 days on water or cucumber-celery juice (optional)

then,
Food Reintroduction program



Paddison Program Reintroduction Sequence

Prioritize the reintroduction of foods that provide **energy**, **nutrient diversity** or **healing** (i.e. pain relief or gut repair). This guide is a suggestion only, since there is significant variation from person to person.

BASELINE - Day 2 – 12. These are also the 'reset' foods when called upon later.

Sweet Potato Buckwheat Quinoa Amaranth Cabbage Cabbage juice Carrots (raw/cooked) Celtic Sea salt Himalayan salt Onion Garlic	Seaweed Dulse Wakame Nori All leafy greens: Bok choy Spinach Romaine lettuce Rocket Swiss chard Kale etc	Celery Cucumber Celery/Cucumber juice Sprouts Mung bean Alfalfa Fresh herbs Cilantro Mint Basil Oregano etc	**ONLY IF UNDERWEIGHT ALSO INCLUDE** Basmati Rice Miso Paste Orange Juice Raw Honey

RELATIVELY SAFE: Wait 12 Days+ before testing

Energy	Nutrient Diversity	Healing Properties
Pumpkin Millet Basmati rice Sushi Rice	Zucchini Yellow Squash Coconut water	Cantaloupe/Rock Mellon Papaya Lemon **Fermented Foods (unpasteurized)** Miso paste

MODERATELY ADVANCED: Allow around 30 - 90 Days before testing

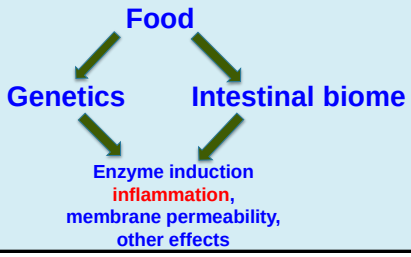
Energy	Nutrient Diversity	Healing Properties
Brown Rice Potatoes Corn Moong Dahl Bananas Honey Edamame beans Oatmeal Oat Sourdough Bread (low oil)	Broccoli Cauliflower Sprouted pumpkin seeds Sprouted Almonds Sprouted Macadamias Strawberries Blueberries Tamari Sauce Nutritional Yeast Apples Tomatoes Beetroot Cherries Peaches Grapes Mangoes	Oranges Oatmeal (for breakfast) Raw Honey Pineapple **Fermented Foods (unpasteurized)** Sauerkraut Pickles Kimchi Mixed cultured vegetables

ADVANCED: For robust digestive systems that can handle many of the above foods first.

Energy	Nutrient Diversity	Healing Properties
Wholegrain Bread Dry-roasted nuts (cashews, almonds, macadamias) Beans (Black, Pinto, Kidney, Garbanzo etc) Wholegrain pasta Rice cakes Spelt Bread Tahini Avocados Naan (no ghee/butter) Tandoori Roti	Olives Coconut meat	**Fermented Foods (unpasteurized)** Kombucha Water Kefir

"DYNAMIC TRIO" INTERACTION

"Nutrigenomics"



Changing the diet changes gut flora

R Peltonen, WH Ling, O Hänninen, E Eerola. An uncooked vegan diet shifts the profile of human fecal microflora: computerized analysis of direct stool sample gas-liquid chromatography profiles of bacterial cellular fatty acids. Appl Environ Microbiol. 1992 Nov;58(11):3660-6.

Lignans have anti-microbial effects:

M Saleem, HJ Kim, MS Ali, YS Lee. An update on bioactive plant lignans. Nat Prod Rep. 2005 Dec;22(6):696-716.

Plant-based diets shift fecal flora to less pro-inflammatory species

Appl Environ Microbiol. 1992 Nov;58(11):3660-6.

An uncooked vegan diet shifts the profile of human fecal microflora: computerized analysis of direct stool sample gas-liquid chromatography profiles of bacterial cellular fatty acids.

Peltonen R[1], Ling WH, Hänninen O, Eerola E.

Faecal microbial flora and disease activity in rheumatoid arthritis during a vegan diet.

Peltonen R, Nenonen M, Helve T, Hänninen O, Toivanen P, Eerola E.

Eur J Clin Nutr. 2012 Jan;66(1):53-60. doi: 10.1038/ejcn.2011.141. Epub 2011 Aug 3.

A vegan or vegetarian diet substantially alters the human colonic faecal microbiota.

Zimmer J, Lange B, Frick JS, Sauer H, Zimmermann K, Schwiertz A, Rusch K, Klosterhalfen S, Enck P.

Department of Internal Medicine VI, University Hospital, Tübingen, Germany.

Abstract We examined faecal samples of vegetarians (n=144), vegans (n=105) and an equal number of control subjects consuming ordinary omnivorous diet who were matched for age and gender. We used classical bacteriological isolation, identification and enumeration of the main anaerobic and aerobic bacterial genera and computed absolute and relative numbers that were compared between groups.

RESULTS: Total counts of Bacteroides spp., Bifidobacterium spp., Escherichia coli and Enterobacteriaceae spp. were significantly lower (P=0.001, P=0.002, P=0.006 and P=0.008, respectively) in vegan samples than in controls, whereas others (E. coli biovars, Klebsiella spp., Enterobacter spp., other Enterobacteriaceae, Enterococcus spp., Lactobacillus spp., Citrobacter spp. and Clostridium spp.) were not. Subjects on a vegetarian diet ranked between vegans and controls. The total microbial count did not differ between the groups. In addition, subjects on a vegan or vegetarian diet showed significantly (P=0.0001) lower stool pH than did controls, and stool pH and counts of E. coli and Enterobacteriaceae were significantly correlated across all subgroups.

- **CONCLUSIONS: Maintaining a strict vegan or vegetarian diet results in a significant shift in the microbiota while total cell numbers remain unaltered.**

Diets rich in complex carbohydrates show less pathogenic species such as *Mycobacterium avium* subspecies *paratuberculosis* and Enterobacteriaceae than diets higher in fat or protein.

Walker A.W., Ince J., Duncan S.H., Webster L.M., Holtrop G., Ze X., Brown D., Stares M.D., Scott P., Bergerat A., et al. Dominant and diet-responsive groups of bacteria within the human colonic microbiota. ISME J. 2011;5:220–230.

Complex carbohydrates also increase levels of beneficial Bifidobacteria spp. such as B. longum subspecies longum, B. breve and B. thetaiotaomicron .

Refined sugars, on the other hand, mediate the overgrowth of opportunistic bacteria like C. difficile and C. perfringens

Vegetarianism alters intestinal microbiota in humans because high amounts of fiber result in increased short chain fatty acid production by microbes which decrease the intestinal pH. This prevents the growth of potentially pathogenic bacteria such as *E. coli* and other members of Enterobacteriaceae.

Zimmer J., Lange B., Frick J.S., Sauer H., Zimmermann K., Schwiertz A., Rusch K., Klosterhalfen S., Enck P. A vegan or vegetarian diet substantially alters the human colonic faecal microbiota. Eur. J. Clin. Nutr. 2012;66:53–60.

Int J Biol Macromol. 2013 Oct;61C:75-81. doi: 10.1016/j.ijbiomac.2013.06.048. Epub 2013 Jul 1.

An apple oligogalactan suppresses endotoxin-induced cyclooxygenase-2 expression by inhibition of LPS pathways.

Li Y, Fan L, Sun Y, Zhang D, Yue Z, Niu Y, Meng J, Yang T, Liu W, Mei Q.

Department of Oncology, Xijing Hospital, Fourth Military Medical University, Xi'an 710032, Shaanxi, PR China.

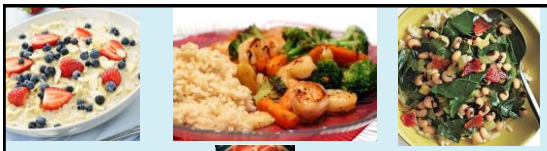
Abstract

Colorectal cancer (CRC) is one of the most common cancers and a leading cause of cancer-related mortality in developed countries. Many ingredients of apples have been proven to have anti-inflammatory and anti-carcinogenic characteristics, and show benefits for CRC prevention. The aim of this study, therefore, was to evaluate inhibitory effect of an apple oligogalactan (AOG) on pro-inflammatory endotoxin lipopolysaccharide (LPS)-activated human colon carcinoma cells HT-29 and SW-620 and investigate the possible mechanisms. through inhibiting the phosphorylation of MAPKs and the activation of NF-κB and AP-1. These data may provide another molecular basis for understanding how apples act to prevent CRC and indicate that AOG may be useful for treatment of colitis and prevention of carcinogenesis.

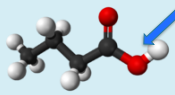
A gluten-free diet decreases the abundance of Firmicutes and increases the number of Proteobacteria

De Palma G., Nadal I., Collado M.C., Sanz Y. Effects of a gluten-free diet on gut microbiota and immune function in healthy adult human subjects. Br. J. Nutr. 2009;102:1154–1160.

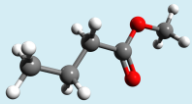
However, a gluten-free diet may not completely restore the natural balance of the microbiota normally seen in healthy individuals in those patients that have experienced dysbiosis due to gluten sensitivity.



Colon bacteria digest fiber – liberate short-chain fatty acids



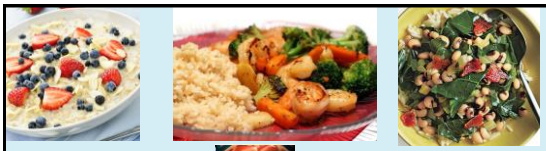
Butyric acid



(methyl) butyrate

BUTYRATES ARE ABSORBED INTO BLOODSTREAM AND EXERT ANTI-INFLAMMATORY EFFECT

Meijer K, de Vos P, Priebe MG. Butyrate and other short-chain fatty acids as modulators of immunity: what relevance for health? Curr Opin Clin Nutr Metab Care. 2010 Nov;13(6):715-21.



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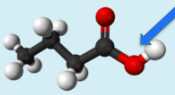
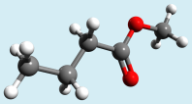


Butyric acid



(methyl) butyrate

Vegetarians diets foster more butyrate-producing colon bacteria

Hippe B, Zwielehner J, Liszt K, Lassl C, Unger F, Haslberger AG.Quantification of butyryl CoA:acetate CoA-transferase genes reveals different butyrate production capacity in individuals according to diet and age. FEMS Microbiol Lett. 2011 Mar;316(2):130-5.

PROBIOTICS

LACTOBACILLUS PLANTARUM

BMC Microbiol. 2013 Aug 10;13:190. doi: 10.1186/1471-2180-13-190.

Lactobacillus plantarum MYL26 induces endotoxin tolerance phenotype in Caco-2 cells.

Chiu YH, Lu YC, Ou CC, Lin SL, Tsai CC, Huang CT, Lin MY

Department of Food Science and Biotechnology, National Chung Hsing University, Taichung 40227, Taiwan.

Abstract: Crohn's disease and ulcerative colitis are the major types of chronic inflammatory bowel disease occurring in the colon and small intestine. A growing body of research has proposed that probiotics are able to attenuate the inflammatory symptoms of these diseases in vitro and in vivo. However, the mechanism of probiotic actions remains unclear.

RESULTS: **Our results suggested Lactobacillus plantarum MYL26 inhibited inflammation in Caco-2 cells through regulation of gene expressions of TOLLIP, SOCS1, SOCS3, and IκBα, rather than SHIP-1 and IRAK-3.**

CONCLUSIONS: We proposed that live/ heat-killed Lactobacillus plantarum MYL26 and bacterial cell wall extract treatments impaired TLR4-NFκb signal transduction through Tollip,SOCS-1 and SOCS-3 activation, thus inducing LPS tolerance. Our findings suggest that either heat-killed probiotics or probiotic cell wall extracts are able to attenuate inflammation through pathways similar to that of live bacteria.

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LACTOBACILLUS RHAMNOSUS

J Biol Chem. 2013 Sep 16. [Epub ahead of print]

A Lactobacillus rhamnosus GG-derived soluble protein, p40, stimulates ligand release from intestinal epithelial cells to transactivate EGF receptor.

Yan F, Liu L, Dempsey PJ, Tsai YH, Raines EW, Wilson CL, Cao H, Cao Z, Liu L, Polk DB.

Abstract: **p40, a Lactobacillus rhamnosus GG (LGG)-derived soluble protein, ameliorates intestinal injury and colitis, reduces apoptosis and preserves barrier function by transactivation of the EGF receptor (EGFR) in intestinal epithelial cells.** The aim of this study is to determine the mechanisms by which p40 transactivates EGFR in intestinal epithelial cells. Here we show that p40-conditioned medium activates EGFR in young adult mouse colon (YAMC) epithelial cells and human colonic epithelial cell line, T84 cells. p40 up-regulates a disintegrin and metalloproteinase domain-containing protein 17 (ADAM17) catalytic activity and broad-spectrum metalloproteinase inhibitors block EGFR transactivation by p40 in these two cell lines. In ADAM17-deficient mouse colonic epithelial (ADAM17$^{-/-}$ MCE) cells, p40 transactivation of EGFR is blocked, but can be rescued by re-expression with wt ADAM17. Furthermore, p40 stimulates release of heparin binding (HB)-EGF, but not transforming growth factor (TGF)α or amphiregulin, in YAMC cells and ADAM17$^{-/-}$

LACTOBACILLUS CASEI

Scand. J. Immunol. 2011;74:335–341.

Immunomodulatory effects of lactobacillus casei administration in a mouse model of gliadin-sensitive enteropathy.

D'Arienzo R., Stefanile R., Maurano F., Mazzarella G., Ricca E., Troncone R., Auricchio S., Rossi M.

LACTOBACILLUS CASEI

Lactobacillus casei has been found to be effective in restoring normal mucosal architecture and gut-associated lymphoid tissue homeostasis in a mouse model of gliadin-induced enteropathy.

D'Arienzo R., Stefanile R., Maurano F., Mazzarella G., Ricca E., Troncone R., Auricchio S., Rossi M. Immunomodulatory effects of lactobacillus casei administration in a mouse model of gliadin-sensitive enteropathy. Scand. J. Immunol. 2011;74:335–341.

BIFIDOBACTERIA SPP

Bifidobacteria spp. enhance the maturation of the mucosal sIgA system.

Diet-Induced Dysbiosis of the Intestinal Microbiota

and the Effects on Immunity and Disease

Kirsty Brown, Daniella DeCoffe, [...], and Deanna L. Gibson

Supplement Facts

Serving Size 1 Capsule Servings Per Container 30

Amount Per Capsule

Probiotic Blend Supplying 25+ billion CFUs 135 mg**

viable microorganisms as:
Lactobacillus rhamnosus,
Bifidobacterium bifidum,
Lactobacillus acidophilus,
Lactobacillus casei,
Lactobacillus plantarum,
Lactobacillus salivarius,
Bifidobacterium longum,
Streptococcus thermophilus,
Lactobacillus bulgaricus,
Lactobacillus paracasei,
Bifidobacterium lactis,
and *Bifidobacterium breve*

**Daily Value not established.

Other Ingredients: Inulin (from chicory root), vegetarian capsule (hydroxypropyl methylcellulose, water), polysaccharide complex, and L-leucine.

No Dairy. **No** Gluten. **No** Soy. **No** Sugar. **No** Yeast. **No** Corn.

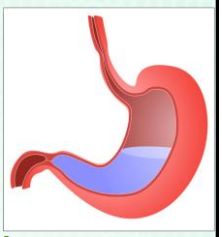
Product is Acid-Stable for Delayed Release

Timing of probiotics

Take probiotics between meals -

- one hour before
- two hours after
- Or *at bedtime…*

NOT with an antibiotic!



Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

Use probiotics if:

If the patient has taken a course of antibiotics recently, take probiotics during the treatment and for 3-4 weeks afterwards.

If the patient has known "leaky gut" or autoimmune disease until improved.

If the patient drinks chlorinated water, alcohol, sugary drinks – take probiotics once or twice a month?

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

EATING YOGURT FOR PROBIOTICS ?

Most have high fructose corn syrup for sweetness and often cornstarch and **gelatin** for texture and artificial sweeteners

All yogurts - "acidophilus," "probiotic" or not - have DAIRY protein.

Why consume dairy protein and sugar that work against weight loss and diabetes control?

IF ONE WANTS A PROBIOTIC - TAKE A NON-DAIRY PROBIOTIC

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

PROBIOTICS

ARE THERE ENOUGH ORGANISMS PER DOSE?

At least 5 BILLION

CFU (colony forming unit)

IS THE PROBIOTIC ALIVE?

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

LACTOBACILLUS SPECIES CURDLES MILK!

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

SIMPLE "KITCHEN CHEMISTRY!"

In EAC

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

TEST IT!

In ONE of the bowls…

OPEN 3-4 CAPSULES OR ½ TSP LIQUID OR POWDER AND *STIR IN TO THE MILK WITH A FORK.*

(IF TABLETS, CRUSH TO POWDER)

LET BOTH BOWLS SIT OUT AT ROOM TEMPERATURE OVERNIGHT

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

After 24 – 48 hours: (in the bowl with the probiotics)

1. **Chunks of curdled milk**

   or

2. **A film of yogurt**

   or

3. **Bubbles of CO_2**

   AND

4. **A smell of sour milk**

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

Probiotics should be able to curdle milk.

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

WHAT ABOUT FISH OIL?

Rheumatol Int. 2003 Jan;23(1):27-36.

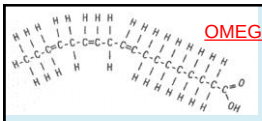
Anti-inflammatory effects of a low arachidonic acid diet and fish oil in patients with rheumatoid arthritis.

Adam O[1], Beringer C, Kless T, Lemmen C, Adam A, Wiseman M, Adam P.

Sixty patients completed the study. In AID patients, but not in WD patients, the numbers of tender and swollen joints decreased by 14% during placebo treatment. In AID patients, as compared to WD patients, fish oil led to a significant reduction in the numbers of tender (28% vs 11%) and swollen (34% vs 22%) joints (P<0.01). Compared to baseline levels, higher **enrichment of eicosapentaenoic acid** in erythrocyte lipids (244% vs 217%) and **lower formation of leukotriene B(4)** (34% vs 8%, P>0.01), **11-dehydro-thromboxane B(2)** (15% vs 10%, P<0.05), and **prostaglandin metabolites** (21% vs 16%, P<0.003) were found in AID patients, especially when fish oil was given during months 6-8 of the experiment.

CONCLUSION:

A diet low in arachidonic acid ameliorates clinical signs of inflammation in patients with RA and augments the beneficial effect of fish oil supplementation.

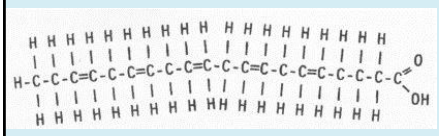


OMEGA – 3's

LINOLEIC ACID
(Walnuts, flax, hemp, dark greens, chia, etc.)

CARBON ATOMS = 18

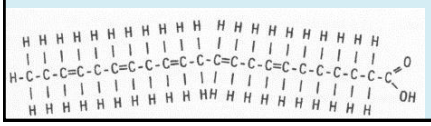
\+ C-C



EPA

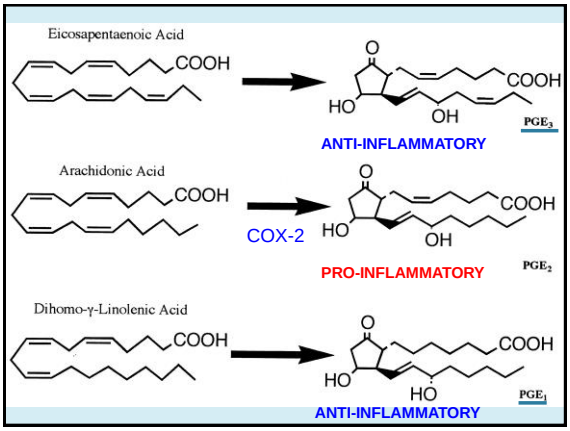
CARBON ATOMS = 20

\+ C-C



DHA

CARBON ATOMS = 22



FISH-OIL MAY CONTAIN:

HYDROCARBON CONTAMINANTS (PCB's, PESTICIDES, etc.) [1]

and

PROLONG

BLOOD CLOTTING[2]

1 T Ashley, J S Ward, C S Anderson, M W Schafer, L Zaoudeh, R J Horwitz, D J Velinsky, ***Children's daily exposure to polychlorinated biphenyls from dietary supplements containing fish oils.*** *Food Addit Contam Part A Chem Anal Control Expo Risk Assess. 2013;30(3):505-14.*

E. Hoh, S. J. Lehotay, K. C. Pamgallo, K. Mastovska, H. L. Ngo, C. M. Reddy, and W. Vetter, ***Simultaneous quantitation of multiple classes of organohalogen compounds in fish oils*** *with direct sample introduction comprehensive two-dimensional gas chromatography and time-of-flight mass spectrometry. J. Agric. Food. Chem., 57(7):2653-2660, 2009. (Heavier brominated ethers, and halogenated natural products – not distilled.)*

2. Arteriosclerosis, Thrombosis, and Vascular Biology. 2004; 24: 1734-1740 Variable Hypocoagulant Effect of Fish Oil Intake in Humans: Modulation of Fibrinogen Level and Thrombin Generation, Kristof Vanschoonbeek, et.al

FISH

DO NOT MAKE

EPA OR DHA.

DHA/EPA IS MADE BY ALGAE CELLS IN THE OCEAN

FISH SWIM IN THE OCEAN WITH THEIR MOUTHS OPEN AND SWALLOW ALGAE.

THE ***ALGAL*** DHA/EPA DEPOSITS IN THE FISH'S MUSCLE

THE OMEGA-3 DHA/EPA IN "FISH OIL" IS REALLY DERIVED FROM ALGAE.

ALGAE-DERIVED

DHA/EPA

200 MG. – 300 MG. DAILY

DR. KLAPER HAS NO FINANCIAL CONNECTION WITH ANY NUTRITIONAL SUPPLEMENT OR SUPPLIER

PLANT-BASED THERAPIES IN AUTOIMMUNE DISEASES

MINIMIZE PRO-INFLAMMATORY MOLECULES

Neu5Gc – sialic acid (found only in animals)

Arachidonic acid --> pro-inflammatory prostaglandin-2 series

Food-based antigens – whole-food plant-based diet (Paddison Program")

OPTIMIZE ANTI-INFLAMMATORY MOLECULES

High potassium foods increase endogenous cortisol

DHA & EPA – long chain, omega-3 fatty acids (consider supplements?)

Curcumin – in foods and supplements

IMPROVE MICROBIAL BALANCE

MINIMIZE BACTERICIDES – alcohol, antibiotics, chlorinated water, etc.

PLANT-BASED DIET ↓PROTEUS MIRABILIS – USE PROBIOTICS? ANTIBIOTICS?

PROMOTE INTESTINAL WALL INTEGRITY

AVOID NSAID's (they increase intestinal permeability) *EXCEPT* NABUMETONE

Quercetin, glutamine, etc.

AUTOIMMUNE PROTOCOL

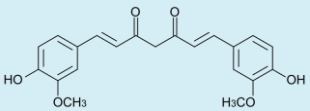
1. CONSIDER 2-3 DAY WATER OR JUICE FAST (or longer medically-supervised fast)
2. "Paddison Program" food re-introduction

   Whole food, plant-based diet. (Gluten free?)

3. Anti-inflammatory foods and supplements – turmeric, DHA/EPA

4. Restore intestinal microbial balance and gut wall integrity

TURMERIC



Usual dose:
300 mg – 600 mg
2 – 3 times/day

Pharmacol Rep. 2015 Apr;1(2):129-139.

"Curcumin, the King of Spices": Epigenetic Regulatory Mechanisms in the Prevention of Cancer, Neurological, and Inflammatory Diseases.

Boyanapalli SS[1], Tony Kong AN[1]

REPAIR GUT INTEGRITY

1.REMOVE ONGOING INJURY

SUGARS, ALCOHOL, ANTIBIOTICS, NSAIDS, ETC.

2. REMOVE IMMUNOGENIC FOODS:

MEAT DAIRY, WHEAT, etc.

3. REPAIR BARRIER FUNCTION

QUERCETIN 500 - 1000 mg. bid (x 6 wks)

GLUTAMINE 500 - 1000 mg. bid (x 6 wks)

PROBIOTICS (non-dairy)

Mouth • Esophagus • Stomach • Duodenum • Pancreas • Gallbladder • Small Intestine • Liver • Colon • Rectum

QUERCETIN

- **Quercetin Enhances Intestinal Barrier Function through the Assembly of Zonnula Occludens-2, Occludin, and Claudin-1 and the Expression of Claudin-4 in Caco-2 Cells**[1]
- Takuya Suzuki et a;*Division of Applied Bioscience, Research Faculty of Agriculture, Hokkaido University Kita-9, Nishi-9, Kita-ku, Sapporo 060-8589, Japan*
- Dietary flavonoids provide various beneficial effects for our health. We investigated the promotive effects of quercetin and myricetin on the intestinal barrier function in human intestinal Caco-2 cell monolayers. Transepithelial electrical resistance (TER) across the monolayers increased rapidly during incubation with quercetin, peaking at 6 h. Lucifer yellow flux, a paracellular marker, was dose-dependently lower after quercetin and myricetin treatments, although quercetin exhibited a more potent effect. Immunoblot analysis of tight junction (TJ) proteins revealed that zonnula occludens (ZO)-2, occludin, and claudin-1 were distributed to the actin cytoskeleton fraction by quercetin without increasing their respective whole-cell levels and this distribution was correlated with the increases in TER. The claudin-4 level was elevated by quercetin in both the cytoskeleton fraction and whole cells after 12 h. Confocal microscopy showed the assembly of claudin-1 and -4 at the TJ by quercetin. An inhibitor of protein kinase Cδ (PKCδ), rottlerin, enhanced the barrier function with changes in the distribution and expression of TJ proteins in a manner very similar to that of quercetin. Phosphorylation of PKCδ indicating the enzymatic activity in the cells was decreased by quercetin after 1 h. In the kinase assay, quercetin exhibits direct inhibition of the PKCδ isoform. **This study demonstrates that quercetin enhances the intestinal barrier function through the assembly of ZO-2, occludin, and claudin-1 by inhibiting PKCδ and the increase in claudin-4 expression has an additional role after 12 h.**

GLUTAMINE HEALS INTESTINAL MUCOSA

- JPEN J Parenter Enteral Nutr. 2015 May 13.
- **Glutamine Restores Tight Junction Protein Claudin-1 Expression in Colonic Mucosa of Patients With Diarrhea-Predominant Irritable Bowel Syndrome.**
- Bertrand J[1], Ghouzali I[1], Guérin C[1], Blôle-Feysot C[1], Gouteux M[1], Déchelotte P[2], Ducrotté P[3], Coëffier M[4].
- Turk J Gastroenterol. 2007 Jun;18(2):89-94.
- **The effect of L-glutamine on mucosal healing in experimental colitis is superior to short-chain fatty acids.**
- Kaya E[1], Ceylan A, Kara N, Güven H, Yildiz L.
- J Cell Mol Med. 2002 Jul-Sep;6(3):377-82.
- **Effects of oral supplement of L-glutamine on diverted colon wall.**
- Paulo FL[1].

If flare occurs despite all the above

CONSIDER ANTIBIOTIC TREATMENT

FOR

Proteus mirabilis

AND/OR

Yersinia enterocolitica

Proteus as main cause of RA via cross-reactivity with synovial tissue and bacterial cell wall

A Ebringer, T Rashid. Rheumatoid arthritis is caused by a Proteus urinary tract infection. APMIS. 2014 May;122(5):363-8.

Ann Rheum Dis. 1995 Mar;54(3):221-4.

Decrease in anti-Proteus mirabilis but not anti-Escherichia coli antibody levels in rheumatoid arthritis patients treated with fasting and a one year vegetarian diet.

Kjeldsen-Kragh J[1], Rashid T, Dybwad A, Sioud M, Haugen M, Førre O, Ebringer A.

Yersinia is a key pathogen in Reiter's syndrome (inflammatory arthritis)

J Pathog. 2011;2011:420732. doi: 10.4061/2011/420732. Epub 2011 Oct 23.

Behavior of Yersinia enterocolitica in Foods.

Bari ML[1], Hossain MA, Isshiki K, Ukuku D.

"GENETICS LOADS THE GUN…

DIET AND LIFESTYLE CHOICES PULL THE TRIGGER."

ARE WE REALLY TREATING THE CAUSES OF OUR PATIENTS' PROBLEMS?

Kaiser Permanente Urging Adoption of Plant-Based Diets!

Nutritional Update for Physicians: Plant-Based Diets

Phillip J Tuso, MD; Mohamed H Ismail, MD; Benjamin P Ha, MD; Carole Bartolotto, MA, RD

Perm J 2013 Spring; 17(2):61-66

"Research shows that plant-based diets are cost-effective, low-risk interventions that may lower body mass index, blood pressure, HbA_{1C}, and cholesterol levels. They may also reduce the number of medications needed to treat chronic diseases and lower ischemic heart disease mortality rates. **Physicians should consider recommending a plant-based diet to all their patients, especially those with high blood pressure, diabetes, cardiovascular disease, or obesity."**

Physician Competencies for Prescribing Lifestyle Medicine

JAMA, July 14, 2012 – Vol 304, No. 2 202-203

YOU DON'T HAVE TO DO THIS IS ALL YOURSELF!

THERE IS HELP AVAILABLE!

FIND PLANT-BASED NUTRITION COUNSELORS, COOKING INSTRUCTORS, LIFESTYLE COACHES, ETC. IN YOUR COMMUNITY:

Vegetarian Nutrition
a dietetic practice group of the Academy of Nutrition and Dietetics
eat right.

PCRM.ORG
DRMCDOUGALL.COM
DRFUHRMAN.COM
T.COLIN CAMPBELL CENTER FOR NUTRITION STUDIES

" ALL TRUTH PASSES THROUGH THREE STAGES:

FIRST, IT IS RIDICULED…

THEN, IT IS VIOLENTLY OPPOSED…

THEN, IT IS ACCEPTED AS SELF-EVIDENT"

- Schoepenhaur

PLANT-BASED NUTRITION STRATEGIES for AUTOIMMUNE DISEASE

Michael Klaper, M.D.
www.DoctorKlaper.com