Kronisk inflammation
Vad betyder det för oss kirurger?
Stig Bengmark MD PhD, London University, UK

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www.bengmark.com
stig@bengmark.se
HEALTH HAS THREE MAJOR LEGS – all are needed – honour them all!

SPRITUAL HARMONY

EXERCISE ——— PROPER FOOD
DISEASE, GENES, ENVIRONMENT
- example cancer

_ENVIRONMENT_ 90-95 %

GENES 5 %

DIET app 1/3
The age-adjusted death rate in ChDs such as prostatic cancer rose in Japan during the period 1948 - 98 25-fold parallel to increases in intake of:

- egg 7 X
- meat 9 X
- dairy 20 X

Ganmaa D et al Medical Hypotheses 2003;60:724-730
DIFFERENT TIME & LIFESTYLE – DIFFERENT DISEASE PATTERN

THIRD MILLENIUM DISEASES

DRAMATIC increase in incidence in recent 27 years (1990 – 2017) in USA

Lear R. The Root Cause in the dramatic rise of Chronic Disease

https://app.box.com/s/iyjuzrxtkx3gpblu4vmt0wjrgsxykuzc

Chronic fatigue syndrome 11027 percent
Bipolar disease in youth 10833 percent
Fibromyalgia 7727 percent
Autism 2094 percent
Celiac Disease 1111 percent
ADHD 819 percent
Lupus 787 percent
Hypothyroidism 702 percent
Osteoarthritis 449 percent
Sleep Apnea 430 percent
Diabetes 305 percent
Alzheimer’s disease 299 percent
Mental Depression 280 percent
Asthma 142 percent
FORECAST ALZHEIMER USA – 2050
Hebert LE et al Arch Neurol 2003;60:1119-1122
DISCRETE PERSISTANT CHRONIC INFLAMMATION
- THE MOTHER OF DISEASE

Bengmark S. J Clin Nutr 2004;23:1256-1266

REVIEW

Acute and "chronic" phase reaction—a mother of disease

Stig Bengmark

Department of Surgery and Liver Institute, UCL, London, UK

Received 23 July 2004

KEYWORDS
Acute phase response; Chronic phase response; Metabolic syndrome; Cellular membranes; Endothelial cell

Summary The world is increasingly threatened by a global epidemic of chronic diseases. Almost half of the global morbidity and almost two thirds of global mortality is due to these diseases—approximately 35 million die each year from chronic diseases. And they continue to increase. Increasing evidence suggest that these diseases are associated with lifestyle, stress, lack of physical exercise, over-consumption of calorie-condensed foods rich in saturated fat, sugar and starch, but also under-consumption of antioxidant-rich fruits and vegetables. As a result the function of the host immune system is severely impaired. This chapter discusses the
UNDERSTANDING INNATE IMMUNITY = UNDERSTANDING INFLAMMATION = UNDERSTANDING DISEASE - Perinatal - Postprandial

Inflammation - the Mother of Disease!
MALFUNCTIONING INNATE IMMUNITY

🌞 Reduced number & function of monocytes and macrophages

🌞 Reduced expression of Toll-like receptors

🌞 Reduced efficary of dendritic cells to activate both T and B cell

🌞 Decreased killing ability of natural killer (NK) cells

🌞 Reduced efficacy of macrophages and neutrophils: impaired respiratory burst, reactive nitrogen intermediate production & decreased ability to destroy pathogens & impaired production of several cytokines

DISEASE & PREMATURE AGING
64.1 A Dramatic Increase in Incidence of Chronic Diseases

The burden of chronic diseases is steadily increasing all around the world and is forecasted to continue to do so for at least another 50 years. While the increase in chronic diseases in Western countries, although accelerating in the last 50 years, had been ongoing for more than 100 years, it is mainly in the period after the last world war that more pronounced increases in incidences of chronic diseases have occurred, especially outside the Western hemisphere. Pronounced increases are, for example, reported from Japan from the period of the first 50 years after the last world war (1948–1998) – dramatic increases in incidences of diseases such as breast, ovarian, prostatic, and testicular, much in parallel to the Japanese population adapting Western food habits, to a large extent complementing or eventually also replacing traditional horticultural and aqua-cultural foods with processed Western-type agricultural foods. During these 50 years, for example, prostatic cancer in Japan increased by no less than 25 times, much in parallel to an increase in intake of egg 7 times, meat 1.1 times, and dairy products 20 times [1,2]. Similar, although slightly delayed, developments are also reported both from other continents and from neighboring Asian countries to Japan [3]. Seemingly this epidemic dominated by obesity and associated diseases has its epicenter in the southern United States, with states such as Alabama, Louisiana, and Mississippi having the highest incidence of obesity and chronic diseases in the United States.
Dietary AGEs and Their Role in Health and Disease

Edited by Jaime Uribarri

Available at http://bengmark.com/research-articles/
VÄLJ HÄLSA!
Mina samlade råd till dig som vill förebygga ohälsa

Under publication
December 2018
PROCESSED FOODS – THE CAUSE

Excess of refined foods; fats, sugars, bioactive peptides, hormones, chemicals (incl pharmaceuticals)

- Destabilizes the immune system
- Increases prooxidant actions
- Stimulates overexpression of NF-κB, COX-2, LOX, iNOS
- Reduced microbiota - Creates dysbiosis
- Reduces resistance to disease

www.bengmark.com
PROCESSED, Refined, CALORIE-CONDENSED HIGH ENERGY DIET
POSTPRANDIAL INFLAMMATION – BLOOD GLUCOSE 🙁
POSTPRANDIAL INFLAMMATION


Normal:
72-108 mg/dL = 4-6 mmmol/l fasting, max 157 = 8.7 after meal.

DAILY BLOOD GLUCOSE VARIATIONS
POSTPRANDIAL INFLAMMATION & ENDOTOXEMIA


B

Time (min)

Frequency (counts)

Plasma endotoxin (pg/mL)

0-2  2-5  5-10  10-20  20-40  40-80  80-160  160-240
INDUCERS OF POSTPRANDIAL INFLAMMATION


Rich in:  
- **Saturated Fat**  
  (animal fat)
- **Monosaturated Fat**  
  (sunflower oil 85 %, olive oil 75 %, canola oil 58 %)  
  (tallow 50 %, lard 40 %)
- LFHCC = COMPLEX CARBOHYDRATES  
- + Omega-3 Fats

\[ P_{\text{diet}} = 0.706 \]
\[ P_{\text{time}} = 0.046 \]
\[ P_{\text{interaction}} = 0.147 \]
OBESE PREGNANT WOMEN – SOURCE OF INFLAMMATION

Basu S et al Obesity 2011;19:476-482

Graphs showing:

**a. Cytokine expression in SVF (FC lean vs. obese)**
- MCP1
- IL-8
- IL-6
- TNF-α
- Leptin

**b. Expression of LPS-sensitive genes (FC lean vs. obese)**
- CD14
- TLR4
- TRAM2
LEAKY PLACENTA

A shocking 9/20 (43 %) of umbilical cord blood, cultivated from healthy neonates, born by cesarean section, demonstrate positive growth:

*Enterococcus faecium*, *Propionibacterium acnes*, *Staphylococcus epidermidis* & *Streptococcus sanguinis*

<table>
<thead>
<tr>
<th>Lactic Acid Bacteria</th>
<th>Obese (n=68)</th>
<th>Controls (n=44)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. plantarum</td>
<td>0 (0%)</td>
<td>8 (18.2%)</td>
<td>0.0004</td>
</tr>
<tr>
<td>L. paracasei</td>
<td>10 (14.7%)</td>
<td>17 (38.6%)</td>
<td>0.004</td>
</tr>
<tr>
<td>L. reuteri</td>
<td>6 (8.8%)</td>
<td>1 (2.3%)</td>
<td>0.16</td>
</tr>
<tr>
<td>L. rhamnosus</td>
<td>3 (4.4%)</td>
<td>4 (9.1%)</td>
<td>0.27</td>
</tr>
<tr>
<td>L. ruminis</td>
<td>3 (4.4%)</td>
<td>4 (9.1%)</td>
<td>0.27</td>
</tr>
<tr>
<td>L. salivarius</td>
<td>5 (7.4%)</td>
<td>2 (4.5%)</td>
<td>0.43</td>
</tr>
</tbody>
</table>
MOTHERS LIFESTYLE RELATES TO PERINATAL INFLAMMATION AND LONG-TERM HEALTH


The individual

Early childhood

Mother during pregnancy

Mother at conception

Grandfather & father
2001 – Mothers from families with high burden of allergies received during the last 2-4 weeks of pregnancy and the baby during first 6 mo Lactobacillus GG. Kalliomäki M et al. Lancet 2001;357(9262):1076-1079.


2015 - Probiotic-treated individuals showed no ADHD or Asperger syndrome - 0/40 = 0%

In contrast to placebo group - 6/35 (17.1%) - every 6th child. Pärtty A et al Pediatr Res. 2015;77:823-828.
PREVENTING DYSBIOSIS IS KEY TO DISEASE & INFECTION CONTROL
Brandtzaeg P et al Gastroenterology 1989;97:1562-84

Per Brandzaeg 1936 - 2016

😊 A striking local preponderence (70-90 %) of IgA immunocytes in the gut: plasma cells, plasma blasts
😊 The gut content is constantly tested by recognition cells such as dendritic cells (DC)
😊 Programming/tuning the immune system
😊 Each DC commands about 1200 T-cells
😊 DYSBIOSIS ➔ LEAKY GUT &
😊 INDUCING INFLAMMATION
😊 FACILITATING INFLAMMATION, INFECTION & DISEASE
DENDRITIC CELL & IMMUNE REGULATION
THE DENDRITIC CELL IN ACTION

Kraehenbuhl JP, Corbett M. Science 2004;303:1624-1625
ANTIBIOTICS ➔ DYSBIOSIS ➔ DISEASES

Dysbiosis = malfunctioning intestinal flora (microbiota)

The frequency with which doctors prescribe antibiotics varies greatly from state to state. The reasons for this variation are being studied and might suggest areas where improvements in antibiotic prescribing (fewer unnecessary prescriptions) would be most helpful.

Louisiana Mississippi, Alabama, Arkansas, Tennessee, Indiana, West Virginia

Highest number of PRESCRIPTIONS
METABOLIC SYNDROME - A GLOBAL TZUNAMI
- strongly associated to modern agriculture & mass-produced cheap processed foods

EPICENTRE: Louisiana Mississippi, Alabama, Arkansas, Tennessee, Indiana, West Virginia

Soon to lead "the league of unhealth"
GLOBAL STROKE INCIDENCE

SIX DANGEROUS METABOLIC MANIFESTATIONS
OFTEN OCCURING IN THE SAME CHRONICALLY ILL PERSONS

Today strongly associated with consumption of "Western-type" foods

Suggested in 1923 by Eskil Kylin, Eksjö, Jönköping and Stockholm.

خدام Abdominal obesity
خدام High blood pressure
خدام Elevated blood sugar
خدام Elevated blood triglycerides
خدام Low blood HDL cholesterols
خدام Fatty liver & fat-infiltrated skeletal muscles
خدام High blood uric acid
THE QUARTET OF DEATH

Excessive body weight
Hypertension
Impaired glucose homeostasis
Atherogenic dyslipidemia
Metabolic Syndrome is a Portal to Other Chronic Diseases

- Type 2 Diabetes (5X risk)
- Sarcopenia
- Sleep Apnea
- Obesity
- NASH
- Cardiovascular Disease (2X risk)
- Dyslipidemia
- Hypertension
- Erectile Dysfunction
- PCOS
- Osteoporosis
- Cognitive Decline / Alzheimers Disease
METABOLIC SYNDROME & DYSBIOSIS

Leaky Gut Affects the Whole Body

Brain
- Depression
- Anxiety
- ADHD

Skin
- Acne
- Rosacea
- Eczema
- Psoriasis

Thyroid
- Hashimotos
- Hypothyroidism
- Graves

Joints
- Rheumatoid Arthritis
- Fibromyalgia
- Headaches

Adrenals
- Fatigue

Colon
- Constipation
- Diarrhea
- IBD
DYSBIOSIS-INDUCED METABOLIC DISORDERS

Cani PD et al Diabetes 2008;57:1470-1481

LPS = ENDOTOXIN – THE VILLAIN

WESTERN DIET

HIGH FAT & SUGAR INTAKE

LPS concentration 10 to 50 X higher than those obtained during septic shock

ENDOTOXIN - THE VILLAIN & ASSOCIATED DISEASES

- Arterio-/Coronary Diseases Heo SK et al Immunol Lett 2008;120:57-64
- Diabetes type 1 Nymark M et al Diabetes Care 2009 32(9): 1689–1693
- Diabetes type 2 Andreasen AS Intensive Care Med. 2010;36:1548-1555

ADHD, allergy, ALS, autism, autoimmune diseases, bipolar disease, cataracts, chronic fatigue, syndrome, chronic kidney disease, chronic lung disease - COPD, fibromyalgia, glaucoma, gulf war syndrome, HIV, iritis, macular degeneration, minimal encephalopathy, multiple sclerosis, nephropathies, obesity, osteoporosis, paradontosis, Parkinson, polycystic ovary syndrome, rheumatoid disease, stress, schizophrenia, stroke, uveitis, etc
Endotoxemia
menace, marker, or mistake?
Munford RS. J Leukoc Biol 2016:100;687-699
"Never has blood-borne, Gram-negative bacterial endotoxin (LPS) been invoked in the pathogenesis of so many diseases ......... atherosclerosis, obesity, chronic fatigue, metabolic syndrome, and many other conditions."
FOOD INTAKE CHRONIC INFLAMMATION

☆ High intake in bacterial toxins
☆ High intake of proteotoxins in certain foods: casein (dairy), gluten & ATIs (wheat, rye, barley), zein (corn)
☆ High intake of heat- and storage-induced proteotoxins: glycated (AGEs), lipoxidated molecules (ALEs), processed carbohydrates
☆ Low intake of fresh plant foods; vegetables, fruits, spices induces:
  - Dysbiosis: reduced numbers & diversity
  - Leakage of various body membranes; leaky gut, leaky airways, leaky skin, leaky vagina, leaky eye cavity, leaky nose, leaky placenta, leaky blood-brain barrier etc.
ATIs - A "SUPER"- TRIGGER OF INFLAMMATION

ATIs - app 4 % of wheat proteins –express strong inflammation-inducing abilities – associated with:

-Coeliac disease
- Asthma
- Multiple Sclerosis
- Rheumatoid arthritis
- Inflammatory bowel disease
- Non-coeliac sensitivity
- Systemic lupus erythematosus
- Autoimmune encephalomyelitis etc

A potent microflora will break down ATIs.
ATIs-INDUCED INFLAMMATION


LPS = Endotoxin

A

IL-8 (pg/ml)

Medium  PT gliadin 250μg/ml  PT gliadin 500μg/ml  PT zein 250μg/ml  PT zein 500μg/ml  LPS 10ng/ml

B

MCP-1 (ng/ml)

Medium  PT gliadin 250μg/ml  PT gliadin 500μg/ml  LPS 10 ng/ml

* Significant difference
HEATING OF FOODS – NEGATIVE EFFECTS


Fresh Microvawed Conventionally heated

LUTEIN:
Spinach
Kale
Carrots
Broccoli
Peppers
Sweetcorn
Tomatoes

BETACAROTENE:
Peppers
Lettuce
Kale
Carrots
Spinach
Mustard Greens
Turnip Greens
Chinese Cabbage

CHLOROFLYLL:
Microg/cup
Parsley 380
Spinach 240
Cress, garden 160
Green beans 80
Arugula 80
Leeks 80
Endive 50
Sugar peas 50
Chinese cabbage 40

PHa: pheophytin A
Phb: Pheophytin B
HEAT-INDUCED TOXINS (AGEs & ALEs)

MEAT, POULTRY, FISH: AGE content increases with exposure to higher temperatures:

comp: Boiling 1000 vs Frying 9000 kU/serving


DAIRY: CHEESE, espec. hard cheeses

POWDERED MILK (espec. ice cream, baby & clinical nutrition formulas)

GRAIN PRODUCTS: Toasted bread, bread crusts & crisp breads

VEGETABLE OILS: ex. heated olive oil ca 8000 kU/100 ml

OTHERS: Egg yolk powder, lecithin powder, coffee, espec dark roasted, hard-cured teas, roasted and salted peanuts, dark and sugar-rich alcoholic beverages - high in i.g. broth, Chinese soy, balsamic vinegar, Cola drinks etc
# AGEs & INFLAMMATION-INDUCTION

Bohlender JM  Am J Physiol Renal Physiol 2005;289:F645-659

<table>
<thead>
<tr>
<th>Table 2. Cytokines and cellular events associated with AGE or RAGE activation</th>
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<tbody>
<tr>
<td>VCAM-1 ↑</td>
</tr>
<tr>
<td>ICAM-1 ↑</td>
</tr>
<tr>
<td>E-selectin ↑</td>
</tr>
<tr>
<td>PDGF ↑</td>
</tr>
<tr>
<td>eNOS ↓</td>
</tr>
<tr>
<td>Tissue factor ↑</td>
</tr>
<tr>
<td>TGF-β ↑</td>
</tr>
<tr>
<td>TNF-α ↑</td>
</tr>
<tr>
<td>IGF-1 ↑</td>
</tr>
<tr>
<td>MCP-1 ↑</td>
</tr>
<tr>
<td>CTGF ↑</td>
</tr>
<tr>
<td>IL-6 ↑</td>
</tr>
<tr>
<td>PAI-1 ↑</td>
</tr>
<tr>
<td>RAGE ↑</td>
</tr>
<tr>
<td>VEGF ↑</td>
</tr>
<tr>
<td>ANG II-dependent cell activation ↑</td>
</tr>
<tr>
<td>Type IV collagen expression ↑</td>
</tr>
<tr>
<td>Fibronectin ↑</td>
</tr>
<tr>
<td>Cell cycle progression ↓</td>
</tr>
</tbody>
</table>

* eNOS, endothelial nitric oxide synthase; TGF-β, transforming growth factor-β; MCP-1, monocyte chemotactic protein-1; CTGF, connective tissue growth factor; PAI-1, plasminogen activator inhibitor-1.
AGEs IN VARIOUS MILK PRODUCTS

Baptista J, Carvalho R Food Res Int 2004;37:739-747

Furosine mg/g of Protein

Fresh milk

1 year storage in room temperature

2 years storage in room temperature

STORAGE IN ROOM TEMPERATURE 1-2 YEARS
Acrylamide has been studied extensively for more than 40 years, but the first detection of acrylamide in carbohydrate-rich foods was made as late as 2002.

Acrylamide has a number of adverse effects on the human body - two major effects being 😷 NEUROTOXICITY & 😩 CARCINOGENICITY.

### Table 1. Acrylamide data of heat-treated foods.

<table>
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<th>Product group</th>
<th>Typical range</th>
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<tr>
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<td>600-2000</td>
</tr>
<tr>
<td>French fries</td>
<td>300-700</td>
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<tr>
<td>Pan fries potatoes</td>
<td>250-300</td>
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<td>100-600</td>
</tr>
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<td>Popcorn</td>
<td>400</td>
</tr>
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<td>50-250</td>
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<td>Corn crisps</td>
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</tr>
<tr>
<td>Soft breads</td>
<td>&lt;30-50</td>
</tr>
<tr>
<td>Meat and fish products</td>
<td>&lt;30-50</td>
</tr>
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<td>&lt;30</td>
</tr>
<tr>
<td>Scramble egg</td>
<td>&lt;30</td>
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</tr>
<tr>
<td>Vegetarian schnitzel</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Cauliflower gratin</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Dried fruit</td>
<td>&lt;30</td>
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Acrylamide is a strong inducer of acute and chronic diseases, which has among other effects

- NEUROTOXICITY
- NEFROTOXICITY &
- CARCINOGENICITY

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</tbody>
</table>
Toasted bread contains several-fold more of acrylamide than untoasted.

Wheat: 11–161 vs < 5 mg/kg. Rye: 27–205 vs 7–23 mg/kg.

Figure 6. Acrylamide concentrations (micrograms per kilogram), corrected for weight loss, in French-fried potatoes heated in a temperature-programmed oven.
DISEASES WITH ELEVATED AGEs/ALEs

- ADHD
- AGING
- AUTISM
- Allergy & Autoimmune diseases
- Alzheimer´s disease
- Amyotrophic lateral sclerosis
- Atherosclerosis & Cardiovascular diseases
- Chronic kidney, liver & pulmonary disorders
- Chronic ophtalmic diseases
- Creutsfeldt-Jakob disease
- Diabetes
- Epilepsia
- Familial amyloidotic polyneuropathy
- Fibromyalgia
- Hormone deficiencies
- Huntington´s disease
- Macula degeneration
- Multiple sclerosis
- Osteoporosis
- Paradontosis
- Parkinson´s disease
- Polycystic Ovary Syndrome 
- Rheumatoid diseases
- Ruptured Achilles tendon
- Sepsis
- Stroke
ADVANTAGES OF RAW FOOD VEGAN DIET

Fontana L et al. Rejuvenation Res. 2007;10:225–234

Consuming a low-calorie low-protein vegan diet of unprocessed and uncooked plant derived foods

Recruited from The St. Louis Vegetarian Society and a Raw Food online magazine (Raw Food News, www.rawfoods.newsmagazine.com)

SBP=Systolic blood pressure, DBP=Diastolic blood pressure, HOMO-IR=homeostatic model assessment - a method used to quantify insulin resistance and beta-cell function, hsCRP=high sensitive c-reactive protein – indicator of inflammation

<table>
<thead>
<tr>
<th></th>
<th>Low-calorie low-protein vegan diet group (n=21)</th>
<th>Endurance runner group (n=21)</th>
<th>Western diet group (n=21)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBP (mm Hg)</td>
<td>104 ± 15&lt;sup&gt;a,c&lt;/sup&gt;</td>
<td>122 ± 13</td>
<td>132 ± 14</td>
<td>0.0001</td>
</tr>
<tr>
<td>DBP (mm Hg)</td>
<td>62 ± 11&lt;sup&gt;b,c&lt;/sup&gt;</td>
<td>72 ± 9&lt;sup&gt;f&lt;/sup&gt;</td>
<td>79 ± 8</td>
<td>0.0001</td>
</tr>
<tr>
<td>Fasting glucose (mg/dL)</td>
<td>85 ± 7&lt;sup&gt;c&lt;/sup&gt;</td>
<td>88 ± 6&lt;sup&gt;f&lt;/sup&gt;</td>
<td>95 ± 6</td>
<td>0.0001</td>
</tr>
<tr>
<td>Fasting insulin (µU/mL)*</td>
<td>2.8 ± 2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.1 ± 2&lt;sup&gt;d&lt;/sup&gt;</td>
<td>5.9 ± 4</td>
<td>0.0001</td>
</tr>
<tr>
<td>HOMA-IR</td>
<td>0.59 ± 0.43&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.45 ± 0.38&lt;sup&gt;d&lt;/sup&gt;</td>
<td>1.36 ± 0.83</td>
<td>0.0001</td>
</tr>
<tr>
<td>hsCRP (mg/L)*</td>
<td>0.52 ± 0.6&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0.75 ± 0.9&lt;sup&gt;e&lt;/sup&gt;</td>
<td>2.61 ± 3.3</td>
<td>0.0003</td>
</tr>
<tr>
<td>Carotid artery IMT (mm)</td>
<td>0.56 ± 0.1&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.63 ± 0.1&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0.74 ± 0.1</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

"Couch potatoes"
PLANT FOOD PREVENT CHRONIC INFLAMMATION

RECOMMENDATION for optimal health: 1 – 1 ½kg/person/day

Eating 800 g fruit and vegetables a day –
or 10 portions – is associated with:
😊 28 % reduced risk of cardiovascular disease
😊 24 % reduced risk of heart disease
😊 33 % reduced risk of stroke
😊 13 per cent reduced risk of total cancer
😊 31 % reduction in premature death
SPICES – EFFECTS ON HB-GLYCATATION

wild caraway = vild kummin

"WARNING SIGNALS" - CHRONIC INFLAMMATION

Unexplained fatigue, sleep problems, frequent headache, hair loss, gray hair, dandruff, acne, skin rashes, dry eyes, frail nails, dry mouth or increased salivation, reduced sex functions, irregular menstruations, obstipation or diarrhea, osteoporosis, overweight, frequent infections, mental depression, easy breathless, sweaty feet, sweaty hand palms etc.

www.bengmark.com
PRESENT

POOR EATING – POOR IMMUNITY

PALEO

THE FRONT DOOR – A SHORTCUT

app 60 % are Sugar and Suger-like substances which enters the body in upper jejunum via mainly the arterial system < 15 %

THE BACK DOOR – THE DANGEROUS ROUTE

app 30 % animal fats & vegetable oil enters via the the body via the lymphatic system and remains in circulation for hours > 10 %

THE MAIN DOOR

< 20 % raw greens, vegetables, fruits are Foods for Microbiota and reaches the large intestine after 2-3 hours, enhancing immune system & preventing inflammation app 80 %
MICROBIOTA DIVERSITY – ANCIENT CULTURES


PALEO CULTURES: YANOMAMI - MALAWIANS

WESTERN COUNTRIES
LEAKY BARRIERS

- Gastrointestinal tract
- Airways
- Skin
- Oral cavity
- Vagina
- Nose
- Eye cavity
- Blood brain barriers

Maccaferri S et al Dig Dis 2011;29:525–530
RESEARCH BACKGROUND: THE 1986 EXPERIENCE

1986: Review of 81 extensive liver resections

Prophylactic antibiotic (ampicillin, cephalosporin, tetracyclines) given to 57/81 patients

No antibiotics to 24/81 patients

Morbidity: 33% (17% major)

INFECTIONS ONLY IN ANTIBIOTIC-TREATED PATIENTS

NO INFECTIONS SEEN IN THE PATIENTS WHO DID NOT RECEIVE ANTIBIOTICS

Ekberg, PhD thesis, Lund University 1986

Henrik Ekberg 1951 – 2012 (61 år)
Most lactobacillus strains are not probiotics

Suzuki C et al Int J Food Microbiol 2008;123:159-165

**IMMUNE IMODULATION – studied in 46 strains of Lb. Lactis**

<table>
<thead>
<tr>
<th>Strains</th>
<th>IL-6 (ng/ml)</th>
<th>IL-12 (ng/ml)</th>
<th>TNF-α (ng/ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S63</td>
<td>138</td>
<td>37</td>
<td>20</td>
</tr>
<tr>
<td>P79</td>
<td>100</td>
<td>23</td>
<td>10</td>
</tr>
<tr>
<td>H-17</td>
<td>118</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>H45</td>
<td>4</td>
<td>2</td>
<td>0.33</td>
</tr>
<tr>
<td>O 62</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>G50</td>
<td>10</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>1257</td>
<td>0.29</td>
<td>1</td>
<td>0.23</td>
</tr>
<tr>
<td>ATCC19435</td>
<td>21</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>O19</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>O20</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LPS</td>
<td>170</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>
FERMENTATION ABILITY

The ability of 712 different LAB to ferment oligofructans (inulin, phleins) studied:

16/712 able to ferment the phleins &

8/712 able to ferment the inulin type fibre

Only four species had the ability:

*Lactobacillus plantarum* (several)
*Lactobacillus paracasei* subsp. *paracasei*
*Pediococcus pentosaceus* &
*Lactobacillus brevis*  


Included in Synbiotic 2000
CONTROL OF PATHOGENS

The ability of 50 different LAB to control 23 different pathogenic *C. difficile* studied:

- 27 were totally ineffective
- 18 antagonistic to some
- 5 effective against all:
  - 2 strains - *Lb paracasei s. paracasei*
  - 3 strains - *Lb plantarum*

The abilities of 535 *Lactobacillus* strains to control inflammation and infection were studied 355 harvested from humans & 180 from plants

www.bengmark.com
SYNBIOTIC 2000 - UNIQUE PROPERTIES

4 LACTOBACILLUS CHOSEN of 535 STUDIED:

- All induce Bioactive Proteins
- & cross-react with stress proteins
- All transcribe NF-κB
- All produce both pro-inflammatory (IL-1β, IL-8) and anti-inflammatory (IL-10) cytokines

Ljungh Å, Microb Ecol Health Dis 2002;3, Suppl 4:4
Kruszewska D et al Microecol. Ther. 2002;29:37
SYNBIOTICS 2000 ORIGINAL
40 BILLION LACTIC ACID BACTERIA:

• $10^{10}$ of *Pediococcus pentosaceus* 5-33:3
• $10^{10}$ of *Leuconostoc mesenteroides* 32-77:1
• $10^{10}$ of *Lactobacillus paracasei sbsp. paracasei*
• $10^{10}$ of *Lactobacillus plantarum* 2362

10 GRAM BIOACTIVE FIBRES:

• 2.5 g of betaglucan
• 2.5 g of inulin
• 2.5 g of pectin
• 2.5 g of resistant starch
SYNBIOTIC 2000 IN LUNG INJURY


Placebo  Only fibres  Synbiotic 2000
SYNBIOTIC 2000 INHIBITS MULTiresistant BACTERIA

Professor Val Edwards-Jones, University of Manchester, UK

Multi-resistant
Acinetobacter baumanii

Multi-resistant Klebsiella
50 to 85% of transplant patients develop nosocomial infections within 30 days.

Compared effects of daily supply of Synbiotic 2000 and Only fibres daily from the day before surgery & during following 14 postoperative days

30 day-infection rate:

Synbiotic 2000       1/33 - 3%
Only fibres          17/33 - 51%
**SYNBIOTIC 2000 IN LIVER TRANSPLANTATION**

<table>
<thead>
<tr>
<th>Isolated bacteria</th>
<th>Synbiotic 2000</th>
<th>Fibres only</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Enterococcus faecalis</em></td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><em>Enterobacter cloacae</em></td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1</strong></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>

SYNBIOTIC 2000 IN PANCREATECTOMY

INFECTIONS:

Synbiotics 2000 5/40 - 13 %
Control (Only fibres) 16/40 - 40 % p< 0.05

<table>
<thead>
<tr>
<th>Condition</th>
<th>Synbiotic 2000</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound infections</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Peritonitis</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Urinary</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Sepsis</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Cholangitis</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Empyema</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>5</strong></td>
<td><strong>20</strong></td>
</tr>
</tbody>
</table>

### Synbiotics in Acute Pancreatitis

**Oláh A et al. Hepato-gastroenterology 2007;54:36-41**

<table>
<thead>
<tr>
<th></th>
<th>Synbiotic 2000</th>
<th>Fibres Only</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total infections</td>
<td>9/33 (27%)</td>
<td>15/29 (52%)</td>
<td></td>
</tr>
<tr>
<td>Pancreatic abscesses</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Infected necrosis</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Chest infections</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Urinary infections</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SIRS</td>
<td>3</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>MOF</td>
<td>5</td>
<td>9</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>SIRS + MOF</td>
<td>8</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Late (&gt;48h) MOF</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Complications</td>
<td>9/33</td>
<td>15/29</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>Surgical drainage</td>
<td>4/33 (12%)</td>
<td>7/29 (24%)</td>
<td></td>
</tr>
<tr>
<td>Mean hospital stay</td>
<td>14.9 ±6.5</td>
<td>19.7±9.3</td>
<td></td>
</tr>
<tr>
<td>Dead</td>
<td>2/33 (6%)</td>
<td>6/29 (18%)</td>
<td></td>
</tr>
</tbody>
</table>
SYNBIOTICS IN ACUTE PANCREATITIS

Oláh A et al Hepato-gastroenterology 2007;54:36-41

Synbiotic 2000   Fibres Only

<table>
<thead>
<tr>
<th></th>
<th>Total number of infections</th>
<th>9/33 (27%)</th>
<th>15/29 (52%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pancreatic abscesses</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Infected necrosis</td>
<td></td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Chest infections</td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Urinary infections</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SIRS</td>
<td></td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>MOF</td>
<td></td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>SIRS + MOF</td>
<td></td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Late (&gt;48h) MOF</td>
<td></td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Complications</td>
<td>9/33</td>
<td>15/29</td>
<td>p&lt;0.05</td>
</tr>
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<td>7/29</td>
<td>(24%)</td>
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<td>19.7±9.3</td>
<td></td>
</tr>
<tr>
<td>Dead</td>
<td>2/33 (6%)</td>
<td>6/29</td>
<td>(18%)</td>
</tr>
<tr>
<td>Isolated Microorganisms</td>
<td>SYNBIOTIC 2000</td>
<td>Fibres Only</td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------</td>
<td>-------------</td>
<td></td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><em>Enterococcus faecalis</em></td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><em>Enterobacter spp</em></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Streptococcus spp</em></td>
<td>2</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Enterococcus faecium</em></td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><em>Candida spp</em></td>
<td>-</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><em>Staphylococcus haemolyticus</em></td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Serratia spp</em></td>
<td>-</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><em>Klebsiella spp</em></td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Stenotrophomonas maltophilia</em></td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><em>Citrobacter freundii</em></td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7</strong></td>
<td><strong>17</strong></td>
<td></td>
</tr>
</tbody>
</table>
102 patients supplied 15 days posttrauma with either Synbiotic 2000 Forte or placebo.

The treated patients demonstrated reduced:

- Mortality
- Rate of infection ($P = 0.01$)
- Rate of SIRS & severe sepsis ($P = 0.02$)
- Numbers of days on mechanical ventilation ($P = 0.001$)
- ICU stay ($P = 0.01$)
SYNBIOTIC 2000 IN CHRONIC LIVER DISEASE

One month supply of Synbiotic 2000 reduces:

😊 Mucosal pH

😊 PPM flora: *E. coli* *(p<0.001)*, *Staphylococcus* *(p<0.01)* & *Fusobacterium* *(p<0.05)*

😊 Endotoxin, ammonia/s, ALT/s, bilirubin/s

&

improves:

😊 Albumin/s and prothrombin

😊 Degree of disease at Child classification &

😊 Degree of encephalopathy at psychometric testing
Traumatic brain injury (TBI) markedly reduced contractile activity of the intestinal smooth muscle ($P < 0.01$), impaired ICC networks and densities ($P < 0.01$) & reduction of defecation/obstipation ($P < 0.01$).

Application of Synbiotic2000™ Forte improves contractile activity of the small intestine ($P < 0.01$) & maintains contractile activity ($P < 0.01$).
Study at the Olympic Training Centre in Barcelona. Six swimmers (4 women and 2 men) ingested regularly Synbiotic 2000 Original

One of 2 men improved the Spanish record in 200 meters butterfly

Three of 4 women improved the Spanish records: 100 meters butterfly, 200 meters butterfly, 200 freestyle, 4x200 freestyle relays
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver transplantation, 66 patients</td>
<td>16</td>
<td>1</td>
<td>94 per cent</td>
</tr>
<tr>
<td>Pancreatoduodenectomy for cancer, 80 patients</td>
<td>16</td>
<td>5</td>
<td>69 per cent</td>
</tr>
<tr>
<td>Severe pancreatitis – 62 patients</td>
<td>15</td>
<td>9</td>
<td>40 per cent</td>
</tr>
<tr>
<td>Severe trauma, treated with Synbiotic 2000 Standard – 52 patients</td>
<td>23/30 (77 %)</td>
<td>17/35 (49 %)</td>
<td></td>
</tr>
<tr>
<td>Severe trauma, treated with Synbiotic 2000 Forte – 72 patients</td>
<td>13</td>
<td>5</td>
<td>62 per cent</td>
</tr>
</tbody>
</table>
### SYNBIOTICS 2000: REDUCTIONS IN USE OF ANTIBIOTICS, ARTIFICIAL RESPIRATION, TIME IN ICUs & IN HOSPITAL

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Patients</th>
<th>Days on Antibiotics</th>
<th>Days in ICUs</th>
<th>Days in Hospital</th>
<th>Reduction</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver transplantation – 66 patients¹</td>
<td>66</td>
<td>3.8 =&gt; 0.1 = 3.7</td>
<td>10.2 =&gt; 8.8 = 1.4</td>
<td>27.9 =&gt; 27.8 = 0.1</td>
<td>97 per cent</td>
<td>14 per cent</td>
</tr>
<tr>
<td>Pancreatoduodenectomy for cancer - 80 patients²</td>
<td>80</td>
<td>10 =&gt; 2 = 8</td>
<td>6 =&gt; 2 = 4</td>
<td>22 =&gt; 17 = 5</td>
<td>80 per cent</td>
<td>67 per cent</td>
</tr>
<tr>
<td>Severe acute pancreatitis – 62 patients³</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe trauma treated with Synbiotic 2000 Forte – 65 patients⁵</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Patients who underwent liver transplantation.
2. Patients who underwent pancreaticoduodenectomy for cancer.
3. Patients with severe acute pancreatitis.
4. Patients with severe trauma treated with Synbiotic 2000 Forte.
CROHN’S DISEASE – DYSBIOSIS

Haag L-M, Siegmund B Front Immunol 2015 Sep 22;6:489

<table>
<thead>
<tr>
<th>Arguments on behalf of the involvement of intestinal microbiota in CD</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feecal stream diversion improves symptoms of CD</td>
<td>(62)</td>
</tr>
<tr>
<td>Reinfusion of luminal contents results in recurrent disease</td>
<td>(61)</td>
</tr>
<tr>
<td>Antibiotic therapy is associated with clinical improvement</td>
<td>(63–65)</td>
</tr>
<tr>
<td>Mucosal barrier defects and increased translocation</td>
<td>(66, 67)</td>
</tr>
<tr>
<td>Higher loads of mucus-associated bacteria</td>
<td>(42)</td>
</tr>
<tr>
<td>Higher concentrations of mucolytic bacteria</td>
<td>(53)</td>
</tr>
<tr>
<td>Decrease in <em>Faecalibacterium prausnitzii</em></td>
<td>(41, 46, 48)</td>
</tr>
<tr>
<td>Decreased concentrations of AMP</td>
<td>(68)</td>
</tr>
<tr>
<td>CD susceptibility genes: involvement in killing of intracellular bacteria and secretion of AMP</td>
<td>(69–75)</td>
</tr>
<tr>
<td>Siblings of CD patients exhibit mucosal dysbiosis</td>
<td>(76)</td>
</tr>
</tbody>
</table>

CD, Crohn’s disease; AMP, antimicrobial peptides.
<table>
<thead>
<tr>
<th>Probiotics</th>
<th>Disease</th>
<th>Endpoint</th>
<th>Groups and subject no.</th>
<th>Duration</th>
<th>Conclusion</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSL#3</td>
<td>UC</td>
<td>Induction</td>
<td>Conventional therapy+VSL#3, 77</td>
<td>12 weeks</td>
<td>Effective</td>
<td>[63]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conventional therapy+placebo, 70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UC</td>
<td>Induction</td>
<td>Conventional therapy+VSL#3, 71</td>
<td>8 weeks</td>
<td>Effective</td>
<td>[62]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Conventional therapy+placebo, 73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UC</td>
<td>Induction</td>
<td>Steroid+mesalazine+VSL#3, 14</td>
<td>1 year</td>
<td>Effective</td>
<td>[64]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Steroid+mesalazine+placebo, 15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pouchitis</td>
<td>Maintenance</td>
<td>VSL#3, 20 Placebo, 20</td>
<td>9 months</td>
<td>Effective</td>
<td>[60]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pouchitis</td>
<td>Maintenance</td>
<td>VSL#3, 20 Placebo, 16</td>
<td>12 months</td>
<td>Effective</td>
<td>[61]</td>
</tr>
<tr>
<td>Nissle 1917</td>
<td>UC</td>
<td>Induction</td>
<td>Steroid+mesalazine, 57, Steroid+Nissle 1917, 59</td>
<td>12 weeks</td>
<td>Equivalent to mesalazine</td>
<td>[66]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Steroid=mesalazine, 57, Steroid=Nissle 1917, 59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UC</td>
<td>Maintenance</td>
<td>Nissle 1917, 162 Mesalazine, 165</td>
<td>12 months</td>
<td>Equivalent to mesalazine</td>
<td>[67]</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UC</td>
<td>Maintenance</td>
<td>Mesalazine, 50 Nissle 1917, 53</td>
<td>12 weeks</td>
<td>Equivalent to mesalazine</td>
<td>[68]</td>
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<tr>
<td>Lactobacillus GG</td>
<td>CD</td>
<td>Maintenance</td>
<td>Conventional therapy+Lactobacillus GG, 39</td>
<td>~2 years</td>
<td>Not effective</td>
<td>[71]</td>
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<td>Conventional therapy+placebo, 36</td>
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<td></td>
<td>UC</td>
<td>Maintenance</td>
<td>Lactobacillus GG, 65 Lactobacillus GG+mesalazine, 62</td>
<td>12 months</td>
<td>Equivalent to mesalazine</td>
<td>[70]</td>
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<td>Lactobacillus GG+mesalazine, 62</td>
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<td>Mesalazine, 60</td>
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<td>Bifidobacteria-fermented milk (BPM)</td>
<td>UC</td>
<td>Induction</td>
<td>Conventional therapy+BFM, 10</td>
<td>12 weeks</td>
<td>Effective</td>
<td>[74]</td>
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<td>Conventional therapy+placebo, 10</td>
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<td></td>
<td>UC</td>
<td>Maintenance</td>
<td>Conventional therapy+BFM, 11</td>
<td>12 months</td>
<td>Effective</td>
<td>[75]</td>
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<td>Conventional therapy, 10</td>
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<td>Bifidobacterium longum/Synergy 1</td>
<td>UC</td>
<td>Induction</td>
<td>Bifidobacterium longum/Synergy 1, 9</td>
<td>1 month</td>
<td>Effective</td>
<td>[73]</td>
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<td>Placebo, 9</td>
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**PROBIOTICS IN IBD**

GUT RECONDITIONING IN CROHN’S DISEASE

THE MARCH from AGRICULTURE to AQVA- & HORTICULTURE-based diet

President Bill Clinton – now a vegan radically changed diet, lost 20 lbs. in weight & improved his health, Clinton tells CNN.

After experiencing periodic heart problems leading up to the 2004 surgery, the former junk food lover now calls himself a vegan, shunning meat, eggs, dairy and almost all oil saying: "I like the vegetables, the fruits, the beans, the stuff I eat now" 😊

"I feel good, and I also have ... more energy." 😊
SAFE: grains, legumes, lentils, vegetables, fruits, nuts and seeds

NOT SAFE: oils, dairy foods, meat, poultry, & fish (frequently containing unacceptable levels of PCBs, dioxin, and mercury)
VITAMIN K IN FOODS  micrg/100 gr

- Thyme, dried  1715
- Sage, dried  1700
- Parsley raw  1640
- Amaranth leaves  1160
- Kale raw  817
- Mustard greens, raw  497
- Spinach, raw  483
- Basil, fresh  413
- Beat greens, raw  400
- Turnip greens, raw  251
- Lettuce, raw  174
- Broccoli raw  102
INFLAMMATION REDUCTION – ECO-BIOLOGICALS
raw & fresh plants, pro- and synbiotics

Isothiocyanates in **cruciferous vegetables**, anthocyanins and hydroxycinnamic acids in **cherries**, **blueberries**, epigallocatechin-3-gallate (EGCG) in **green tea**, chlorogenic acid and caffeic acid in **fresh coffee beans** & **fresh tobacco leaves** capsaicin in **hot chili peppers**, chalcones in **apples**, euginol in **clove**s, gallic acid in **rhubarb**, hisperitin in **citrus fruits**, naringenin in **citrus fruits**, kaempferol in **white cabbage**, **blueberries** myricetin in **berries**, rutin and quercetin in **apples** and **onions**, resveratrol and other procyanidin dimers in **red wine. virgin peanuts**, **blueberries** various curcumenoids, the main yellow pigments in **turmeric curry foods**, and daidzein and genistein from **soybean**
Third Millennium
Junkfood 😞 😞 😞 😞 😞 😞 😞 😞

Jon Brower Minnoch, USA, 1941 -1983, 635 kg - The world’s ever heaviest person

 Alcohol 😞
 Bread & Pasta, Pastries 😞
 Butter 😞
 Cheese 😞
 Chips 😞
 Fast food & takeaways 😞
 Fried food 😞

 Jam and marmalade 😞
 Milk & Latte 😞
 Potatoes & other tubers – EATEN WARM ➔ NOT COLD
 Red meat 😞
 Refined oils incl oils such as Olive & Canola oil 😞
 Tomato ketchup 😞
 Soft drinks 😞
INFLAMMATION INVOLVES ABOUT 1200 GENES

affect a wide range of effector molecules; pro-inflammatory cytokines, chemokines, matrix metalloproteinases (MMPs) and metabolic proteins

**BIOLOGICALS** aimed to target single genes such as; anti- TNF-α, anti-IL-1β, anti-HER2, IL-12/IL-23, IFN-γ, IL-17A, IL-2 and IL-6, and inhibitors of NF-κB etc.

- Uni-targeting
- Immediate powerful effects
- Limited by multiple toxicity
- Negative effects on microbiota
- Sometimes short-lasting effects
- Substantial adverse effects
- Indicated in aggressive diseases

**ECO-BIOLOGICALS**: utilizes the anti-inflammatory effects of microbes and plants; greens, vegetables, fruits & spices to support microbiota

- Multi-targetting
- Slower and weaker effects
- GRAS – e.g. no toxicity
- Positive effects on microbiota
- Long-lasting effects
- No adverse effects
- Indicated for prevention & early disease
TRIPPLE-HELIX FOR ANTIINFLAMMATION

1. TWELVE COMMANDMENTS
2. GUT RECONDITIONING – SYNBIOTIC 2000
3. ANTIINFLAMMATORY TURMERIC COCKTAIL
HEALTH: TWELVE COMMANDMENTS

2. Limit/eliminate dairy products.
3. Limit red meat to 300 g/week. Avoid processed meat, pig meat, beef from supplement-fed animals and farmed fish. Focus on wild fish, game meat and beef from grass-fed animals.
4. Limit/eliminate intake of long-chain fatty acids and processed oils. Focus on plant fats such as cocos and avocado.
5. Eliminate foods containing inflammation-inducing proteins: casein (diary), gluten (wheet, rye, barley) och zein (corn).
7. Avoid exposure to microbial toxins such as endotoxin, pesticides and other poisons.
8. Limit your sodium & chloride salt intake - increase the intake of iodine. Avoid fluoride, bromide and reduce chloride.
9. Limit/eliminate as much as possible exposure to chemicals including pharmaceutical drugs.
10. Focus on plant foods rich in proteins, fibres, antioxidants. Use grains such as amaranth, durrah, teff, quinoa, various seeds, peas, beans, lentils, almonds and nuts. Germinate/sprout seeds,peas, beans, lentils, almonds and nuts for 12-24 hours.
11. Let the majority of your food (about 80 %) be fresh raw vegetables and fruits with low glycemic index, and anti-inflammatory spices and teas such as puerh, yerba & oliveteas. Supplement Vitamin D, omega3, turmeric and probiotics – the four corner stones of anti-inflammation. Supplement also iodine as KJ or Kelp.
12. Practise daily fasting as Peak fasting (intake of calories 6/24 hours) either as SKIPPING BREAKFAST (no food before noon) or SKIPPING DINNER (no food after 14 pm)
ANTI-INFLAMMATORY TURMERIC COCKTAIL
for consumption once or twice daily

1 heapful tablespoon turmeric powder  159,277
1 heaped teaspoon Ceylon Cinnamon  267,536
OBS! Not Saigon cinnamon (toxic)         15,170
¼ teaspoon or more chilipepper powder
¼ teaspoon or more grounded cloves  314,446

Spread on sallad or mix with fruit dessert, yoghurt or juice or mix with ½ - 1 tablespoon apple cider vinegar in a glass of water

http://bengmark.com/anti-inflammatorisk-kryddblandning-till-cocktailshots
THE DILEMMA: PHARMA & MICROBIOTA ARE INCOMPATIBLE!

 антибиотики уничтожают примерно 90% функций микрофлоры: билирубиновый метаболизм, эйкосаноиды и стероидные гормоны


 химиотерапевтические препараты уменьшают микрофлору в 100 раз; уменьшение анаэробных бактерий до 10000 раз и увеличение в ППМ в 100 раз


 Фарма из пептических ингибиторов кислотности (напри мер, пептический гастрит) во время беременности увеличивает риск развития астмы у ребенка

 Andersen AB et al. Aliment Pharmacol Ther 2012;35:1190-1198

 Антигипертензивы вызывают дисбактериоз кишечника и снижают защиту слизистой, особенно мucus production

AVAILABLE @:
www.bengmark.com
www.synbiotics.se
www.facebook.com/stig.bengmark

Video:
www.ihcanconferences.co.uk/antioxidantsapril2017/

Podcast: https://goo.gl/wTRvwh

“All Disease begins in the gut”
~Hippocrates

460 - 370 BC
Let us not wallow in the past!

The danger of wallowing in the past

THANK YOU!