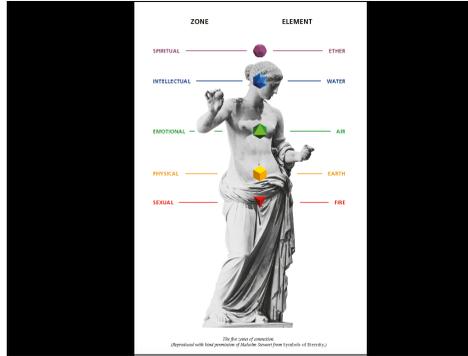
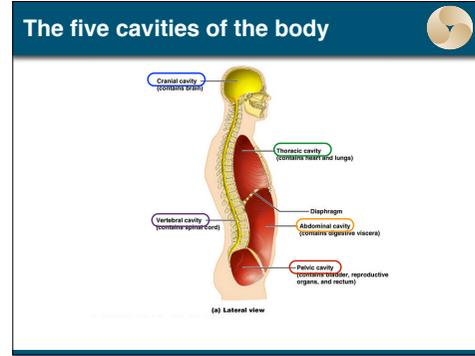


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2



3

**5 elements, C H O S N, make up 97% of your body**

H	He																	He
Li	Be											B	C	N	O	F	Ne	
Na	Mg											Al	Si	P	S	Cl	Ar	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Uut	Fu	Uup	Uuh	Uus	Uuo	
		Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu			
		Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr			

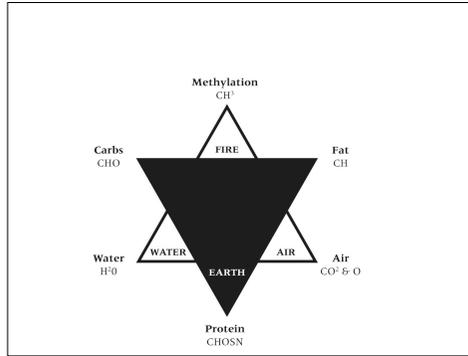
Iron is essential to carry oxygen in blood

Zinc is needed for growth and fertility

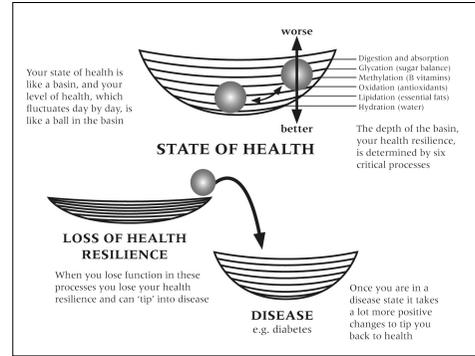
Magnesium lowers blood pressure

Calcium is needed for bones

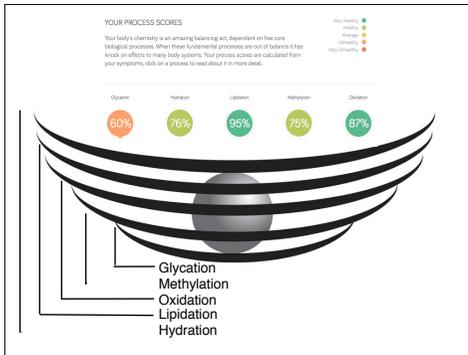
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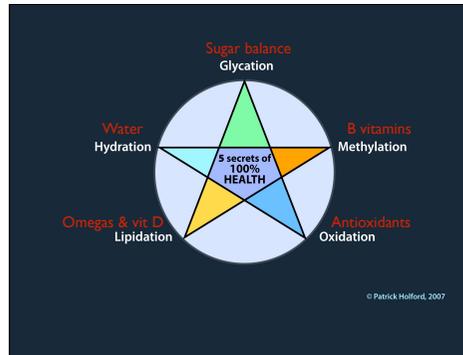
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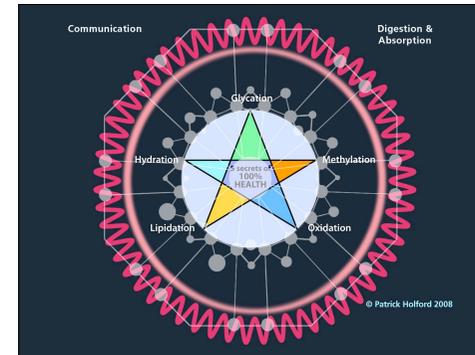
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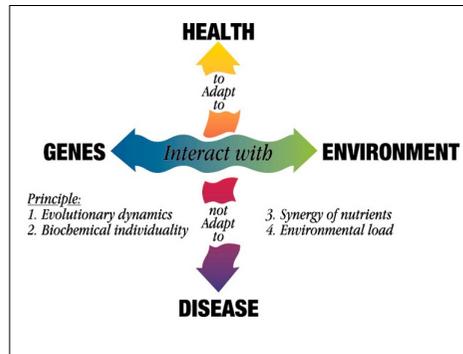
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9

- 7 key processes**
- Glycation - sugars, soluble fibres
  - Lipidation - EFAs, phospholipids, VitD
  - Oxidation - antioxidants/polyphenols
  - Methylation - B vitamins etc
  - Hydration - water
  - Digestion - enzymes, probiotics, fibres etc
  - Communication - hormones, neurotransmitters, cytokines & inflammation

10



11

- What is optimum health?**
- ▶ Optimum physical function
  - ▶ Optimum psychological function
  - ▶ Optimum chemical function
  - ▶ Absence of ill-health - signs and symptoms
  - ▶ Longevity - longest healthy lifespan

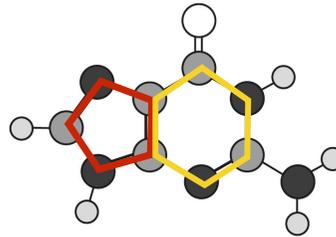
12

## How healthy are we?

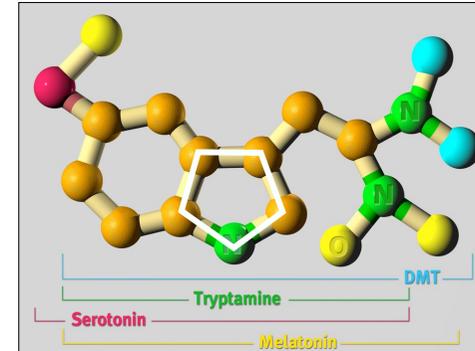
- ▶ 1 in 9 women are diagnosed with breast cancer; 1 in 7 men with prostate cancer; one in 3 with cancer.
- ▶ 1 in 6 die too young from heart attacks or strokes.
- ▶ 1 in 6 over 40 have diabetes.
- ▶ 1 in 4 live their last 30 years with arthritic pain.
- ▶ 1 in 3 people over 70 have impaired memory and
- ▶ 1 in 4 people over 80 have Alzheimer's.
- ▶ 1 in 3 people are obese; 1 in 2 overweight by age 50.

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## Guanine is one of the 4 letters of DNA



14

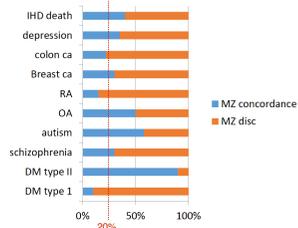


15

## Heritability of diseases

T Spector, Genome Med. 2014; 6(7): 60 -4254430

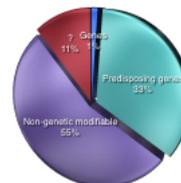
### ▶ Concordance rate for monozygotic twins



16

## Attribution of risk for Alzheimer's

● Genes ● Predisposing genes ● Non-genetic modifiable ● ?



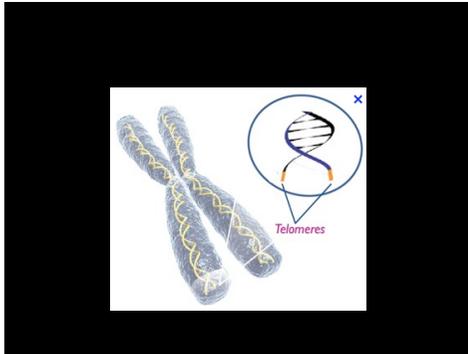
17

## Do genes cause Alzheimer's?

Bekris L, J Ger Psych 2010; Heininger K, Human Psychopharm 2000; Ridge P, PLoS1 2013

- ▶ Three causative genes (APP, PSEN1, PSEN2) account for less than 1% of cases of AD.
- ▶ Other genes predispose, but don't cause. For example, having the ApoE4 gene, if expressed, may account for 4% of the inheritability of risk.
- ▶ 11 other genes may account for 7.8% of the inheritability of AD.
- ▶ Gene studies suggest that, in total, genes could account for a third of one's inherited risk or predisposition. In other words, if you had all the wrong genes (excluding causative genes) you could be up to 33% more likely to get AD.

18

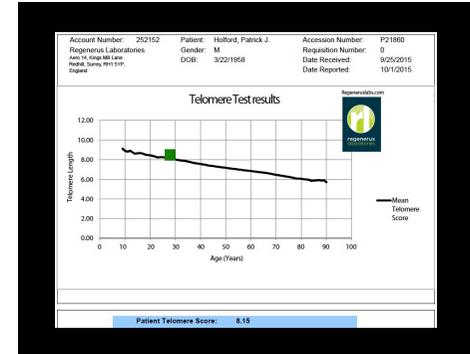


19

### What lengthens telomeres?

- ▶ **Reduce your stress** – People in prolonged stress situations have telomere length. So do childhood traumas, chronic depression and cynicism. Those with 'hostile' cynicism have shorter telomeres.
- ▶ **Meditation** is associated with longer telomeres.
- ▶ **Sleep well** – The better you sleep the longer your telomeres. As far as longevity is concerned seven hours seems to be the optimal.
- ▶ **Exercise** – The more you exercise, and the less stress, the longer the telomeres. Those with post traumatic stress disorder who exercised didn't have shorter telomeres.
- ▶ **Up omega 3 and vitamin D** – One study has found that the higher your intake of omega 3 fish oils the longer your telomeres. Two studies have found that the higher your blood level of vitamin D the longer your telomeres. Both are found in oily fish.
- ▶ **Lower your homocysteine level with more B12 and folate** – The higher your blood levels of these two vitamins, the lower your homocysteine, the longer your telomeres.
- ▶ More nuts and seeds - The more you eat the longer your telomeres.
- ▶ **Supplement takers** have longer telomeres. Three studies confirm this.

20



21

### Essential nutrients - we all need:

- ▶ 2 essential fat families
- ▶ 9 amino acids
- ▶ 21 minerals
- ▶ 13 vitamins
- ▶ Plus carbohydrate, fibre, light, oxygen and water

22

### Vitamin C and bioflavonoids

Vinson JA Am J Clin Nutr. 1988 Sep;48(3):601-4-3414575; also J Med Food. 2001 Winter;4(4):187-192-112639400

- ▶ Vitamin C is only found in nature with bioflavonoids, which are particularly rich in berries such as bilberry and black elderberry. In a study which compared vitamin C on its own, or with a citrus extract as a source of bioflavonoids, 35% more vitamin C was absorbed when given with bioflavonoids than alone, and the vitamin C was more slowly absorbed as well, meaning it would raise blood levels over a longer period of time.
- ▶ Another study found that vitamin C with a bioflavonoid rich citrus extract was more effective in lowering triglycerides than vitamin C on its own, improving its ability to protect essential fats from oxidation for longer.

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### Food varies in nutrient content

Vitamin A	in carrots	70 to 18,500iu
Vitamin B5	in wholewheat flour	0.3 to 3.3mg
Vitamin C	in oranges	0 to 116mg
Vitamin E	in wheatgerm	3.2 to 21iu
Iron	in spinach	0.1 to 158mg

25



Mankind has invented 10 million new chemicals, 18,000 of which you are exposed to, including:

- ▶ Pesticides & herbicides
- ▶ Industrial pollutants such as PCB's, dioxins
- ▶ Exhaust fumes
- ▶ Plastics
- ▶ Food additives
- ▶ Hormones, antibiotics in food

Read 'Art of Chemical Self-Defence'

26

### Defining the optimum intake

The level that...

- ▶ promotes optimal physical function
- ▶ promotes optimal psychological function
- ▶ promotes optimal chemical function
- ▶ is associated with lowest incidence of disease
- ▶ is associated with longest healthy lifespan
- ▶ is consistent with evolutionary & animal models

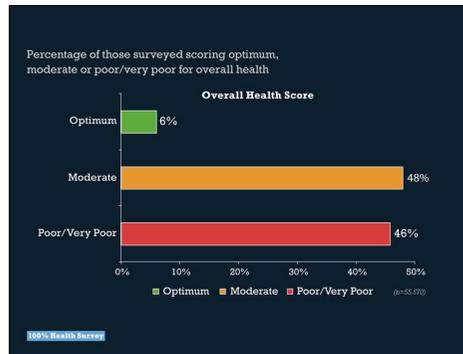
27

NUTRIENTS	RDA	100% RDA	ODA
Vitamin A (µg)	800	900   1500	2500
Vitamin D (µg)	5	3.5   115	30
Vitamin E (mg)	10	14   50	300
Vitamin C (mg)	60	100   200	2000
Vitamin B1 (mg)	1.4	2   5	35
Vitamin B2 (mg)	1.6	2.16   5	35
Vitamin B3 (mg)	18	36.6   50	85
Vitamin B5 (mg)	6	2.175   20	100
Vitamin B6 (mg)	2	3.1   5	75
Folic Acid (µg)	200	325.5   400	800
Vitamin B12 (µg)	1	5.95   10	25
Biotin (µg)	150	36.50   120	225

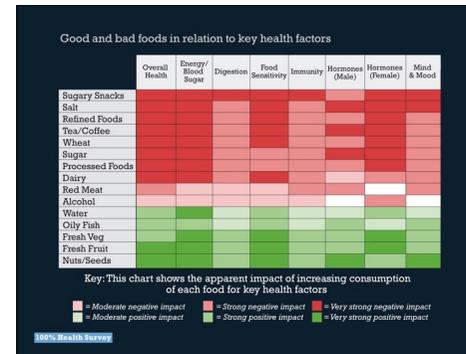
Key: Average Diet, \*Good\* Diet, RDA = Recommended Daily Allowance, ODA = Optimum Daily Allowance (Diet plus supplements)

\* Items marked with an asterisk have no RDA.  
 † Includes vitamin D created by 20 minutes sun exposure per day. More vitamin D may be needed in winter.

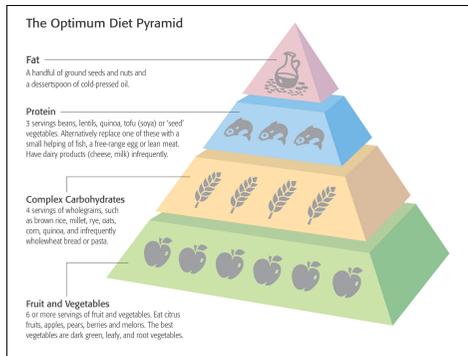
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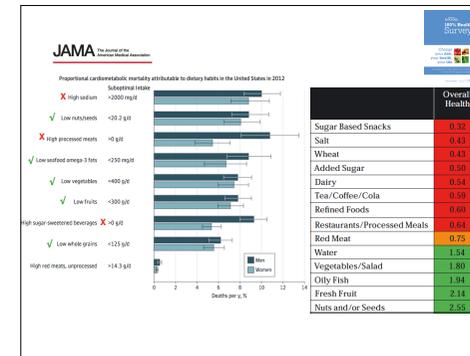
31

March 7, 2017

**JAMA** The Journal of the American Medical Association

“Nearly half of all deaths due to heart disease, stroke, and type 2 diabetes in the U.S. in 2012 were associated with suboptimal nutrition.”

32



33

### Nutrient dense working class diet

P Clayton, J Rowbotham, J. Royal Society of Medicine, 2008

**The ROYAL SOCIETY of MEDICINE**

“The authors believe that, since it would be unacceptable and impractical to recreate the high calorie mid-Victorian working class diet, this constitutes either a persuasive argument for a more widespread use of food fortification and/or food supplements.”

34

### The healthiest 100 take supplements

- ▶ 85% took supplements
- ▶ 2/3rds took up to four different supplements a day and a third took five or more a day.
- ▶ 70% supplemented vitamin C as an extra, most taking between 500mg and 3g a day.

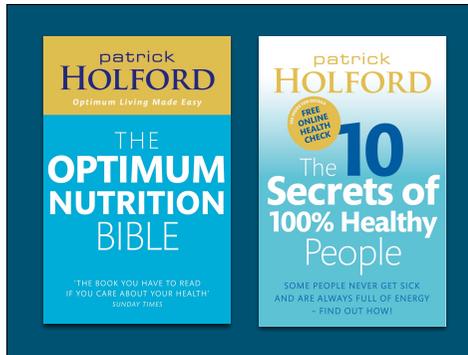
35

### Are supplement takers healthier?

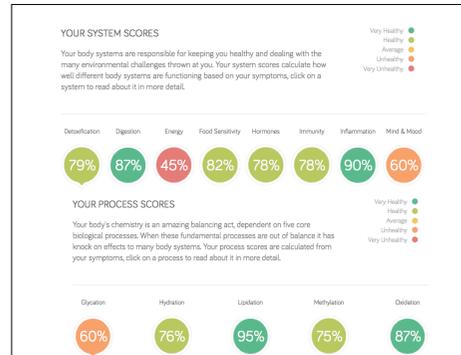
Gladys Block et al, *The Nutrition Journal*, 6: 30, 2007

- ▶ 73% less diabetes risk than non-supplement takers
- ▶ 52% less heart disease risk than non-supplement takers
- ▶ 74% more likely to rate their own health as good/excellent
- ▶ 45% of non-supplement takers, 37% of RDA multi takers, and only 11% of 'many' supplement takers had elevated homocysteine (above 9). Same pattern for cholesterol.
- ▶ 94% of 'many' supplement takers had optimal blood vitamin C levels. None were sub-optimal. 32% of non-supplement takers and 11% of the RDA multi takers were sub-optimal.

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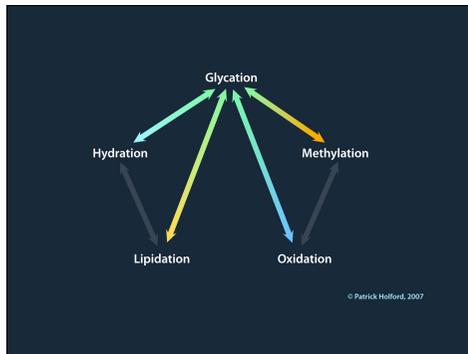
37



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- ### 7 key processes
- 👉 Glycation - sugars, soluble fibres
  - 👉 Lipidation - EFAs, phospholipids, VitD
  - 👉 Oxidation - antioxidants/polyphenols
  - 👉 Methylation - B vitamins etc
  - 👉 Hydration - water
  - 👉 Digestion - enzymes, probiotics, fibres etc
  - 👉 Communication - hormones, neurotransmitters, cytokines & inflammation

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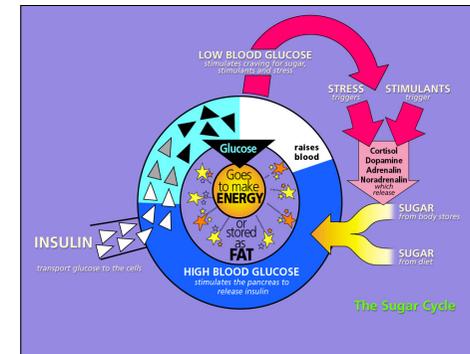


40

## BALANCE YOUR BLOOD SUGAR

GAIN ENERGY,  
LOSE WEIGHT,  
STOP CRAVINGS,  
PREVENT & REVERSE DIABETES

41

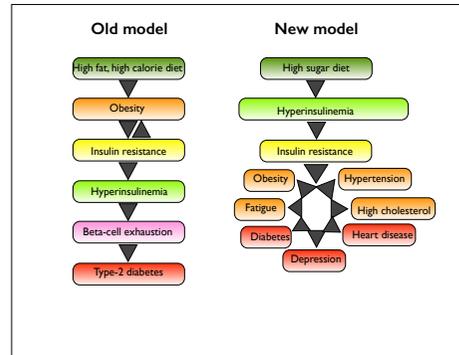


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## Too much insulin...

- ▶ Promotes fat storage and stops you breaking down fat, so you gain more and more weight. Increases non-alcoholic fatty liver.
- ▶ Increases cholesterol and triglycerides (blood fats)
- ▶ It causes the kidneys to retain both water and salt, which leads to high blood pressure. In time this leads to kidney failure
- ▶ Causes rapid deterioration of eyesight
- ▶ The combination of too much insulin and too much glucose damages the arteries and raises your blood pressure, both of which make thrombosis, heart attacks and strokes more likely
- ▶ Makes cancer cells grow fast mainly due to increased insulin-like growth factor (IGF-1)
- ▶ Switches off anti-ageing genes (DAF on, FOXO off)

43



44

## GL of diet determines insulin response

Bao J, Am J Clin Nutr. 2011; Krog-Mikkelsen L, J Nutr. 2011; Grover G, Front Pharm. 2011

- ▶ GL of a diet predicts the insulinemic response.
- ▶ Low GL diets promote satiety and reduce insulin levels after a meal.
- ▶ Only the diet supplemented with the highly viscous (soluble) fiber, compared to other fibres, substantially decreased blood glucose and insulin secretion.

45

## Pluses and minuses of v.low carb

Qin, Int J Food Sci Nutr. 2009; Meinick Med Hypotheses. 2009

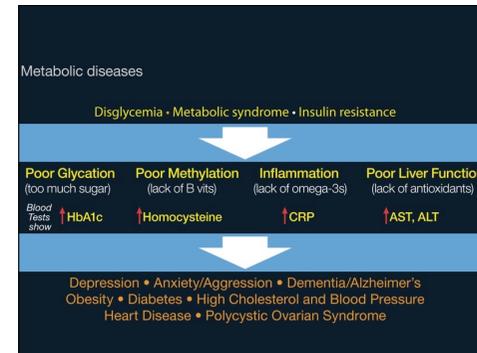
- ▶ Variations on the Atkins diet, with high protein and fat, and low carbs, have consistently been shown to be effective for short-term weight loss, but not as good for maintenance/long-term weight loss as low GL diets
- ▶ Measures of cardiovascular risk improve, as do diabetes
- ▶ Depending on quantity of protein consumption increased risk of kidney stress and disease.
- ▶ High meat and especially dairy diets<sup>1,2</sup> are also associated with raised insulin-like growth factor (IGF-1) and increased risk of both breast, prostate cancer and colorectal cancer

46

## Glycosylated Haemoglobin (HbA1c)

- ▶ Glycosylation is the process by which glucose peaks in the bloodstream damage tissue - from arteries to eyes, kidneys and brain
- ▶ Glycosylated haemoglobin is damaged red blood cells - the more you have the more peaks in blood sugar levels you're having, indicating poor blood sugar control eg insulin isn't doing its job properly.
- ▶ A score above 7 indicates significant risk for diabetes
- ▶ A score above 6 indicates significant risk loss of blood sugar balance
- ▶ A score below 5 indicates very good blood sugar control

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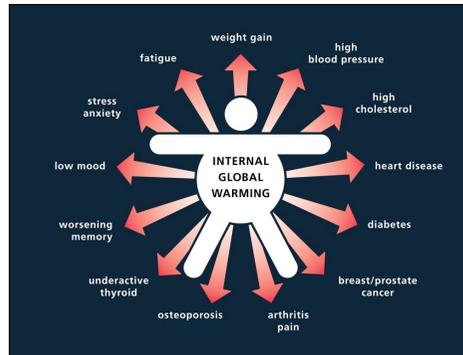


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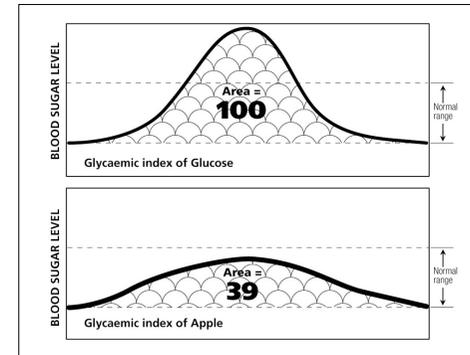
### Metabolic syndrome promotes...

- **Depression** - People with MetS are twice as likely to have depressive symptoms within 7 years. (H Koponen, J. Clin. Psych. 2008)
- **Memory loss** - older women with MetS are twice as likely to have memory loss within 4 years, as are overweight men. (Arch. Neurology, 2009)
- **Pain & ageing** - MetS promotes abdominal obesity, inflammation and early ageing. (S Epel, Hormones, 2009)
- **Infertility** - Stress promotes MetS and abdominal weight gain. Obesity promotes stress. Both lead to reduced fertility. (I Kyrou, Hormones 2008)
- **Breast cancer** - Postmenopausal women with high insulin levels have twice the risk of developing breast cancer. (J. National Cancer Institute, 2009) Weight gain from age 18 doubles risk of cancer. (J Ahn, Archives of Int. Med., 2007)

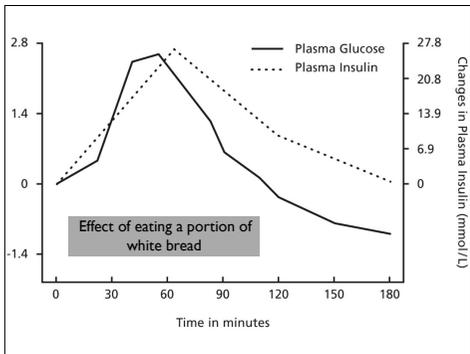
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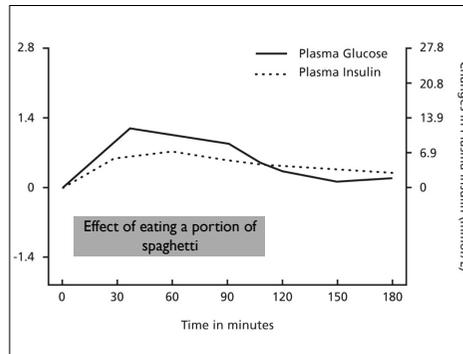
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51



52



53

The Glycemic Load  
of a food is derived from knowing both the  
**QUALITY**  
of the carbohydrate (its GI - fast or slow.)  
and the  
**QUANTITY**  
of the food that is carbohydrate

54

## Glycemic load



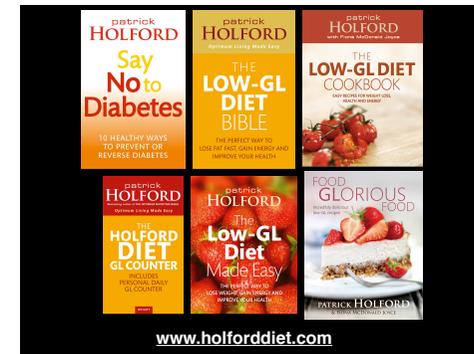
The GL of a food is worked out as follows:

- ▶ GI score (divided by 100) multiplied by the available carbohydrate (carbohydrates minus fibre) in grams.
- ▶ *Take watermelon as an example:*  
Its glycemic index (GI) is pretty high, about 72. A serving of 120 grams has 6 grams of available carbohydrate per serving, so its Glycemic Load is...
- ▶  $0.72 \times 6 = 4.32$ , rounded to 4, per serving.

55

Low GL Foods (10GLs)	High GL Foods (10GLs)
2 large punnets of strawberries	2 dates
6 oat cakes	1 slice of white bread
4 bowls of oat flakes or porridge	1 bowl of cornflakes
A large bowl of peanuts	A packet of crisps
1 pint of tomato juice	Half glass of Lucozade
10 handfuls of green beans	10 french fries
6 tablespoons of xylitol	2 teaspoons of honey

56



57

## Benefits of a low GL diet



- ▶ Weight loss/control
- ▶ Prevents and reverses diabetes
- ▶ Prevents and reverses heart disease, hypertension, cholesterol
- ▶ Reduces cancer risk, especially breast cancer
- ▶ Reduces Alzheimer's risk
- ▶ Reduces depression
- ▶ Switches on anti-ageing genes

58

## Graze don't gorge



**10 GLs for breakfast**  
**+5 GLs snack**  
**+10 GLs for lunch**  
**+5 GLs snack**  
**+10 GLs for dinner**  
**(+5 GLs for drink/dessert)**

59

## Three simple rules



Eat no more than 40/60 GLs a day.

Eat protein with carbohydrate.

Graze rather than gorge.

60

### Breakfast

Carbohydrates		Protein
Cereal/Fruit	+	Seeds/Yoghurt/Milk
Fruit	+	Yoghurt/Seeds
Bread/Toast	+	Egg
Bread/Toast	+	Fish (eg Kippers)

61

### Breakfast

CEREAL	5 GLs	FRUIT	5GLs
Oat flakes	2 servings	Berries	1 large punnet
All Bran	1 serving	Pear	1
Muesli (no sugar)	1 small serving	Grapefruit	1
Alpen	Half a serving	Apple	1 small
Raisin Bran	Half a serving	Peach	1 small
Weetabix	1 biscuit	Banana	third
Cornflakes	Half a serving	Raisins	10

62

### Xylitol - natural sugar alternative

- ▶ High in plums (hence their low GL)
- ▶ 9 teaspoons = 1 teaspoon sugar
- ▶ Half the GL of fructose
- ▶ Half the calories



63

### Breakfast

BREADS	10 GLs
Nairns rough oatcakes	5 biscuits
Rye 'Pumpernickel' style	2 thin slices
Sourdough rye bread	2 thin slices
Rye wholemeal bread (yeasted)	1 slice
Wheat wholemeal bread (yeasted)	1 slice
White, high fibre bread (yeasted)	<1 slice

64

### Breakfast comparisons



5 oatcakes are same GL as

1 slice    1 thick slice    half a bagel    half a muffin    half a croissant

65

### Get your oats

- ▶ Oats, or specifically oat bran, contain a powerful anti-diabetes nutrient called **beta-glucan**. Diabetic patients given oatmeal or oat-bran rich foods experience much lower rises in blood sugar. In fact, 10 per cent of your diet as **beta-glucans can halve the blood sugar peak** of a meal.
- ▶ Practically, that means eating **half oat flakes, half oat bran**, cold or hot as porridge, with a low-GL fruit such as **berries, pears or apples** and snacking on **rough oat cakes** (which have the most beta-glucans). With over 1,000 studies on beta-glucans, the evidence really is overwhelming. Oats are also low GL.
- ▶ This level of effect is far greater than you'll get from taking metformin, at a fraction of the price and with none of the side effects.

66

### Oatcakes - vital statistics

Low GI - high soluble fibre

Ideal goal is 10 GLs per main meal  
5GLs per snack

10 GLs equals 5 rough oatcakes

67

Only 8 GLs per serving with strawberries and soya, cows milk - 10 GLs with oat milk

TIPS: Add cinnamon

Have a 3 x Carboslow & glass of water chaser

68

Blueberry pancakes, made with oat flour and egg, plus berries, yoghurt and a sprinkling of ground seeds, is low GL

69

BRAND	SUGAR % (g/100g)
DIVINE	21%
RAW PAID	23%
DIVINE	26%
VIVANI	27%
VIVANI	28%
GREEN & BLACK'S THIN	28%
SEED AND BEAN	29%
LINDT EXCELLENCE	29%
OHBAR	31%
BARONA	32%
SEED AND BEAN	35%
GREEN & BLACK'S	40%
CADBURY BOURNVILLE	58%

NO DAIRY  
NO ADDED SUGAR  
ORGANIC CACAO 75%  
50g e

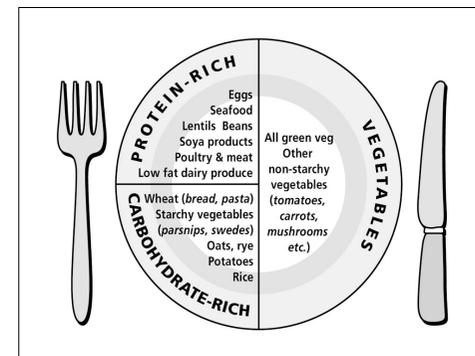
HOLFORDirect.com

70

### Snacks

- ✓ A piece of fruit, plus five almonds or a dessertspoon of pumpkin seeds
- ✓ A piece of bread or two oat cakes and half a small tub of cottage cheese (150g)
- ✓ A piece of bread/two oat cakes and half a small tub of hummus (150g)
- ✓ A piece of bread/two oat cakes and peanut butter
- ✓ Crudites (a carrot, pepper, cucumber or celery) and hummus
- ✓ Crudites and cottage cheese
- ✓ A small yoghurt (150g), no sugar, plus berries
- ✓ Cottage cheese plus berries

71



72

### Starchy veg/grains - 7GLs

Pumpkin/squash	Big serving (186g)	Brown rice	Small serving (70g)
Carrot	One large (158g)	White rice	Third serving (46g)
Swede	Big serving (150g)	Couscous	Third serving (46g)
Quinoa	Big serving (120g)	Broad beans	A serving (31g)
Beetroot	Big serving (112g)	Sweetcorn	Half a cob (60g)
Cornmeal	A serving (116g)	Boiled potato	Three small (74g)
Pearl barley	Small serving (95g)	Baked potato	Half (59g)
Wholemeal pasta	Half serving (85g)	French fries	Tiny portion (47g)
White pasta	Third serving (66g)	Sweet potato	Half (61g)

73



74

### Benefits of legumes

Kim S, Am J Clin Nutr . 2016 -/ 27030531; Jenkins D, Arch Intern Med. 2012 -/ 23089999

- ▶ A review of 21 trials reports overall significant weight reduction of -0.34 kg (95% CI: -0.63, -0.04 kg; P = 0.03) in diets containing dietary pulses (median intake of 132 g/d or 1 serving/d) and a reduction on body fat percentage, compared with diets without a dietary pulse intervention over a median duration of 6 wk.
- ▶ A trial giving diabetics one cup a day of legumes, low GL, reduced HbA1c values by -0.5% over 3 months.

75

### Exercise - aerobic + resistance is key

- ▶ Switches on anti-ageing genes and may lengthen telomeres
- ▶ Improves insulin sensitivity and promotes growth hormone
- ▶ Reduces stress, improves mood and memory
- ▶ Reduces risk for so many age-related diseases,
- ▶ Builds/preserves lean body mass (muscles)
- ▶ Boosts hormone levels (DHEA, testosterone)
- ▶ Resistance training for 4 months = 1kg/2lbs of lean muscle gain 25–30% increased strength. If you don't do any exercise after the age of 50 you lose half a pound a year of muscle.
- ▶ *"Exercise is the closest thing to an anti-ageing pill."* Professor Wayne Derman, Cape Town University

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### Reversing Diabetes

- ▶ A strict low GL diet & soluble fibres
- ▶ Basic supplements, inc Magnesium
- ▶ Chromium 600mcg
- ▶ Cinnamon - 3g/300mg cinnulin
- ▶ Extra antioxidants inc C 2g+
- ▶ Exercise

77

### Benefits of chromium

Balk, Diabetes Care, 2007; Anton, Diab. Technol. Thera, 2008; Brownley, J. Diet Suppl 2013; Brownley, J Psychosom. Res. 2013. See advice/chromium-the-evidence

- \* A systematic review in the top diabetes journal Diabetes Care, concludes: "Among participants with type 2 diabetes, chromium supplementation improved glycosylated hemoglobin levels and fasting glucose. Chromium supplementation significantly **improved glycemia in patients with diabetes.**"
- \* A study gave healthy, overweight women chromium or placebo for 8 weeks. Those on chromium **ate less, felt less hungry, craved fat less and lost more weight.**
- \* A study gave chromium to **women with premenstrual mood disorders** and found **significant mood improvements.**
- \* A placebo controlled study reported those on chromium having **'greater reductions in bingeing, weight, and depression'**.

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J Trace Elem Med Biol. 2016 Jul;36:65-72. doi: 10.1016/j.jtemb.2016.04.002. Epub 2016 Apr 9.

**Effect of chromium supplementation on the glucose homeostasis and anthropometry of type 2 diabetic patients: Double blind, randomized clinical trial: Chromium, glucose homeostasis and anthropometry.**

Gualtieri MM<sup>1</sup>, Galvotto AC<sup>2</sup>, Stava MP<sup>3</sup>

© Author information

**Abstract**

**OBJECTIVE:** To evaluate the effect of chromium supplementation on the glucose homeostasis and anthropometry of type 2 diabetic patients.

**MATERIAL AND METHODS:** Fifty six individuals with type 2 Diabetes were randomized on a double blind clinical trial into three groups: placebo (NC0), 50µg (NC50) and 200µg (NC200) of chromium picolinate. Glucose homeostasis, anthropometry and physical activity intensity were evaluated at the beginning, at day 45 and at day 90. Energy intake was evaluated at the beginning, between the beginning and 45 days, and between days 45 and 90 of the study.

**RESULTS:** There were no differences within or between groups for HOMA-IR, waist circumference, body fat percentage, lean body mass percentage and total energy intake during the trial. There was an increase of the HOMA-β in group NC0 (p=0.0349) and a decrease of 1.08kg in group NC50 (p=0.0048) at 90 days. The relation between body mass index, body fat percentage and insulin sensitivity did not change in the placebo and supplemented groups (p>0.05). In the effect of the intervention, for each 1cm increase in waist circumference there was an increase of 1.90±0.83 in HOMA-IR (p=0.0087) and 16.31±5.27% in HOMA-β (p=0.0073) in group NC200. No difference was seen in the intensity of physical activity within the groups and in the comparison between the supplementer groups (NC50 and NC200) and placebo (NC0) at 90 days. There was an increase in energy expenditure in physical activity at 90days (p=0.0371) of intervention in the group subjects NC50. As for waist circumference, there was no difference between the groups within or between the groups during the study.

**CONCLUSION:** 50µg and 200µg supplementation with chromium picolinate for 90days did not promote improvements in glucose homeostasis and anthropometry in individuals with type 2 diabetes mellitus.

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J Trace Elem Med Biol. 2015 Oct;30:66-72. doi: 10.1016/j.jtemb.2015.05.006. Epub 2015 May 28.

**Beneficial effects of oral chromium picolinate supplementation on glycemic control in patients with type 2 diabetes: A randomized clinical study.**

Falva AN<sup>1</sup>, Lima JF<sup>2</sup>, Medeiros AC<sup>3</sup>, Figueiredo HA<sup>4</sup>, Andrade RL<sup>5</sup>, Loureiro MA<sup>6</sup>, Bezerra AA<sup>7</sup>, Brandão-Neto J<sup>8</sup>, Almeida M<sup>9</sup>

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**Abstract**

**BACKGROUND:** Chromium is an essential mineral that contributes to normal glucose function and lipid metabolism. This study evaluated the effect of chromium picolinate (CrPic) supplementation in patients with type 2 diabetes mellitus (T2DM).

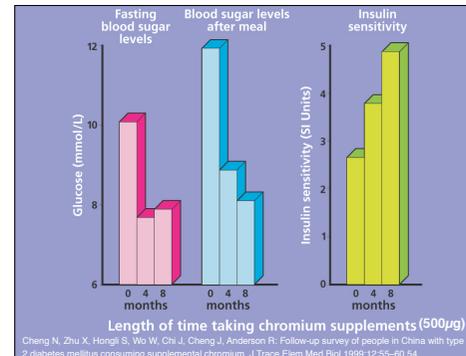
**METHODS:** A four month controlled, single blind, randomized trial was performed with 71 patients with poorly controlled (hemoglobin A1c [HbA1c] >7%) T2DM divided into 2 groups: Control (n=39, using placebo), and supplemented (n=32, using 600µg/day CrPic). All patients received nutritional guidance according to the American Diabetes Association (ADA), and kept using prescribed medications. Fasting and postprandial glucose, HbA1c, total cholesterol, high-density lipoprotein (HDL) cholesterol, low-density lipoprotein (LDL) cholesterol, triglycerides and serum ferritin were evaluated.

**RESULTS:** CrPic supplementation significantly reduced the fasting glucose concentration (-31.0mg/dL, supplemented group - 14.0mg/dL, control group; p<0.05, post- vs. pre-treatment, in each group) and postprandial glucose concentration (-37.0mg/dL in the supplemented group - 11.5 mg/dL in the control group; p<0.05). HbA1c values were also significantly reduced in both groups (p<0.001, comparing post- vs. pre-treatment groups). Post-treatment HbA1c values in supplemented patients were significantly lower than those of control patients. HbA1c lowering in the supplemented group (<1.90), and in the control group (<1.90), was also significant, comparing pre- and post-treatment values, for each group (p<0.001 and p<0.05, respectively). CrPic increased serum chromium concentrations (p<0.001), when comparing the supplemented group before and after supplementation. No significant differences in lipid profile was observed in the supplementer group; however, total cholesterol, HDL-c and LDL-c were significantly lowered, comparing pre- and post-treatment period, in the control group (p<0.05).

**CONCLUSIONS:** CrPic supplementation had a beneficial effect on glycemic control in patients with poorly controlled T2DM, without affecting the lipid profile. Additional studies are necessary to investigate the effect of long-term CrPic supplementation.

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Ann N Y Acad Sci. 2016 Dec;1564:147-153. doi: 10.1111/nyas.12805. Epub 2016 Dec 15.

**Combined chromium and magnesium decreases insulin resistance more effectively than either alone.**

Guo M<sup>1</sup>, Ma Y<sup>1</sup>, Ma ZP<sup>1</sup>, Han L<sup>1</sup>, Song HM<sup>1</sup>, Wang YJ<sup>1</sup>, Yao J<sup>1</sup>, Sun XP<sup>1</sup>, Li L<sup>1</sup>, Gao S<sup>2</sup>, Zhang X<sup>2</sup>

© Author information

**Abstract in English, Chinese**

**BACKGROUND AND OBJECTIVES:** Peroral supplementation with trivalent chromium (Cr) or magnesium (Mg) has been shown to improve insulin resistance (IR). The objective of this study was to determine whether combined peroral supplementation with Cr and Mg improves IR more effectively than Cr or Mg alone.

**METHODS AND STUDY DESIGN:** Subjects (n=120, age range 45-69 years old) and diagnosed with IR were randomly divided into four groups and monitored for a period of 3 months: group 1 (the placebo control group), group 2 (150 µg/d Cr), group 3 (200 mg/d Mg), and group 4 (150 µg/d Cr plus 200 mg/d Mg). Fasting blood glucose (FBG), fasting insulin (FIns), erythrocyte Cr and Mg content, and glucose-transporter-4 (GLUT4) and glycogen-synthase-kinase-3β (GSK3β) mRNA levels in activated T-lymphocytes were measured, and insulin resistant index (IRI) was calculated.

**RESULTS:** Significant decreases between the baseline and study conclusion values of FBG (0.37 mmol/L, p<0.01), FIns (2.91 µU/mL, p<0.01) and IRI (0.60, p<0.01) were observed in group 4, but not groups 1-3. Similarly, compared with baseline, significant changes in GLUT4 (2.9-fold increase, p<0.05) and GSK3β (2.2-fold decrease, p<0.05) mRNA levels in activated T-lymphocyte were observed at the study's conclusion in group 4, but not in groups 1-3.

**CONCLUSIONS:** Our results indicate that combining peroral supplementation with Cr and Mg improves IR more effectively than Cr or Mg alone, and this may be attributable to increased induction and repression, respectively, of GLUT4 and GSK3β expression.

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### Atypical vs melancholic depression

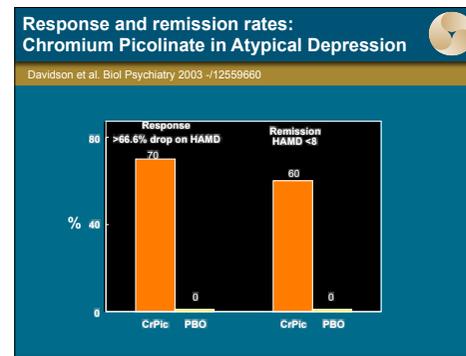
Thase M. J Clin Psychiatry. 2007;68 Suppl 8:11-6; Lasserre A, JAMA Psychiatry. 2014

- Mood reactive
- Excessive appetite or weight gain
- Unexplained exhaustion
- Daytime sleepiness or "grogginess"
- Excessive sensitivity to rejection
- Mood fixed
- Weight loss, anorexia
- Agitation
- None
- Less rejection sensitive

15% to 29% of patients with major depressive disorder have atypical depression.

Those with atypical depression are three times more likely

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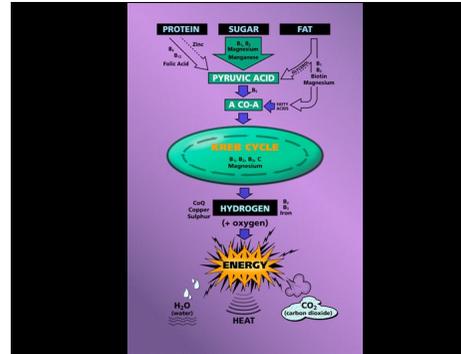
84

## Cinnamon reduces blood sugar

See [www.patrickhoford.com/advice/cinnamon-may-help-weight-loss](http://www.patrickhoford.com/advice/cinnamon-may-help-weight-loss)

- ▶ Pre-diabetics given a cinnamon extract (Cinnulin) for 12 weeks, had improvements in several features of metabolic syndrome (reduced blood sugar levels, blood pressure, body fat percentage, oxidation).
- ▶ 39 patients given cinnamon extract for four months and showed a substantial reduction in post-meal blood sugar levels and a 10 per cent reduction in fasting blood sugar levels.
- ▶ Diabetics were given 1g, 3g or 6g (a heaped teaspoon) of cinnamon per day. All responded within weeks, with blood sugar levels 20 per cent lower on average than those of a control group. Some achieved normal blood sugar levels. The biggest improvements were with 6g.
- ▶ Volunteers were given rice pudding, with or without cinnamon, found that those given 3g cinnamon produce less insulin after the meal.
- ▶ 1g of cinnamon versus placebo reduced glucose by >17% after 12 weeks.
- ▶ **6g=heaped teaspoon Cinnachrome = equ. 1gram per pill**

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## Energy nutrients

These nutrients are involved in turning food into energy. The following levels, supplemented daily, ensure optimum energy.

B1 (thiamine)	35mg	Co-enzyme Q	10-90mg
B2 (riboflavin)	35mg	Vitamin C	1000mg
B3 (niacin)	35mg	Calcium	300mg
B5 (pantothenate)	75mg	Magnesium	200mg
B6 (pyridoxine)	75mg	Iron	10mg
B12 (cobalamin)	10mcg	Zinc	15mg
Folic acid	200mcg	Chromium	30-200mcg

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## Kyra's statistics

	Start	After 6 weeks	Finish (1 yr later)
Medication	2 x 500mg Metformin	None	None
Glucose (mmol/L)	11	5.5	5
HbA1c (%)	7.8	6.2	5.2
Weight (lbs)	252	238	210

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## Weight support supplements

- ▶ Chromium
- ▶ HCA (tamarind extract)
- ▶ 5-HTP (a form of tryptophan)

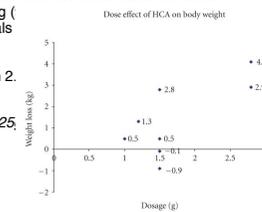
89

## HCA meta-analysis of RCT trials

Onakpoya I et al., J Obes. 2011;2011:509038

- ▶ Meta-analysis of these trials revealed significant mean difference of -1.22kg ( was substantial. Trials weeks.

- ▶ Best results are with 2. = 1lb a week.
- ▶ 3 x GL support = 2.25.



90

## Tryptophan, appetite & weight

Cangiano C et al. Am J Clin Nutr. 1992; also Int J Obes Relat Metab Disord. 1998

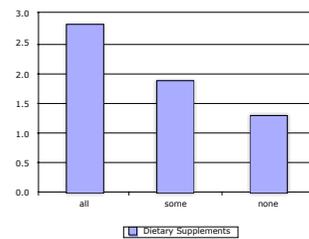
5-HTP causes a reduction in appetite, followed by a loss in weight in animals. Studies by Dr Cangiano at the Department of Clinical Medicine, University of Rome show the same results in obese people.

20 obese volunteers took either 5-HTP or placebo for 12 weeks. During the first 6 weeks, volunteers ate what they liked. During the second 6 weeks they were recommended a low-calorie diet. In both phases those taking 5-HTP **consistently ate less, felt more satisfied and lost weight**. They notably ate less carbohydrate.

25 overweight volunteers took either 5-HTP or placebo for 2 weeks, with no dietary restriction. They ate what they liked. **Patients receiving 5-HTP significantly decreased their daily energy intake, by reducing carbohydrate and fat intake, and reduced**

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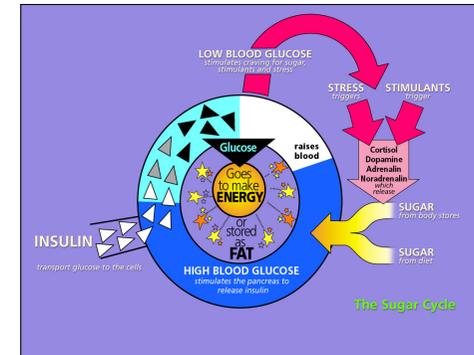
## Effect of supplements (lbs/week)



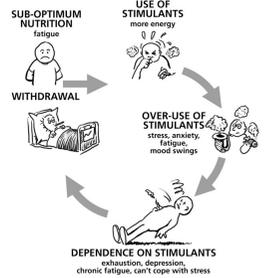
All = Any two of HCA, Chromium, 5-HTP  
Some = multi, vit C



92



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The vicious circle of stress and fatigue

94

## Coffee & croissant - a deadly duo?

Moisey L, Am J Clin Nutr, 2008;87:1254-61.

Britain's most popular pick-me-up, a coffee and a croissant, may be fuelling an epidemic of weight gain and diabetes, according to research at Canada's University of Guelph. Participants were given a carbohydrate snack, such as a croissant, muffin or toast, together with either a decaf or coffee. **Those having the coffee/carb combo had triple the increase in blood sugar levels** and insulin sensitivity, the hormone that controls blood sugar levels, was almost halved.

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## ACTION for sugar balance

- ▶ Follow a low GL diet
- ▶ Exercise every day
- ▶ 1-3 Cinnachrome or 3 GL Support pday
- ▶ Optimum Nutrition Pack



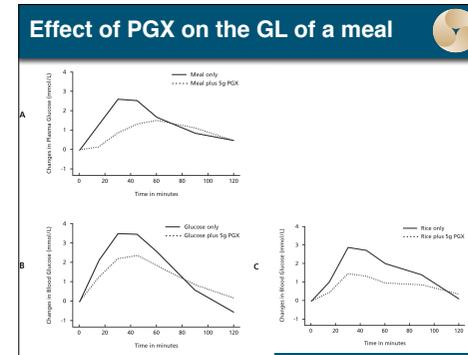
96

# SUPER FIBRE glucomannan

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## Best sources of superfibre

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## PGX fibre reduces appetite

Kacinik et al. Nutr. Diabetes. 2011

► "In this study we were able to show that the viscous fiber (PGX) supplement significantly reduced hunger feelings and promoted satiety during a period of significant caloric reduction."

Category	Placebo (mm)	PGX (mm)
Pre-dinner hunger	~82	~70*
Pre-dinner prospective consumption	~80	~72*

Fig. 1 Comparison of pre-dinner mean hunger and prospective consumption scores of day 3 of the 1000-calorie diet supplement with 5 g of PGX or placebo at each meal. Values are mean (SE) (n=35). Asterisk (\*) indicates significantly lower scores with PGX than the placebo supplement (P<0.05). VAS—visual analogue scale.

100

## Glucosmannan for weight loss

G. Katz et al., Journal of the American College of Nutrition, 2016

► Dr Gilbert Kaatz and colleagues gave 73 overweight men and women either 1 gram of glucosmannan, taken three times a day before meals, or an identical placebo pill for 60 days.

► Those on placebo **gained** an average of 2.18lbs. Those on glucosmannan **lost** an average of 2.75lbs. **So those on glucosmannan lost 4.93lbs, almost 5lbs more over 60 days.** Further analysis found that most of this weight loss, almost 4lbs (3.86lbs) was actually fat loss. LDL cholesterol, reduced by 3mg/dl in those taking glucosmannan.

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Glucosmannan Uses, Benefits & Dosage - Drugs.com Herbal ... <https://www.drugs.com/ipp/glucomannin.html>

**Drugs.com**  
Herbal (39 items)

### Glucosmannan

Scientific Name(s): *Amorphophallus konjac* Koch., *Amorphophallus rivieri* Durieu ex Rivière. Family: Araceae

Common Name(s): Konjac, Konjac mannan, glucomannan, konnyaku, gonyaku

#### Uses

Glucosmannan has been investigated for its effects on weight reduction, diabetes, constipation, cholesterol, lung cancer, and atopic diseases, as well as its use as a prebiotic. However, there is a lack of adequately sized quality clinical trials to support these uses.

#### Dosing

Clinical studies of glucosmannan in diabetes, cholesterol control, and obesity have used dosages of 1 to 13 g daily.

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The American Journal of  
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**A systematic review and meta-analysis of randomized controlled trials of the effect of konjac glucomannan, a viscous soluble fiber, on LDL cholesterol and the new lipid targets non-HDL cholesterol and apolipoprotein B<sup>100</sup>**

Huang W, Thabib H<sup>1,2</sup>, Elena-Jovanovski<sup>1,2</sup>, Andriana Zurbal<sup>1,2</sup>,  
Sonia Blanco Mejia<sup>1,2,3</sup>, John L. Stevens<sup>1,2,3</sup>, Hui An-Yuang<sup>1,2</sup>,  
Alexandra L Jenkins<sup>1,2</sup>, Lea Dornjak<sup>2</sup>, Lawrence Leiter<sup>1,2,3,4</sup>, and  
Vladimir Vukun<sup>1,2,3</sup>

**Conclusions:** Our findings support the intake of ~3 g KJM/d for reductions in LDL cholesterol and non-HDL cholesterol of 10% and 7%, respectively. The information may be of interest to health agencies in crafting future dietary recommendations related to reduction in CVD risk. This study was registered at [clinicaltrials.gov](http://clinicaltrials.gov) as [NCT02068248](https://www.clinicaltrials.gov/ct2/show/study/NCT02068248).

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### Eating out tips

- ✓ Choose Thai, Chinese, Japanese or Malaysian
- ✓ Take away the bread
- ✓ Order olives
- ✓ One portion of rice/noodles two or three
- ✓ Order a salad or portion of vegetables
- ✓ Change the menu
- ✓ Stay away from desserts

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### Simple ways to lower the GL of a meal

- ☞ Add lemon juice
- ☞ Soup it and soak it
- ☞ Chew it and sip water
- ☞ Put your fork down between mouthfuls
- ☞ Add a spoonful of oatbran
- ☞ Don't add sweet sauces
- ☞ Wait 30 minutes before eating something sweet
- ☞ Have dessert as a snack

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### The genetics of calorie restriction

- ▶ It extends lifespan in animals by 25-50% by **switching off a gene that makes insulin and switching on a gene that improves the antioxidant/oxidant equation.**
- ▶ **DAF3 (the grim reaper) is the insulin gene you want to switch off** (by a low GL diet plus chromium, lowering insulin release)
- ▶ **FOXO is the gene you want to switch on** (more antioxidants)  
"Your supply of natural antioxidants goes up, damping down damaging oxidants." Prof Kenyon, who know advocates a low GL diet.
- ▶ In animals you only need **low calories every other day.**
- ▶ **Dairy products raise insulin** (IGF-1)

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### Switching on skinny genes

Low cal(alt day) & resveratrol switches on SIRTUIN

Low cal(alt day) & Low GL diet (keeping IGF-1 down) switches on FOXO

Sugar (high GL) switches on DAF-3

"skinny" "switches on SIRTUIN"

"grim reaper" "switches on DAF-3"

Burns fat Slows ageing Less pain  
ups metabolism better DNA-repair & inflammation

Exercise also switches on fat-burning genes

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### Sirtuin Activators - a new frontier?

Hanhinevah K, Int. J. Molecular Sciences, 2010

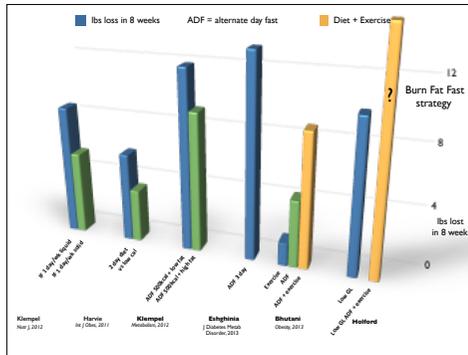
Certain food compounds activate sirtuin, the 'skinny' gene and may deliver the benefits of CR without the pain. These include:

- ▶ Resveratrol in red grapes, wine, red skin of peanuts
- ▶ Flavonols in cocoa and coffee
- ▶ Epicatechin in green tea, apple skin, blueberries,soya & broadbeans

These influence carbohydrate metabolism in a good way and have many potential anti-ageing benefits.

**A Mediterranean style diet is rich in SirActs which may be part of its benefit. So to is our Low GL diet.**

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Patrick Hofferds  
**zest4life**  
nutrition & weightloss

If you have tried and failed many times to get the health and the body you want – don't give up..!  
You can change your life in just 10 weeks with zest4life

Personalised and / or group health & weight loss programmes led by experts

- Be educated, motivated, inspired and supported by people who know what they are doing, so you can lose weight, look great and feel amazing.
- zest4life qualified Nutrition Professionals are also trained as motivational life coaches who work closely with you to achieve your health and weight loss goals.
- Find out what is stopping you and have the life and the body you want. Now, not someday!
- You will be taught step by step how to follow my low GL eating plan which achieves fast healthy weight loss and energy improvement results
- Choose a personalised programme or join a fun inspirational group.
- Available in many locations in the UK and Ireland.
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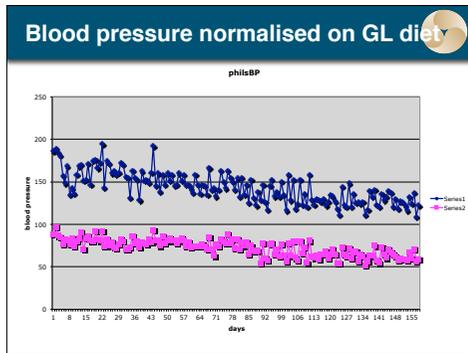
[www.zest4life.com](http://www.zest4life.com)

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21 people on my GL diet for 12 weeks

Health Marker	Before	After	% change	Greatest % change
Weight	92kg	85kg	7.4% -7kg	11.6%-14kg
HbA1c	6.9	5.9	15%	32%
Cholesterol	5.3	4.6	11%	23%
Triglycerides	1.7	1.2	27%	77%
B.Pressure	137/81	131/73	4/10%	22%/25%
Chol/HDL	4.1	3.7	9%	39%
Trig/HDL			Low carb diet results 9kg over 15 months	78%

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Helpful nutrients

▶ The following nutrients have RCTs showing lowering of blood glucose levels, HbA1c and/or improving insulin resistance

**Vitamins**  
Vitamin D (15–50mcg)  
Vitamin C (1–2g)  
Vitamin E (100–300mg) with vit C  
B complex (B1, B2, B3, B6, B12, folic acid) (depending on your Hcy level)

**Super Fibres**  
Glucmannan or PGX (5-15g)

**Antioxidants**  
CoQ10 (10–100mg)  
alpha lipoic acid (10–600mg)  
Glutathione or NACysteine (50–500mg)  
Resveratrol/anthocyanidins (10–40mg)

**Minerals**  
Chromium (200–1,000mcg)  
Magnesium (150–300mg)

**Essential Fats**  
Omega-3

**Herbs**  
Cinnamon (3–6g) or Cinnulin (0.5-1g)

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Evidence for vitamin C

Those with the highest amounts of vitamin C in their blood plasma were 62 per cent less likely to develop diabetes, compared to those with the lowest amounts. (Harding A, *Archives of Internal Medicine*, 2008 -/18663161)

One study in india gave people with diabetes either 500mg or 1,000mg of vitamin C. Those taking 1,000mg had a significant decrease in both their blood sugar levels and glycosylated haemoglobin, as well as triglycerides and cholesterol. (M. Alkhami-Ardekani and A. Shjoaoddiny-Ardekani, *Indian Journal of Medicine Research*, 2007 -/18160753)

31 obese hypertensive or diabetic patients were given 500mg x 2 vitamin C for eight weeks. Vitamin C significantly reduced the levels of high-sensitivity C-reactive protein (hs-CRP), interleukin 6 (IL-6), fasting blood glucose (FBG), compared to controls. (M. Ellulu, *Drug Des Devel Ther*. 2015 -/26170625)

A high intake (2g) of vitamin C a day also protects the eyes, which are prone to damage from the accumulation of slowly processed sorbitol, a consequence of diabetes. Taking a daily dose of vitamin C halves the amount of sorbitol the body produces. (J. S. Vinson, et al., *Diabetes*, 1989 -/2753234)

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### Magnesium and diabetes

Magnesium levels tend to be low in people with diabetes, and the lower the magnesium the higher the insulin levels. (J. Ma et al., Journal of Clinical Epidemiology, 1995)

A 14-year study tracking over 75,000 people found that the lower a person's magnesium level the higher was their risk of diabetes. (B. N. Hopping, et al., Journal of Clinical Epidemiology, 1995)

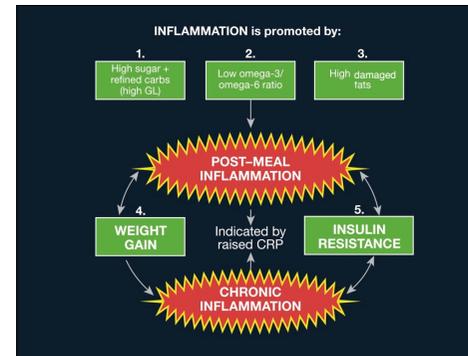
In an RCT, diabetics with low magnesium were given magnesium 382mg or a placebo for 16 weeks. At the end of that period only those taking the magnesium had lower blood sugar levels, insulin levels and HbA1c, which dropped from an average of 10% to an average of 8%. (M. Rodriguez-Moran and F. Guerrero-Romero, Diabetes Care, 2003 and Diabetes Metabolism 2015 -/25937055 )

115

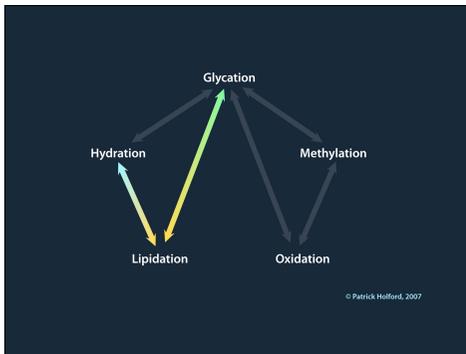
### 7 key processes

- Glycation - sugars, soluble fibres
- Lipidation - EFAs, phospholipids, VitD
- Oxidation - antioxidants/polyphenols
- Methylation - B vitamins etc
- Hydration - water
- Digestion - enzymes, probiotics, fibres etc
- Communication - hormones, neurotransmitters, cytokines & inflammation

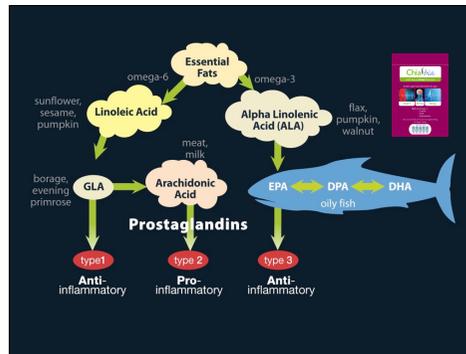
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### Omega-3s - many benefits

- Fish oils improve insulin resistance
- Fish oils promote fat burning
- Fish oils reduce risk of heart attack
- Fish oils make you less anxious and aggressive and improve your mood
- Fish oils reduce joint pain and inflammation
- Fish oils stop dry skin, making your skin velvety smooth

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## How much Ω3/EPA in fish?

Fish Source FSA 2004	Omega-3 g/100g	EPA g/100g	Mercury mg/kg	Omega-3/mercury ratio
Canned tuna	0.37	0.23	0.19	1.95
Trout	1.15	0.25	0.06	19.17
Herring	1.31	0.90	0.04	32.75
Fresh tuna	1.50	0.36	0.40	3.75
Canned/smoked salmon	1.54	0.47	0.04	38.50
Canned sardines	1.57	0.47	0.04	39.25
Fresh mackerel	1.93	0.65	0.05	38.60
Fresh salmon	2.70	0.69	0.05	54.00
Swordfish	27	0.13	1.40	1.43?
Marlin	27		1.10	1.83?

The omega-3 and mercury content of fish

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## How much omega 3/EPA is ideal?

▶ Joe Hibbeln, one of the world's leading experts on omega-3 and disease risk, concludes: "the majority of the populations (98-99%) are protected from...increased risk of chronic illnesses [with an intake of] 2g a day of omega-3".

- ▶ Eat oily fish three times a week. (serving of fish is >1g omega-3.)
- ▶ Eat a serving (small handful/tblspoon) chia/flax/walnuts every day(1g)
- ▶ Supplement 574mg of EPA+DHA ( equivalent to 1.4g omega-3)
- ▶ 3 x 1g = 3g from fish
- ▶ 7 x 1.4 = 10g from supplements
- ▶ handful of seeds/nuts = 1g from nuts/seeds
- ▶ 14g/7 = 2g a day



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## The best seeds are chia seeds

- ▶ Richest source of Omega 3 in vegetable kingdom
- ▶ High in protein
- ▶ High in soluble fibres
- ▶ High in antioxidants
- ▶ Rich in minerals inc magnesium
- ▶ Soft husk means grinding unnecessary



123

## Omega-3s work for depression

Grosso G et al, PLoS One, 2014

- ▶ The most comprehensive review and meta-analysis of 19 trials on patients with mild and major depression 'concludes that 'the use of omega-3 fats is effective' both in patients with major depressive disorder and milder depression'.

The greater the amount of EPA, not DHA, the more effective was the treatment likely to be.

Most effective studies give 1,000mg of EPA. Lowest effect with 300mg combined EPA/DHA. (2 x Essential Omegas = 600mg)

124

## Omega 3 reduces joint pain

Goldberg R., Pain, May 2007

We conducted a meta-analysis of 17 randomized, controlled trials assessing the pain relieving effects of omega-3 PUFAs in patients with rheumatoid arthritis or joint pain. Supplementation with omega-3 PUFAs for 3-4 months reduces

- ✓ patient reported joint pain intensity (by 26%),
- ✓ minutes of morning stiffness (by 43%),
- ✓ number of painful and/or tender joints (by 29%),
- ✓ and NSAID consumption (by 40%).

The results suggest that omega-3 PUFAs are an attractive adjunctive treatment for joint pain.

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## Vitamin D prevents/treats...

<https://www.vitaminwiki.com/Proof-that-Vitamin-D-Works>

- ▶ Depression and other mental health problems
- ▶ Diabetes
- ▶ Cardiovascular disease and stroke
- ▶ Arthritis & osteoporosis
- ▶ Auto-immune diseases
- ▶ Pregnancy outcomes
- ▶ Infections
- ▶ Cancer

126

## How much vitamin D?



Bischoff-Ferrari H, Adv Exp Med Biol. 2014. /25207384; Pludowski P, J Steroid Biochem 2017. /28216084

- ▶ The most advantageous serum levels for 25(OH)D appeared to be 75 nmol/l (30 ng/ml). An intake of **800IU** (20µg) of vitamin D3 per day for all adults may bring 97% of the population to level of at least 50 nmol/l and about 50% up to 75 nmol/l. 1600 to 2000IU (40-50µg) vitamin D3 needed to achieve 75nmol/l.
- ▶ The bone-centric guidelines recommend achieving 50 nmol/L (20ng/mL) with daily vitamin D doses of **400–800 IU**. For optimising disease prevention a concentration of 75 nmol/L is required from vitamin D doses ranging from 400 and 2000IU(50µg).
- ▶ Diet plus 30 mins sun exposure can provide 600IU(15ug). Supplement 600IU (15µg) + 1000IU(25µg) for those 'at risk', to correct deficiency and possibly in winter.

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## Action to increase vitamin D and Ω3

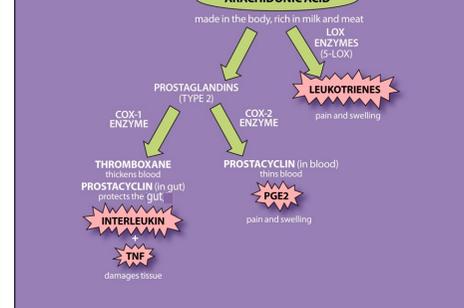


- ▶ **Eat more fish**, especially oily (carnivorous fish with teeth), ideally three or more times a week
- ▶ **Eat chia, flax or pumpkin seeds** almost every day
- ▶ Supplement a daily **Essential Omega** supplement
- ▶ If you are depressed also **take an Omega 3 fish oil supplement with the most EPA**
- ▶ Take an Optimum Multi giving **15mcg of vitamin D**
- ▶ **Get outdoors** for 30 minutes a day with skin exposed, especially on sunny days
- ▶ In the winter **boost your vitamin D** with a drop (25mcg, 1000iu)

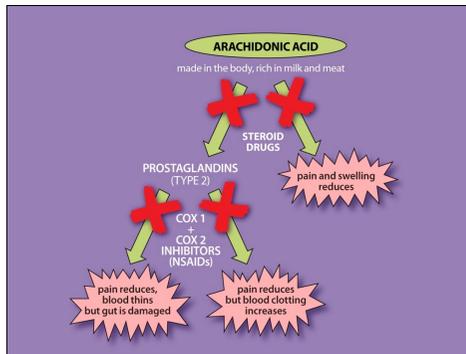


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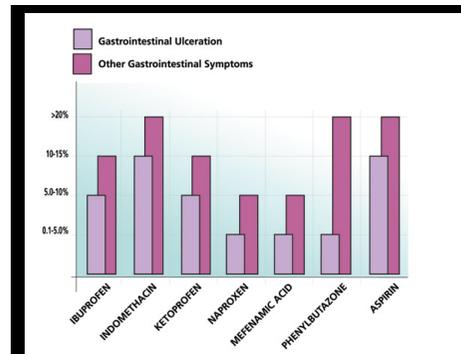
## How the body makes pain



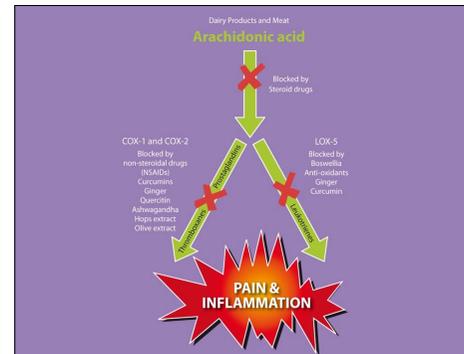
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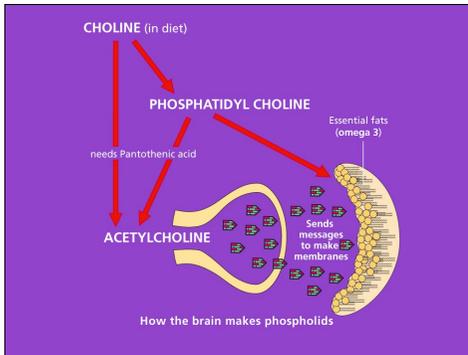
130



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### Phosphatidyl CHOLINE & SERINE

Pyapali G. J. Neurophysiol.1998; Meck, W.H., et al. Neuroreport.1997; Zeisel S., J Am College Nutrition. 2000; Hung S et al., Br J Neur 2001; Jacob N et al., Atherosclerosis, 1999; Ladd S et al., Clin Neuropharmacol. 1993; Amenta F et al., Clin Exp Hypertens. 2002; Wurtman RJ Aging 1982; Kidd P. Alt Medicine Review.1996, 1(2), 70

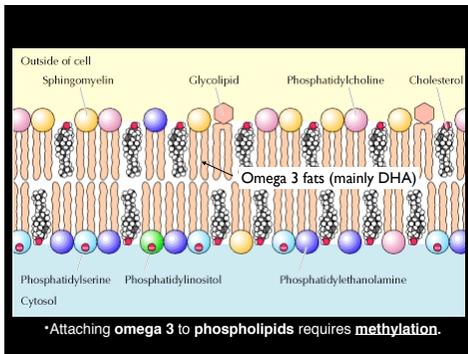
- Infants of pregnant rats fed choline half way through their pregnancy have more dendrite connections, plus improved learning ability and better memory recall.
- A placebo-controlled trial giving a single dose of phosphatidylcholine found a significant improvement in explicit memory 90 minutes later.
- The lower your homocysteine the better your ability to make phospholipids
- If essential fat or choline levels are depleted, a woman's brain size shrinks in pregnancy
- 16 clinical trials indicate that PS benefits measurable cognitive functions which tend to decline with age; these include memory, learning, vocabulary skills and concentration, as well as mood, alertness and sociability.

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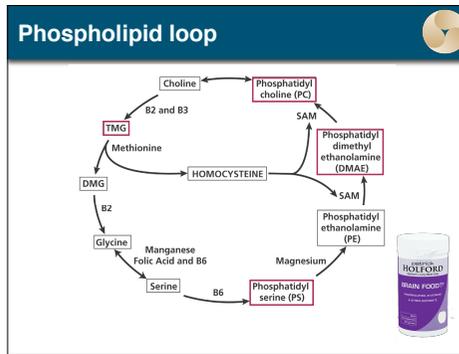
### How to increase phospholipids

- Add a tablespoon of lecithin granules to your cereal every day.
- Eat root vegetables, high in TMG.
- Or eat an egg a day, or six eggs a week – preferably free-range, organic and high in Omega 3's.
- Eat fish at least three times a week
- Supplement a brain food formula providing phospholipids, plus B vitamins, inc B5, and pyroglutamate.

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### 7 key processes

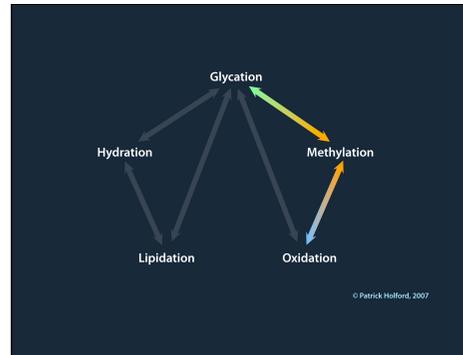
- Glycation - sugars, soluble fibres
- Lipidation - EFAs, phospholipids, VitD
- Methylation - B vitamins etc**
- Oxidation - antioxidants/polyphenols
- Hydration - water
- Digestion - enzymes, probiotics, fibres etc
- Communication - hormones, neurotransmitters, cytokines & inflammation

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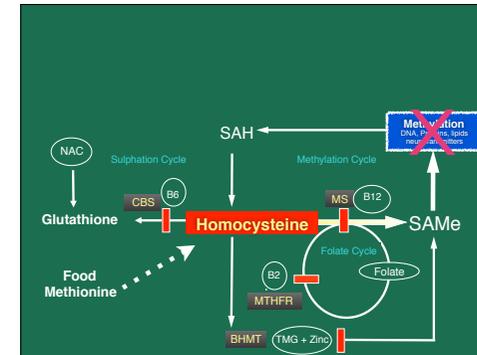
## METHYLATION

SAY NO ALZHEIMER'S,  
STAY SHARP, HAPPY & MOTIVATED

139



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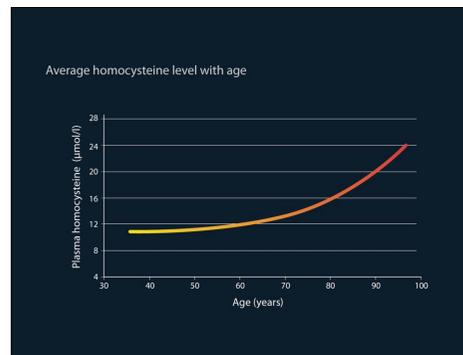
141

### Homocysteine predicts risk for..

- ▶ Heart attacks, strokes and thrombosis
- ▶ Pregnancy problems and birth defects
- ▶ Memory deficit and Alzheimer's disease
- ▶ Depression (especially in women)
- ▶ Osteoporosis
- ▶ School grades

... and is easily reversible with optimum nutrition

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### Homocysteine co-factor nutrients

- ▶ Folic acid, folate, MTHFolate (methylfolate)
- ▶ B12 (methylB12, glutathional B12)
- ▶ B6 - pyridoxine (pyridoxal-5-phosphate)
- ▶ (B2 - riboflavin)
- ▶ (B3 - niacin)
- ▶ Zinc
- ▶ Tri-Methyl Glycine (TMG)
- ▶ N-Acetyl Cysteine (NAC)

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## How much B12 to correct deficiency?

Vogiatzoglou A et al Neurology 2008 ; Euseen SJ et al Arch Intern Med. 2005

**“Two in five people over age 61 have insufficient B12.”**

A randomized, parallel-group, double-blind, dose-finding trial to determine the lowest oral dose of B12 required to normalize methylmalonic acid, the biochemical marker of deficiency in older people with mild vitamin B12 deficiency.

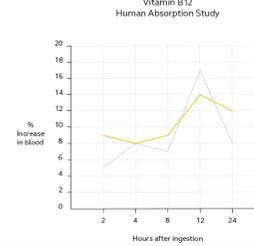
**RESULTS:** Only doses of 647 to 1032 mcg of B12 were associated with 80% to 90% of the estimated maximum reduction in the plasma methylmalonic acid concentration.

**CONCLUSION:** The lowest dose of oral B12 required to normalise mild B12 deficiency is more than 250 times greater than the RDA, (2.5µg).

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## Food state/grown B12 vs ‘synthetic’

JA Vinson, Royal Society of Chemistry, 1989

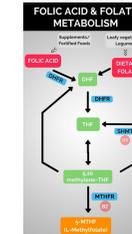


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## Folic acid or MTHF?

Venn J et al, Am J Clin Nutr 2003;77:658-62.

▶ MTHF vs folic acid (100µg) for 24 weeks mean tHcy was -14.6% vs -9.3% lower. L-MTHF was more effective than was folic acid in lowering tHcy (P < 0.05).



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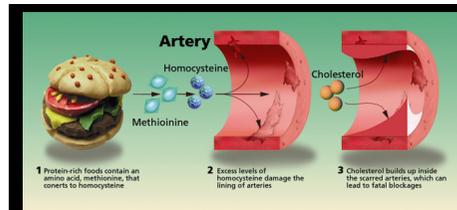
## Homocysteine lowering nutrients

H SCORE	VERY LOW	LOW RISK	AT RISK	HIGH RISK
	<7	7-9	10-15	>15
<b>Dose per day</b>		<b>1</b>	<b>2</b>	<b>3</b>
Folic acid	200µg	400µg	500µg	<b>800µg</b>
MethylB12	10µg	250µg	<b>500µg</b>	750µg
B6	10mg	<b>20mg</b>	40mg	60mg
Zinc	5mg	10mg	15mg	20mg
TMG		500mg	1000mg	1500mg
NAC		250mg	500mg	750mg

Halve this if using MTHF



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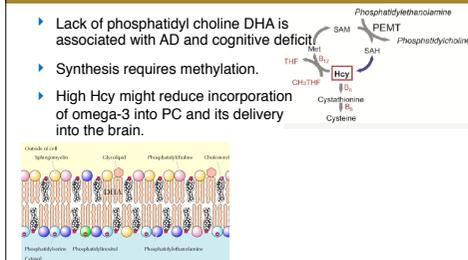
3 in 4 heart attack patients don't have high cholesterol.  
Two thirds of heart attacks in the elderly are predicted by high homocysteine.

149

## A role for phospholids?

Schaefer E et al, Arch Neurol. 2006; Jerneren F, RCGP presentation, 2014;

- ▶ Lack of phosphatidyl choline/DHA is associated with AD and cognitive deficit
- ▶ Synthesis requires methylation.
- ▶ High Hcy might reduce incorporation of omega-3 into PC and its delivery into the brain.



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### 7 key processes

- Glycation - sugars, soluble fibres
- Lipidation - EFAs, phospholipids, VitD
- Methylation - B vitamins etc
- Oxidation - antioxidants/polyphenols
- Hydration - water
- Digestion - enzymes, probiotics, fibres etc
- Communication - hormones, neurotransmitters, cytokines & inflammation

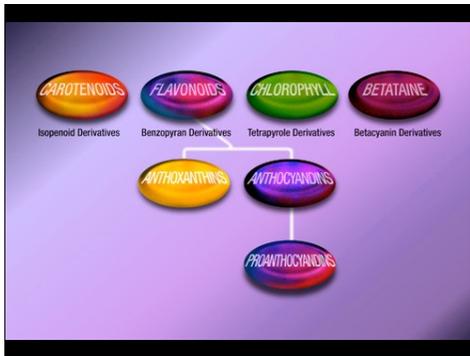
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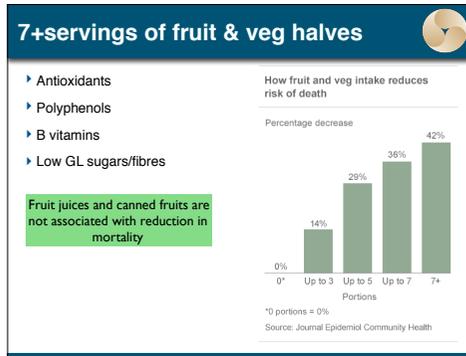
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### Each of these is 2,000 ORACs

1	1/3 tsp Cinnamon, ground	11	7 Walnut halves
2	1/3sp Oregano, dried	12	8 Pecan halves
3	1/2sp Turmeric, ground	13	1/2cup Pistachios
4	1 heaped tsp Mustard	14	1/2cup cooked lentils
5	1/5 cup Blueberries	15	1 cup cooked Kidney beans
6	1/4 cup Cherries or a quarter shot of Cherry Active concentrate	16	1/3 medium Avocado
7	1 soup Blackcurrants & berries, raspberries, strawberries	17	1/2 cup of red cabbage
8	1/2 tsp pear, grapefruit or plum	18	2 cups of broccoli
9	An orange or apple	19	1 medium Artichoke or 8 spears of asparagus
10	4 pieces of dark Chocolate (70% cocoa)	20	1/3 medium glass (150ml) Red Wine

Source: Oxygen Radical Absorbance Capacity of Selected Foods - 2007, US Department of Agriculture

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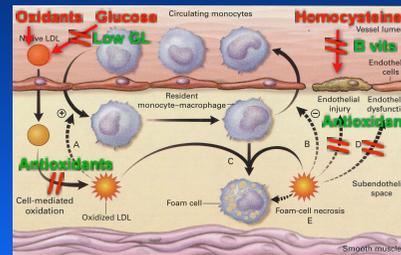
## Not just any five a day...

Comparative ORACs for two days' food choices

Day 1		Day 2	
Fruit/vegetable portion	ORAC	Fruit/vegetable portion	ORAC
1/2 large cantaloupe melon	315	1/2 pear	2,617
1 kiwi fruit	802	1/2 cup strawberries	2,983
1 medium carrot, raw	406	1/2 avocado	2,899
1/2 cup green peas, frozen	432	1 cup broccoli florets, raw	1,226
1 cup spinach, raw	455	4 spears asparagus, boiled	986
<b>Total</b>	<b>2,410</b>	<b>Total</b>	<b>10,411</b>

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## The real causes of heart disease



Adapted from Diaz, Frei et al. *New Engl J Med* 1997;337:408-416, used with permission

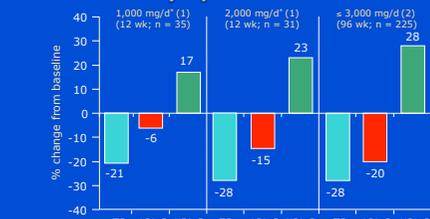
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## Vitamin C halves heart disease risk

- ▶ Vitamin C is superb at preventing lipid peroxidation. Vitamin C halves HPNE with 1g a day for 17 days.[1] A study on smokers 2g a day, (not vitamin E 800iu) significantly reduced F2-isoprostanes.[2] Another on marathon runners showed that 1g a day lowers F2-isoprostanes.[3]
- ▶ It also helps circulation by protecting Nitric Oxide (NO).
- ▶ Vasodilation becomes almost normal in heart disease patients with 2 grams after 2 hours or with 500mg a day for 30 days.[4]
- ▶ Meta-analysis of 29 trials show blood pressure drops by 5 points, on average, in those with high blood pressure supplementing 500mg of vitamin C, and by 10 points with 2grams a day[5]
- ▶ A study of >85,000 nurses found that those supplementing over 400mg a day for 10 years+ had a 30% reduced risk of developing heart disease.[6]
- ▶ The EPIC study of >19,000 people, those in the highest fifth for plasma vitamin C had half the risk of premature death[7] and stroke[8]

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## Extended-Release Niacin for Treatment of Dyslipidemia



Baseline (mg/dL): TG (156) (197) (44) (137) (206) (42) (174) (195) (45)

\*Significant difference ( $P < 0.001$ ) between dosage groups.  
 1. Morgan JM et al. *Am J Cardiol* 1998;82(12A):25U-94U  
 2. Capuzzi DM et al. *Am J Cardiol* 1998;82(12A):74U-81U  
 © Copyright 1998, with permission from Excerpta Medica Inc.

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## CoQ+carnitine for heart & brain

- ▶ More than half of your heart's energy comes from fat.
- ▶ Carnitine 'feeds' fats to the heart and brain
- ▶ Propionyl-L-carnitine (PLC) best for the heart
- ▶ L-carnitine & acetyl-L-carnitine (ALC) best for brain
- ▶ CoQ10 is highly synergistic - the best antioxidant for heart, and blocked by statins



Product information per 100mg (1 Capsule)

Ingredient	Amount
Adipylcarnitine	100mg
L-Carnitine	100mg
Propionylcarnitine	100mg
Coenzyme Q10	80mg

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## The magic of Magnesium

- ▶ It lowers high blood pressure by about 10%
- ▶ It lowers cholesterol, triglycerides and glucose
- ▶ It reduces carotid artery thickness
- ▶ It is a natural diuretic
- ▶ Most people are deficient in it - think greens & seeds
- ▶ For diabetes, hypertension or cardiovascular disease supplement 300mg a day

"Magnesium supplementation can produce a favourable effect on fasting glucose, HDL, LDL, triglycerides and blood pressure. Therefore, magnesium supplementation may decrease the risk T2D associated cardiovascular diseases." Versa, H J Hum Nutr Diet. 2017 -28150351

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### Action for Heart Disease prevention

- ▶ Eat a low-GL diet, with plenty of beans, lentils, nuts and seeds, oats, chia and flax seeds, which are high in soluble fibre.
- ▶ Eat oily fish at least three times a week, and omega-3 rich walnuts, flax or chia seeds. These are all also high in magnesium.
- ▶ Avoid salt. Eat lots of fruits, vegetables, spices and herbs.
- ▶ Exercise is also essential. So is reducing stress.
- ▶ Bring your homocysteine level below 7 by supplementing a high-dose B vitamin formula designed to lower homocysteine.
- ▶ If you have high blood pressure or heart disease, make sure you are supplementing at least 300mg of **magnesium** a day.
- ▶ If you have a high cholesterol/lowHDL, take **non-blush niacin** 1,000mg p.d
- ▶ If you are on statins, supplement at least 90mg of **CoQ10**. If you have heart problems supplement at least 90mg **CoQ10 together with carnitine**.



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### Supplements for heart disease



**Vitamin C - 2,000 mg**  
**Magnesium - 155mg**

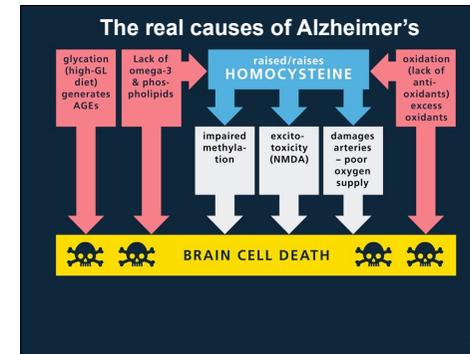
Omega-3— 1,400 mg (EPA+DHA- 575mg)

Vitamin E (261iu)  
Selenium 80µg  
Glutathione 50mg -  
Resveratrol 20mg -  
Alpha Lipoic Acid 10mg -  
Coenzyme Q10 10mg -  
Beta Carotene

Omega-3— 1,150 mg (EPA+DHA- 450mg)

**Vitamin C -490mg - 2,445mg**  
**Magnesium - 290mg - 445mg**  
**Niacin - 1,000mg**

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### Metabolic syndrome and dementia

J. A. Luchsinger, et al., Neurology, 2004; A. M. Abbatecola, et al. Journal of American Geriatrics Society, 2004; W. L. Xu, et al., Neurology, 2004; Yaffe, K, et al., Archives of Neurology, 2009

- ▶ Researchers at Columbia University, New York found that twice as many people with high insulin levels developed dementia. People with high insulin had the worst memory.
- ▶ An Italian study of people free from dementia and diabetes showed that high insulin levels were strongly associated with poorer mental function.
- ▶ A six-year Swedish study showed that those with diabetes were 1.5 times more likely to develop dementia.
- ▶ Researchers at the University of California found postmenopausal women with HbA1C levels above 7 per were four times more likely to develop dementia.

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### Omega 3, DHA & Alzheimer's disease

M.Morris Arch. Neurol 2003; K.Yurko-Mauro, AlzDem.2010; A.ICN.2013; Witte, Cortex, 2013

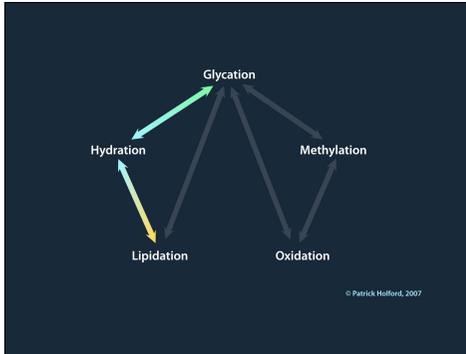
- ▶ **Eating fish once a week reduces risk of developing AD by 60%**. The strongest link was the amount of DHA.
- ▶ A study giving elderly with memory decline **900mg of DHA for 24 weeks versus placebo found a significant improvement in memory**, but not in those already with Alzheimer's disease.
- ▶ A study giving adults who didn't eat much fish found **memory improvements after 6 months taking DHA 1,160mg a day**
- ▶ **A study in healthy 50-75 year olds found beneficial structural changes and improved function after 26 weeks on fish oils.**

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### 7 key processes

- 👉 Glycation - sugars, soluble fibres
- 👉 Lipidation - EFAs, phospholipids, VitD
- 👉 Methylation - B vitamins etc
- 👉 Oxidation - antioxidants/polyphenols
- 👉 Hydration - water
- 👉 Digestion - enzymes, probiotics, fibres etc
- 👉 Communication - hormones, neurotransmitters, cytokines & inflammation

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### The Importance of Water

- ▶ Two-thirds of your body is water. Your brain is about 85 per cent water, whereas muscles are 75 per cent, and even bone is 22 per cent.
- ▶ In a normal day, drink around 2 litres (3 1/2 pints) – eight glasses – of water, including hot drinks
- ▶ Start by drinking a glass of fresh water when you get up in the morning.
- ▶ Drink good quality water - use a water filter
- ▶ Spring water is not the same as mineral water

Those who drink eight glasses of water a day are twice as likely to be in optimum health than those who don't drink water.

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### 7 key processes

- Glycation - sugars, soluble fibres
- Lipidation - EFAs, phospholipids, VitD
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- Hydration - water
- Digestion - enzymes, probiotics, fibres etc
- Communication - hormones, neurotransmitters, cytokines & inflammation

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Stomach produces stomach acid (betaine HCl)

HCl + pepsinogen = **pepsin**

Intrinsic factor = B12 absorption

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### Stomach acid declines with age

You need stomach acid to:

- ▶ Kill bugs
- ▶ Digest protein
- ▶ Trigger pancreatic enzyme release
- ▶ Absorb vitamin B12
- ▶ Shut the valve from oesophagus to stomach (LES)

Fig. 1. Contrary to popular belief, stomach acid secretions drop with advancing age. This graph shows average decline in stomach acid secretion in humans between age 20 to age 80. (From "Why Stomach Acid is Good For You.")

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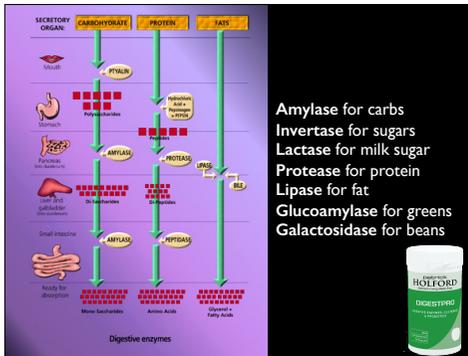
### With too little stomach acid you get:

- ▶ Heart burn
- ▶ Indigestion
- ▶ Bloating
- ▶ Belching

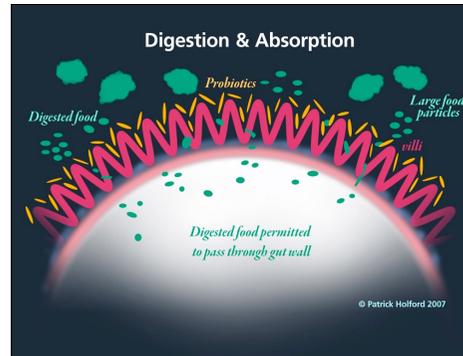
Take 2 capsules (600mg) with a meal. Keep increasing up to 3,000mg. Stop if you get any discomfort or heartburn.

Don't take if you have or suspect an ulcer

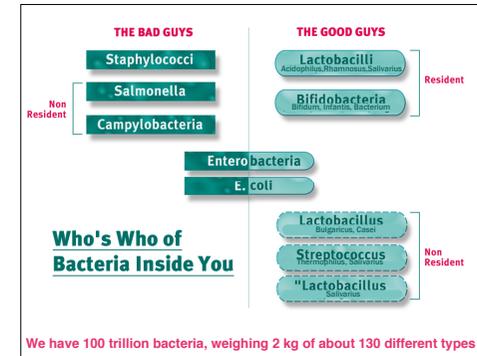
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### What gut bacteria do

- ▶ **Make vitamins**, including vitamins B1, B2, B3, B5, B6, B12, biotin, vitamins A and K as well as short-chain fatty acids.
- ▶ **Ensure normal function of the intestine**, including motility, secretion of mucus and absorption as well as helping to eliminate cholesterol and bile.
- ▶ **Help to digest carbohydrates and proteins**, such as casein and gluten, and digesting lactose and other carbohydrates.
- ▶ **Fight infections**: they have been shown to halve recovery time from diarrhoea and prevent the overgrowth of harmful bacteria & fungi

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### What gut bacteria do - continued

- ▶ **Boost your immunity** by increasing the number of immune cells and the production of secretory IgA.
- ▶ **Promote other 'good' bacteria**, while reducing 'bad' bacteria.
- ▶ **Repair and promote gut-wall integrity**
- ▶ **Probiotics produce** butyric acid, which is used as fuel by the intestinal lining, helping it to repair itself, by fermenting sugars
- ▶ **Reduce inflammation and allergic inflammatory reactions** by inhibiting pro-inflammatory cytokine production

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### What kills beneficial bacteria

- ▶ Alcohol
- ▶ Gut infections
- ▶ Antibiotics

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## How to promote healthy bacteria

- ▶ Yoghurt, cottage cheese, fermented cheeses(from dairy or soya)
- ▶ Sauerkraut, pickles (from vegetables)
- ▶ Miso, tofu, natto, tempeh, tamari, shoyu
- ▶ Kefir (from milk or water+sugar, juice or coconut milk)
- ▶ Sourdough bread (ideally from Kamut unless coeliac)
- ▶ Feed them with foods high in resistant starch (more later)



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## What probiotics can help

- ▶ Shorten diarrhoea
- ▶ Food poisoning ( e.g. salmonella)
- ▶ C.difficile infection (antibiotic resistant)
- ▶ Irritable bowel disease
- ▶ Inflammatory bowel disease (crohns, ulcerative colitis)
- ▶ Allergic tendency
- ▶ ? Weight loss

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## SIBO, Candida & gut infections

- ▶ A sugar-free diet that starves the organism - there are variations called FODMAP and Specific Carbohydrate Diet
- ▶ The right probiotics
- ▶ Anti- infectious agent supplements - e.g. caprylic acid, oregano oil, artemisia, olive leaf extract
- ▶ Boosting the body's Secretory IgA levels with Sacchromyces Boulardii.

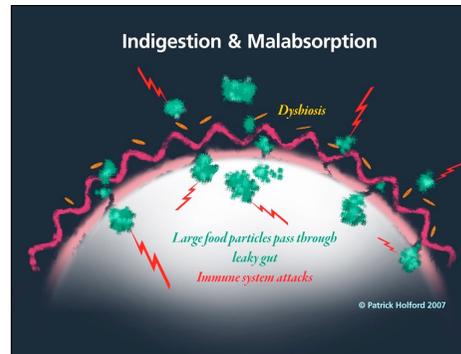
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## FODMAP diet eases the load

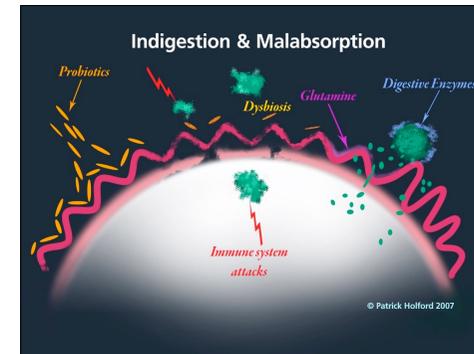
Eswaran, S.L American Journal of Gastroenterology, 2016

- ▶ Some people with IBS may have small intestinal bacterial overgrowth (SIBO) with dysbiosis and that foods containing resistant starch, or prebiotics, while otherwise 'good', may encourage further undesirable bacterial fermentation.
- ▶ While FODMAP diets have been shown to be helpful for those with inflammatory bowel disease, one study giving the resistant starch inulin with probiotics reported significant IBS relief.
- ▶ The recent study set out to test the effects of a low FODMAP diet on 84 IBS sufferers, compared to a NICE 'healthy' diet for four weeks. There was no significant difference overall (42% on FODMAP vs 41% on NICE diet reported improvement) however a significant improvement in abdominal pain in 52% of those on the FODMAP diet versus 23% on the NICE diet was reported.

184



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186

## Benefits of glutamine

Shu X. et al., *Experimental and Therapeutic Medicine*, 2016; Ren W. *Front Immunol*, 2016

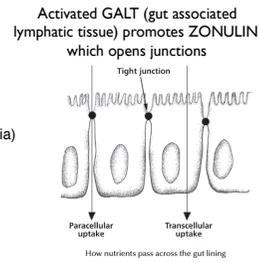
- ▶ Glutamine is the most abundant amino acid in the human body. There's five times more than any amino acid in breast milk and lots in food - 150mg in a tomato.
- ▶ It's essential for your digestive tract, but it's also highly beneficial for your immune system and brain.
- ▶ It nourishes, repairs and rebuilds the small intestine, reducing gut permeability, to aid recovery after surgery an infection.
- ▶ It reduces gut inflammation (CRP, TNF-a, IL-6)
- ▶ It promotes secretory IgA protecting the gut from pathogens
- ▶ When gut is damaged take 1-2 teaspoons (5-10 grams) in cold water (heat destroys it) before bed

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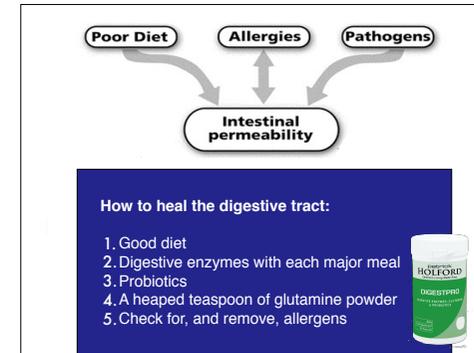
## What affects gut integrity

Fasano, A., *Clin Gastroenterol Hepatol*, 2010

- ▶ Alcohol
- ▶ Painkillers (NSAIDs)
- ▶ Some gliadins in wheat
- ▶ Caffeine
- ▶ Dysbiosis (wrong bacteria)
- ▶ Poor digestion
- ▶ Gut inflammation
- ▶ Food intolerances



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## Symptoms of food allergy/intolerance

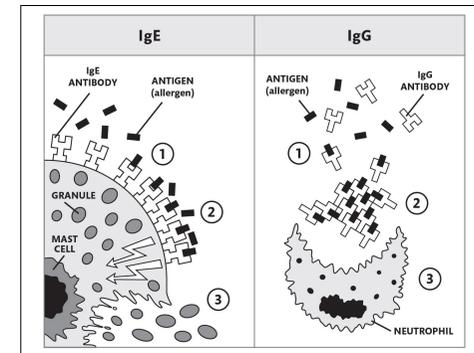
- ▶ Child history of colic, eczema, asthma, rashes, ear infections
- ▶ Eczema, asthma
- ▶ Joint aches
- ▶ Colds, blocked nose, sinus
- ▶ Sore throat
- ▶ Bloating, IBS
- ▶ Facial puffiness, circles or discolouration around eyes
- ▶ Seasonal (e.g. hayfever)
- ▶ Red ears, sleepiness or blocked nose after eating
- ▶ Headaches
- ▶ Depression
- ▶ Brain fog
- ▶ Anxiety, panic, stress
- ▶ Difficulty sleeping
- ▶ Hyperactivity/attention deficit
- ▶ Underactive thyroid
- ▶ Weight gain (water retention)

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## Classic (IgE) & delayed (IgG) food allergies

- ▶ **IgE – normally only 1 to 2 foods involved - symptoms appearing within 2 hours**
  - Potentially dangerous anaphylactic reaction (eg to peanuts, shellfish)
  - Effects limited primarily to gut, skin & airways
  - Usually self-diagnosed, doctor rarely seen
  - Involves rarely eaten foods
  - Usually IgE RAST &/or skin test positive
- ▶ **IgG – 4 to 5 foods (or more) involved - symptoms from 2 to 72 hours**
  - Chronic conditions affecting any organ or tissue
  - Involves commonly eaten foods, additive component
  - IgG blood test positive (IgE & skin test negative)

191



192

## IgG, not IgE linked to IBS

Sameer Z. et al., American Journal of Gastroenterology 2005; 100:p1550-1557

Researchers at St. Georges Hospital Medical School in London measured both types of antibodies in 108 people with irritable bowel syndrome (IBS), and compared the levels with 43 healthy controls. The researchers found that the people with IBS had significantly higher levels of IgG antibodies to specific foods, including wheat, beef, lamb, pork, and soy. Both groups had raised IgG antibody levels to dairy products. Neither group, however, had raised levels of IgE antibodies.

193

## Double-blind IBS trial

Atkinson W. et al., Gut, vol 53, pp. 1391-1393 (2004) 2004

Researchers at the University of York devised an ingenious study. They tested 150 IBS sufferers using an IgG allergy test and then gave their doctors either the real results or fake results, and a supposedly 'allergy-free' diet to follow for the next three months. Neither the patients nor their doctors knew they were on a fake diet. At the end of the three month trial there was a significant improvement only in those people on their true food allergy-free diet. What's more, those who stuck to it most strictly had the best results. Level of compliance, on the other hand, didn't make a difference in those on the sham diets.

The NNT for Yorktest was 2.5 compared to 17 for drug treatment.

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## Denise Lewis suffered from terrible IBS

"Since removing my allergy foods, tested by Yorktest a year ago I haven't had a single IBS attack. It's not always easy to avoid the foods but the benefits are worth it. for a pain-free existence. Finding out what I'm allergic to with an IgG allergy test has transformed my life. For the first time in 13 years I'm pain free."

195

## Of those who rigorously followed the diet 76% showed noticeable improvement in their chronic symptoms.

Hardman G. and Hart G., (2007) Nutrition and Food Science 37:16-23

Chronic Symptoms	Noticeable Benefit
Gastro-intestinal	80%
Respiratory	72%
Neurological	78%
Dermatological	76%
Musculo-skeletal	64%
Psychological	81%
Other	79%

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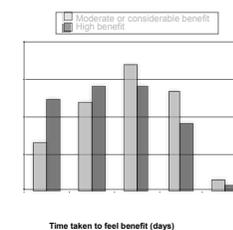
## YorkTest foodSCAN 113 Test Survey Data - Survey commissioned by Allergy UK and analysed by the Centre for Health Economics, University of York

Further analysis of data in Hardman G, Hart G, 2007: Nutrition and Food Science 37, 16-23

Symptoms (n)	Moderate benefit %	High benefit %	Total benefit %	Low or no benefit %
<b>Musculo-skeletal</b>				
Arthritis (130)	35%	39%	74%	26%
Fibromyalgia (24)	42%	33%	75%	25%
General aches and pains (177)	34%	54%	88%	12%
Swollen joints (32)	31%	53%	84%	16%
Restless leg syndrome (1)	0	100%	100%	0
MS (51)	41%	33%	74%	25%

197

## How long after altering their diet did people start to feel the benefits ?



For those who dieted rigorously and reported a high level of benefit, 92.3% noticed a return of symptoms on reintroduction of the offending foods.

198

### Testing for food & drink intolerance

- Food & Drink Scan - the complete food and drink intolerance programme
- Easy to use finger-prick home-to-laboratory test
- Return sample by post, results within 10 working days
- Comprehensive results pack
- 2 telephone consultations with a nutritionist to discuss your results
- Recommended by Allergy UK



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### Your results

Food & DrinkScan Intolerance Test



patrick HOLFORD  
Dr James Braly  
Optimise Living Made Easy

### HIDDEN FOOD ALLERGIES

IS WHAT YOU EAT MAKING YOU ILL?

www.yorktest.com

201

### 20 most common food allergens

- cow's milk
- yeast
- egg white
- wheat
- gluten/gliadin
- cashew
- egg yolk
- garlic
- soya bean
- brazil nut
- almond
- corn
- hazelnut
- oat
- lentils
- kiwi
- chilli pepper
- sesame seed
- sunflower seed
- peanut

202

### Facts about milk

- 75% of people (25% of Caucasians, 80% of Asians, native Americans or Africans) stop producing lactase once weaned.
- The incidence of breast and prostate cancer is 100 to 1,000 times lower in non-dairy consumers
- The incidence of cardiovascular disease is also lower in non-dairy consumers
- One in ten people are allergic to dairy products
- Children are more likely to become allergic if exposed to dairy products before the age of 4 months
- Infant onset diabetes is often linked to early dairy exposure
- Milk is not an essential food, nor does it prevent osteoporosis

203

### Staff of life or cereal killer?



1 in 10 coeliacs go undiagnosed

204

## Coeliacs Disease affects 1 in 111

Gerarduzzi T et al. Journal of Pediatric Gastroenterology and Nutrition 31 (suppl) 2000: S29, Abst. 104

Coeliacs disease can be diagnosed by a simple blood test called IgATissueTransGlutaminase Test. When this test was randomly carried out on schoolchildren, unexpectedly it was found to occur in one in every 167 so-called normal healthy children and one in every 111 "normal, healthy" adults. Among those who report gastrointestinal symptoms, it occurs in one in 40 children and one in 30 adults. Among those who have a father, mother, brother, sister or grandparent with coeliacs, the risk is one in eleven.

205

## Facts about gluten

- ▶ Gluten is highest in wheat, then rye, barley. It's also in spelt, kamut, triticale.
- ▶ There's no gluten in rice, corn, millet, buckwheat, quinoa, gram.
- ▶ It is a sticky protein that probably aggravates most people's guts, some of whom become IgG sensitive. Most people react only to 'gliadin' gluten - which is what's in wheat.
- ▶ An IgG Food Intolerance test will tell you in you're gliadin sensitive, in which case oats are OK. 8 in 10 coeliac sufferers don't react to oats.
- ▶ IgE sensitivity is, in part, probably inherited.

206

## Kamut® khorasan is ancient organic

nut khorasan was the form of wheat in a  
nut khorasan has 28 chromosomes  
eat and spelt have 42 chromosomes  
...modern wheat has been through hundreds of hybridizations  
introducing new genes

▶ Kamut® is guaranteed organic and uncontaminated

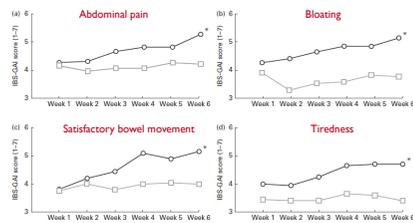


207

## Kamut vs modern wheat improves

F.Sofi et al. British Journal of Nutrition, 2014

"A significant reduction in inflammatory markers." e.g. IL-6 >36:2



208

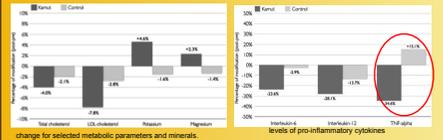
## Modern wheat vs Kamut® khorasan on cardiovascular health

F.Sofi et al. European Journal of Clinical Nutrition, 2013, 67:p190-195

This human trial was a randomized, single-blinded cross-over trial with 2 intervention diets (based on modern wheat or KAMUT® khorasan products) on 22 healthy volunteers.

After a 8-week diet with KAMUT® khorasan products, there was an IMPROVEMENT OF CARDIOVASCULAR RISK PARAMETERS:

- ✓ significant reduction of metabolic risk factors such as total cholesterol, LDL cholesterol, and blood glucose.
- ✓ improvement of redox status (reduction in both TBARS and carbonyl levels);
- ✓ increase of serum potassium and magnesium;
- ✓ reduction of levels of key pro-inflammatory cytokines (IL-6, IL-12, TNF-alpha, VEGF).



209

## Kamut and diabetes

Whittaker H et al., Eur J Nutr, 2016 -26853601



210

### Facts about yeast

- ▶ 1 in 5 people react to either brewer's or baker's yeast
- ▶ Brewer's yeast is highest in beer, lager, wine - lowest in spirits, then champagne
- ▶ Baker's yeast is in most breads, baked and convenience foods
- ▶ There's no yeast in pasta

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### Do you have...

Heartburn?	Get checked for H. pylori and ulcers	If none try betaine HCl
Indigestion?	Take digestive enzymes Have an IgG food intolerance test	SIB suffering? → Test and avoid your IgG food intolerances
Bad bloating and/or BSG?	Check for SIBO, FIBROSIS or candida	Avoid FODMAP foods and take probiotics
Chronic constipation?	Take glucosaminase and/or FOS or probiotics	Follow the anti-candida diet and take specified supplements
Inflammatory bowel disease?	Take digestive and inflammatory	... and follow the Digestion-Friendly Diet

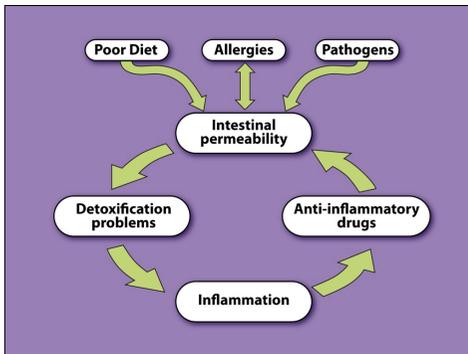
212

### ACTION for good digestion

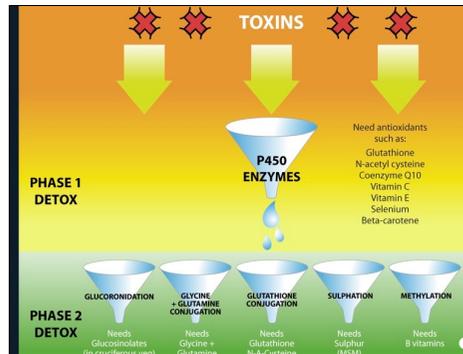
- ▶ Eat a low allergen diet (get yourself tested)
- ▶ Minimise/avoid wheat and other gluten grains
- ▶ Minimise/avoid dairy products
- ▶ Limit alcohol and coffee
- ▶ Limit fried foods, especially deep-fried foods
- ▶ Eat something raw with every meal
- ▶ Choose whole, not refined foods
- ▶ Restore gut integrity with glutamine powder
- ▶ Reinoculate the gut with probiotics
- ▶ Assist digestion with digestive enzymes



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### Detox supplements

- ▶ Vitamin C & E
- ▶ Coenzyme Q10
- ▶ Glutathione/NAC
- ▶ Glutamine
- ▶ Calcium-D-glucarate
- ▶ Milk thistle (silymarin)
- ▶ DIM/I3C-broccoli extract
- ▶ MSM - a form of sulphur
- ▶ Trimethyl Glycine (TMG)

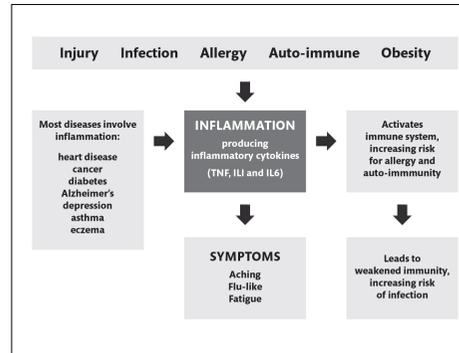


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## 7 key processes

- Glycation - sugars, soluble fibres
- Lipidation - EFAs, phospholipids, VitD
- Methylation - B vitamins etc
- Oxidation - antioxidants/polyphenols
- Hydration - water
- Digestion - enzymes, probiotics, fibres etc
- Communication - hormones, neurotransmitters, cytokines & inflammation

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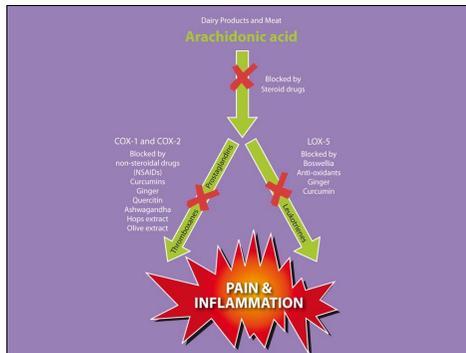


218

## Anti-inflammation diet

- Eliminate your food intolerances
- Follow a 3 or 4 day rotation diet for minor intolerances
- Minimise modern wheat and milk products even if you're not intolerant
- Eat oily fish, rich in omega-3 fats, three times a week
- Have seven servings of fruit and veg a day - high antioxidants and polyphenols
- Eat quercetin foods such as red onions, apples and berries and eat turmeric, mustard, ginger and olives

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### Quercetin rich foods

Food	Quercetin per 100g	Food serving size for 10 mg quercetin
red onions	19.93 mg	50g (an onion)
cranberries	14.02 mg	71g (one cup)
spinach	4.86 mg	206g (three servings)
apples	4.42 mg	226g (two small apples)
red grapes	3.54 mg	282g (two medium servings)
carrots	3.50 mg	288g (two large carrots)
broccoli	3.21 mg	312g (three servings)
blueberries	3.11 mg	322g (large punnet)
lettuce	2.87 mg	405g (4 lettuces)
cherries	2.87 mg	405g (two large punnets)

221

## Ginger - antioxidant & anti-inflammatory

Ginger inhibits the synthesis of pro-inflammatory prostaglandins and thromboxanes, another type of inflammatory mediator. It also has strong antioxidant properties.



222

### Turmeric contains curcumin

Curcumin works as well as anti-inflammatory drugs, but without the side effects. Like NSAIDs, it blocks the formation of the pro-inflammatory prostaglandins (PGE2), as well as leukotrienes. In fact, it turns out to be what everyone hoped drugs like Vioxx would be (a mild 5-Lox and Cox-2 inhibitor that not does not affect Cox-1) and has been used for its medicinal properties in Ayurveda (Indian traditional medicine), for hundreds of years. There is no evidence of any downsides, even in high doses of 8g a day.

Mustard is good too

223

### Curcumin is anti-cancer

Hallman K et al. Breast Cancer 2017 -28331366

- Curcumin is a compound that has antibacterial, antiviral, anti-inflammatory, and anti-cancer properties.
- In this study, we have analyzed the effects of curcumin on the expression of Estrogen Receptor- $\alpha$  and p53 in the presence of hormones and anti-hormones in breast cancer cells. In cell proliferation studies, Curcumin caused a 10-fold decrease compared with the treatment with estrogen, which suggests its antiproliferative effects.

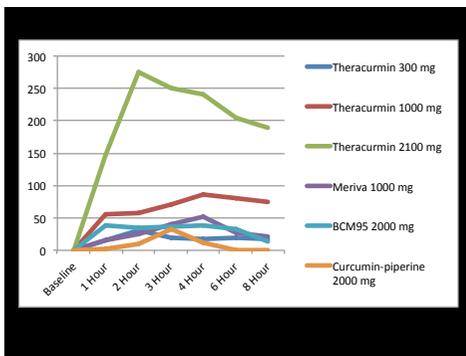
224

### Theracurmin - super absorption

H. Sasaki et al. Biol. Pharm. Bull. 34(5) 660 - 665 (2011)21532153; also see /21603867

Fig. 3. Concentration of Curcumin in Rat Plasma after the Oral Administration of THERACURMIN and Curcumin Powder

225



226

### Olives contain two potent painkillers

See [www.patrickholford.com/advice/natural-pain-killers](http://www.patrickholford.com/advice/natural-pain-killers)

**Hydroxytyrosol** - a very powerful antioxidant and anti-inflammatory effects. This is a 'polyphenol.'

**Oleocanthal** which is chemically related to ibuprofen, though has none of the negative side effects.

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### 10 times more polyphenols

- The highest recorded polyphenols in olive oil, according to a study at the University of Athens of over 2500 samples from around the world measured using the NMR method, is a type of olive called Olympia (also known as Ladolia or Palaioastritsa), grown in a mountainous valley in the Peloponnese in Greece.
- 'Drop of Life' olive oil and contains over 1900mg/kg of polyphenols, which is eight times higher than the level needed to make health claims and ten times higher than average olive oils.

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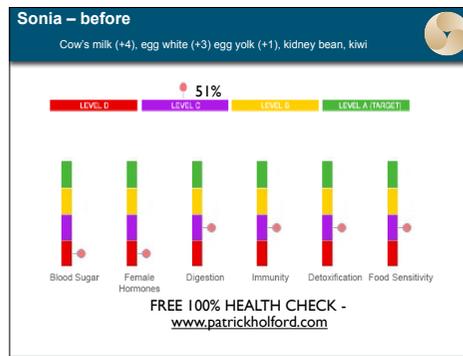
## Hop extract is an anti-inflammatory

See [www.patrickholford.com/advice/natural-pain-killers](http://www.patrickholford.com/advice/natural-pain-killers)

An extract from hops, called IsoOxygene, is one of the most potent natural COX-2 inhibitors and one of the most effective natural painkillers of all. It works just as well as painkilling drugs. In one study two tablets of ibuprofen inhibited COX-2 by 62 per cent, whereas IsoOxygene achieved a 56 per cent inhibition. Not only is it almost as effective as ibuprofen but it also doesn't have the gut-related side effects of anti-inflammatory drugs. This is because ibuprofen also inhibits COX-1 (the so called 'good' COX, because it produces prostacyclin, which protects the gut lining), whereas the hop extract does not.



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## My five favourites

- ▶ Quercetin
- ▶ Glutamine
- ▶ Vitamin C
- ▶ MSM (a form of sulphur)
- ▶ Bromelain (an enzyme from pineapple)



231

## Sonia - after

- ▶ Health score 82%.
- ▶ After ten days, almost all of Sonia's symptoms were gone.
- ▶ Since then, she hasn't had to take a single antihistamine.
- ▶ At the end of four weeks she told me, "After a diet of healthy fresh fruit, vegetables and oily fish, I've noticed a huge difference in energy levels. Not only have I conquered my hayfever, it has been a very easy diet to follow. I don't feel like I've missed out on anything, except for an occasional desire for cheese. I look at it as an eating plan, not a diet, and something that I will follow for the foreseeable future. I wish I had known all this ten years ago!"
- ▶ Now, one year later, she remains symptom-free and is no longer allergic to eggs. Milk, however, is still a problem.

232

## What about glucosamine?

- ▶ It slows progression of osteoarthritis of the knee.
- ▶ It works as well as ibuprofen but with less side-effects.
- ▶ In four high-quality 2005 studies that gave glucosamine sulphate versus NSAIDs, the glucosamine worked better in two, and was equivalent to the NSAIDs in the other two.
- ▶ Although there is evidence that chondroitin works, the research does not show that it works better than glucosamine. Most of the research has been done using glucosamine sulphate, but the most absorbable form is glucosamine hydrochloride.
- ▶ Promising results are reported for pain relief and relief from arthritis in people taking daily supplements supplying 1 to 3g of one of the most effective sources of sulphur, methylsulfonylmethane (MSM). A combination of both glucosamine and MSM is particularly effective.

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## Supporting supplements

Choose supplements that contain:

- Glucosamine hydrochloride
- MSM (absorbable sulphur)
- Curcumin rich turmeric
- Olive extract
- Hop extract
- Quercetin



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## Common contributors to chronic pain

- ▶ Digestive problems
- ▶ Unidentified food allergy/intolerance
- ▶ Poor liver detoxification
- ▶ Pro-inflammatory diet (eg high in alcohol, meat & milk)
- ▶ Lack of anti-inflammatory nutrients, herbs and foods
- ▶ Raised homocysteine and poor methylation
- ▶ Poor blood sugar balance, stress and overweight
- ▶ Lack of magnesium
- ▶ Physical tension - eg joint strain or injury

235

## Migraines? Think magnesium

Asaradzegan F. Int Clin Psychopharmacol. 2016;27(10):4442. Chiu H. Pain Physician. 2016 ;26(7):52497

- ▶ A dip in magnesium level can trigger a migraine, and giving a high oral or intravenous dose can stop it. One recent study found that, among migraine sufferers, the odds of having a migraine increased by 36 times when magnesium levels dropped below normal levels. Another reviewed 10 studies giving high dose oral magnesium and 11 giving intravenous magnesium, both of which showed a dramatic and significant relief of symptoms. Most studies gave 1,000mg of magnesium.
- ▶ Comment: The strongest evidence for magnesium's effectiveness is in patients who have aura with their migraines. Magnesium may prevent the wave of brain signaling, called cortical spreading depression, which produces the visual and sensory changes associated with aura. Magnesium also improves platelet function and decreases release or blocking of pain transmitting chemicals in the brain. Magnesium may also counter the narrowing of brain blood vessels caused by the neurotransmitter serotonin.

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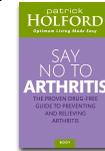
## Ed's story

Ed first started getting joint pain in his mid-thirties.

After an accident in which he tore a ligament, he needed surgery, which revealed that the cartilage in his knee was severely damaged. The damaged cartilage was surgically removed. A few years later the same thing happened to his other knee.

A few years on, he needed a second operation on the first knee!

Now, in his mid-forties he was suffering from severe arthritis, with ever-increasing pain.



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## Six months on...

There was little improvement in the first two months, but by the third month his knees were feeling a whole lot better. By six months he was virtually pain-free.

*"I used to have constant pain in my knees and joints, could not play golf or walk more than 10 minutes without resting my legs. Since following your advice my discomfort has decreased 95-100%. It is a different life when you can travel and play golf every day. I never would have believed my pain could be reduced by such a large degree, and no return no matter how much activity."*

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## Chemicals of Communication

- ▶ Neurotransmitters
- ▶ Hormones
- ▶ Cytokines
- ▶ Immunoglobulins

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## Five kinds of cytokines

- ▶ There are five main kinds of cytokines:
- ▶ **Interleukins** (eg IL-1,2,6)
- ▶ **Tumor necrosis factor** (TNF).
- ▶ **Interferon** makes cells put up their guard against an infection. Injecting interferon is now a treatment to boost immunity.
- ▶ **Chemokines** induce chemotaxis which makes things move towards the battle ground, a process that is vital in healing wounds, or disabling a pathogenic bacteria such as in food poisoning. (inc VEGF)
- ▶ **Lymphokines**, produced by lymphocytes, also tell other cells to move to an infected area, and encourage other immune 'B' cells to produce antibodies.

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### Serotonin

...is associated with mood, sleep patterns, dreaming, and visions. Low levels of serotonin are associated with:

- ▶ Depression
- ▶ Anxiety
- ▶ Premenstrual syndrome (PMS)
- ▶ Decreased sexual desire
- ▶ Carbohydrate cravings
- ▶ Sleep disturbances
- ▶ Increased sensitivity to pain
- ▶ Emotional volatility, including violent behaviour against self and others
- ▶ Obsessive thinking
- ▶ Alcohol and drug abuse
- ▶ Suicide

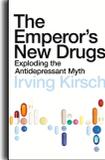
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### SSRI's more than double suicide risk

D. Healey et al, British Medical Journal 2005;330:396-404

A review of 702 studies on SSRI antidepressants showed that people taking an SSRI were more than twice as likely to attempt suicide compared with those taking a dummy pill. The researchers also noted that the actual number of suicide attempts is likely to be much higher, because many of the studies did not gather information on suicide.

Despite these risks doctors wrote out 57 million prescriptions for anti-depressants last year, costing NHS £265 million.



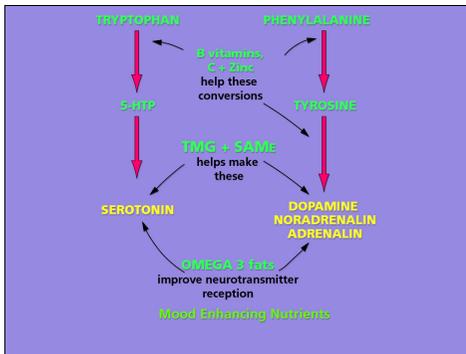
248

### Anti-depressants no better than placebo

J. C. Fournier, et al., Journal of the American Medical Association, 2010;303(1):47-53

- ▶ An analysis of six large studies found that for people with mild or moderate depression, which accounts for the vast majority of those with depression, antidepressants are really no better than a placebo. To quote the study, *'The magnitude of benefit of medication compared with placebo . . . may be minimal or nonexistent, on average, in patients with mild or moderate symptoms.'*
- ▶ A recent report on all treatments for depression from the UK's National Institute for Health and Clinical Excellence agrees, *'There is little clinically important difference between antidepressants and placebo for mild depression.'*

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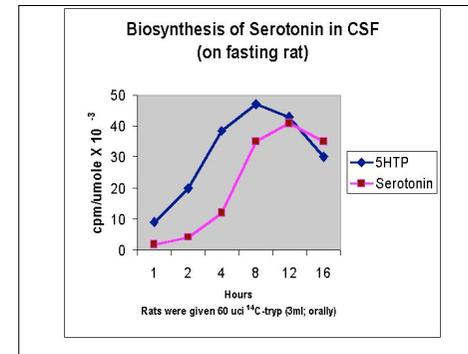
250

### Relapse of depression after rapid depletion of tryptophan

Smith, K. A. et al (1997). Lancet. 349, 915-919

An experiment was carried out at Oxford University's Department of Psychiatry which proved this connection very clearly. Fifteen women were given a diet devoid of tryptophan. Within eight hours ten of the women started to feel more depressed. When tryptophan was added back into their diet, without them knowing, their mood improved.

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## 5-HTP effective for depression

Turner E et al., Pharmacology & Therapeutics (2005)

▶ There have been 27 studies using 5-HTP for the treatment of depression, involving 990 people to date, most of which proved effective. Of these, 11 were double-blind placebo controlled, six of which measured depression using the Hamilton Rating Scale.

### % Improvement in Hamilton Rating Score vs placebo or drug

Alino et al	39% improvement
Nardini	56% improvement
Rousseau	13% improvement
Van Praag (72)	40% improvement
Van Praag (84)	30% improvement
Quadbeck	34% improvement

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## How much?

- ▶ **100 to 300mg a day is most effective, but start with 100mg. Mood Food contains 100mg in 2 capsules.**
- ▶ best taken on an empty stomach, or with a carbohydrate snack (eg fruit)
- ▶ rarely, people experience mild nausea when first taking 5-HTP which tends to go after a couple of days
- ▶ if you become more hyper or anxious then the chances are you are not low in serotonin and don't need 5-HTP.
- ▶ Don't take with anti-depressants unless under the guidance of a health care professional.

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## 5-HTP & melatonin for sleep

- ▶ Supplementing **100 to 200mg of 5-HTP half an hour before you go to bed helps you get a good night's sleep.**
- ▶ **Melatonin**, which is a neurotransmitter, not a nutrient, is proven to help you get to sleep but needs to be used much more cautiously than a nutrient. In controlled trials it's a bit less effective than the drugs, but has a fraction of the side effects. Discuss with your doctor. **Try between 3mg and 6mg before bed.**
- ▶ **Listen to 'Silence of Peace'** to switch your brain off.
- ▶ **Magnesium and GABA** help you to relax. So does **theanine**. Take a supplement containing all these.

255

## Serotonin & mood-related nutrients

- ▶ Sunlight/full spectrum light (and **vitamin D**)
- ▶ Exercise
- ▶ Low GL diet plus **chromium**
- ▶ Tryptophan/**5-HTP**
- ▶ Lack of stress/**tyrosine**
- ▶ Co-factors (eg B3, **B6**, folate, C **Zn**, Mg)
- ▶ Methyl nutrients (S**A**Me, **TMG**, **B12**, **folic acid**)
- ▶ Omega 3 (EPA)



256

## Omega-3s work for depression

Grosso G et al, PLoS One. 2014

- ▶ The most comprehensive review and meta-analysis of 19 trials on patients with mild and major depression 'concludes that 'the use of omega-3 fats is effective' both in patients with major depressive disorder and milder depression'.

The greater the amount of EPA, not DHA, the more effective was the treatment likely to be.

Most effective studies give 1,000mg of EPA. Lowest effect with 300mg combined EPA/DHA. (2 x Essential Omegas = 600mg)

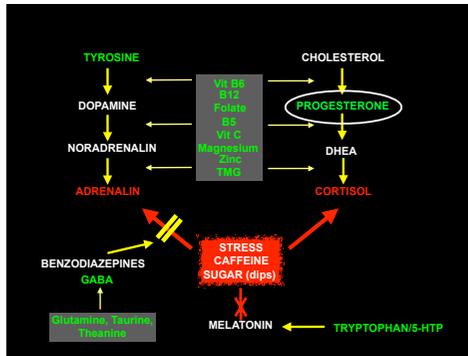
257

## Vit D improves mood & memory

R. Jorde, Archives of general psychiatry, 2008; Littlejohns, Neurology, 2014  
C. Shipwreck, Applied Nursing Research, 2009; A.Lansdowne, Psychopharmacology, 1998

- ▶ The lower your vitamin D the worse your mood.
- ▶ Low vitamin D doubles dementia risk.
- ▶ Supplementing vitamin D improves mood.
- ▶ We are all deficient in winter and need to supplement at least 15mcg (600iu), although twice this may be necessary to correct deficiency.
- ▶ It is also linked to less cancer, heart disease and healthy bone mass.

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### Adrenalin dominance-symptoms &

- ▶ Anxiety, irritability, anger, panic attacks
- ▶ Insomnia
- ▶ ADHD
- ▶ Depression
- ▶ PMS
- ▶ Thyroid problems
- ▶ Chronic interstitial cystitis
- ▶ IBS
- ▶ Fibromyalgia, aches and pains
- ▶ Restleg leg syndrome
- ▶ Hot flushes

ADRENALINE DOMINANCE  
A REVOLUTIONARY APPROACH TO WELLNESS  
MICHAEL E. PLATT, M.D.

260

### Stress - why you need to crack this

- ▶ One in five people take time off because of it
- ▶ 59% say life is more stressful than 5 years ago
- ▶ Heart disease risk goes up five-fold
- ▶ Diabetes, obesity and dementia risk more than doubles
- ▶ It's as bad for you as smoking or having a high cholesterol

*"There is nothing either good or bad but thinking that makes it so."*

261

### Four ways to raise adrenal

- ▶ A stressful thought
- ▶ A blood sugar dip
- ▶ Caffeine (and other stimulant drugs)
- ▶ Progesterone deficiency

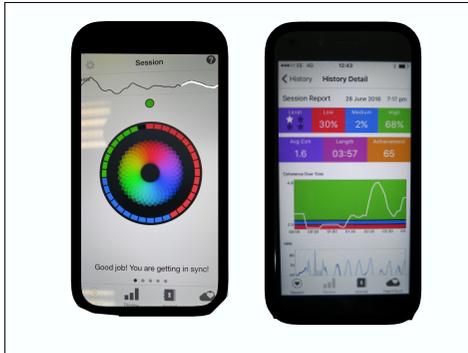
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HeartMath  
The heart sends more information to the brain than it receives

263

Out of Sync | In Sync

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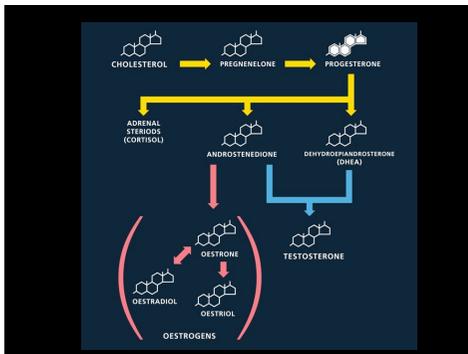
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**Brain Bio Centre**  
[www.brainbiocentre.com](http://www.brainbiocentre.com)  
 or call  
 (+44) 020 8332 9600  
 international consultations by skype  
 see [www.foodforthebrain.org](http://www.foodforthebrain.org)

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**BALANCE YOUR HORMONES**  
 SAY NO TO PMS &  
 MENOPAUSAL SYMPTOMS  
 IMPROVE YOUR (SEX) DRIVE

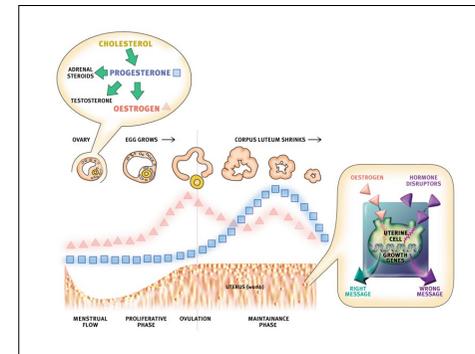
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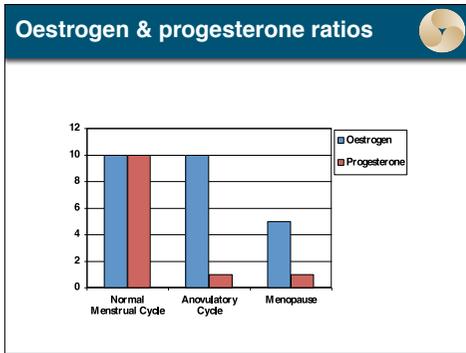
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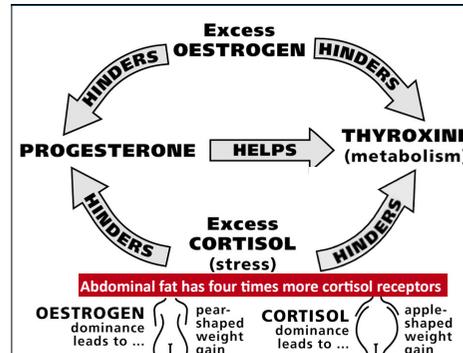
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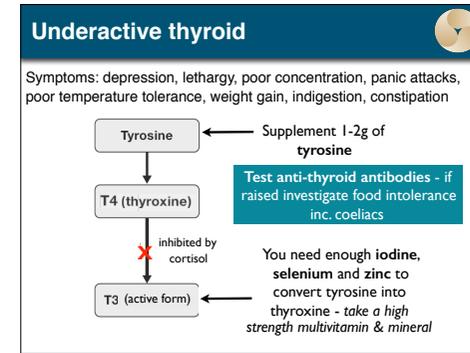
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273

### Vitamin C normalises thyroxine

Jubiz W et al., J Clin Endocrinol Metab. 2014 / 24801693

- ▶ 31 people with hypothyroid were given 500mg of vitamin C for 3 months. TSH levels were normalised in 17 patients. The average decrease was 69.2% compared to controls. (p+.001)
- ▶ T4 was higher in 30 out of 31 patients.
- ▶ T3 increased as well in all 16 patients in whom it was measured

274

### Evidence for isoflavones

- Cross-sectional study - the higher the isoflavone intake the lower the PMS scores (Kim H et al. Nurs Health Sci, 2006)
- RCT - Soya protein (high in isoflavones versus milk protein placebo) reduced PMS scores and specifically headaches and breast tenderness (Bryant M, Br J Nutr, 2005)
- Adolescents with the higher isoflavone or soya intake had the lowest risk for premenopausal breast cancer (Lee S, Am J Clin Nutr, 2009)
- cruciferous vegetables contain indoles, **Di-IndolylMethane (DIM)** and **Indole-3-Carbonol (IC3)** which help eliminate excess oestrogen. (TMG converts IC3 to DIM.)

275

### Soya and breast cancer

Mai Z et al. Carcinogenesis. 2007 / 17234721; Fan S et al. Br J Cancer. 2006 / 16434996

- ▶ Genistein or Tamoxifen alone inhibited the growth of oestrogen-dependent MCF-7 human BRCA cells
- ▶ The combination of TAM with genistein or soya phytochemical concentrate, especially at the lower dose of TAM, had synergistic effects on delaying the growth of MCF-7 tumors.
- ▶ The combination of TAM with genistein or soya phytochemical concentrate, especially at the lower dose of TAM, had synergistic effects on delaying the growth of MCF-7 tumors.
- ▶ Combination of **I3C** and **genistein** inhibit oestrogen receptor (ER-alpha) activity in human breast cancer cells.

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## Phytoestrogens in common foods

mcg per 100G		mcg per 100G	
Miso	126,500	Brown rice	132
Soya mince	121,000	Chick peas	124
Tofu	78,000	Mixed nuts + raisins	100
Soya cheese	33,000	Nut cutlets	61
Veg Sausage/burger	26,300	Muesli, Swiss style	51
Tofu burger	24,200	Green / French beans	38
Soya milk, plain	11,815	Blackeye beans	32
Soya yoghurt, plain	11,815	Hazelnuts	24
Chickpea channa dahl	1,960	Haricot beans	23
Soy sauce	1,800	Peanuts, plain	23
Wholemeal bread	829	Noodles, wheat	23
Beansprouts	758	Lentils, green and brown	22
Rye bread	757	Prunes, ready-to-eat	13
Granary bread	369	Apples	12
Currants	250	Brown rice	12
Runner beans	221	Red kidney beans	12
Nut and seed roast	162	Hummus	11

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## Evidence for nutrients

- Systematic review - B6 generally favourable up to 100mg p.d (Wyatt K, BMJ. 1999)
- RCT - B6 (100mg p.d for three months) significant effect on PMS scores. (Sharma P et al, Ind. J. Physiol.Pharmacol. 2007)
- Open label - Magnesium (250mg p.d) in luteal phase reduces PMS symptoms (Quaranta S et al,Clin Drug Investig. 2007)
- RCT - Magnesium (200mg p.d.) reduces water retention. (Walker et al, J Womens Health 1998)
- RCT - Magnesium (360mg p.d) improves mood. (Facchinetti, F et al, Obstet Gynecol. 1991)
- Zinc and magnesium levels tend to be lower in PMS sufferers, especially in luteal phase. Both appear to boost serotonin levels and zinc has an anti-depressant effect. Siwek M et al., J Affective Disorders 2009 )
- Higher dietary thiamine and riboflavin (B2) associated with lower risk of PMS (Cochano-Bedoya P et al., Am J Clin Nutr 2011 )

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## Which supplements might help?

- High-dose B vitamin complexes containing B2 (20mg), B3 (20mg), B6 (50mg), B12(10mcg), folic acid (200mcg) and biotin (50mcg)
- Extra vitamin C (1-2g a day)
- Magnesium (200-300mg a day), zinc (10-15mg a day)
- Omega-3 and especially omega-6 essential fats (up to 300mg of GLA)
- Isoflavones
- IC3(+betaine) or DIM for oestrogen dominance



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## Which herbs might help?

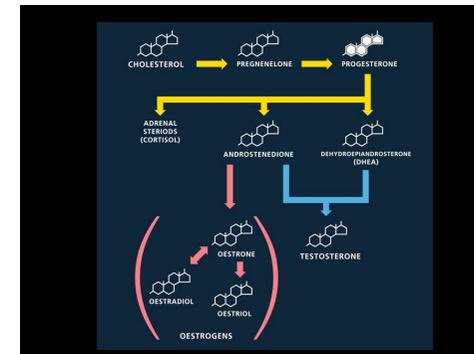
- Black cohosh**, originally used by the native North American Indians, may help to counteract excess oestrogen. It may also act on serotonin receptors and raise levels of the 'happy' neurotransmitter, serotonin. This makes it a useful supplement for treating PMS-related depression.
- Agnus castus/chasteberry** has been shown to promote progesterone while decreasing excess oestrogen levels. Taking agnus castus (20mg pd) can significantly reduce PMS symptoms.
- Dong quai** (Angelica sinensis) is one of the most commonly prescribed herbs in Chinese medicine for female problems. It promotes normal hormonal balance and helps sufferers of menstrual cramps, as it has muscle-relaxing qualities.

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## Six actions for hormonal health

- Eat a low GL diet
- Choose organic or wild fish or meat (eat less beef)
- Less reliance on dairy products
- Have oily fish three times a week and seeds most days
- Eat 15mcg of phytoestrogens a day - beans, nuts, seeds
- Eat more cruciferous vegetables - cabbage, Brussels sprouts, broccoli, cauliflower, kale, turnip, swede, radish, horseradish, mustard and cress.
- Supplement B vitamins inc. B6, zinc, magnesium, plus essential 3/6 fats, isoflavones, IC3
- Consider herbs - agnus castus, black cohosh, dong quai

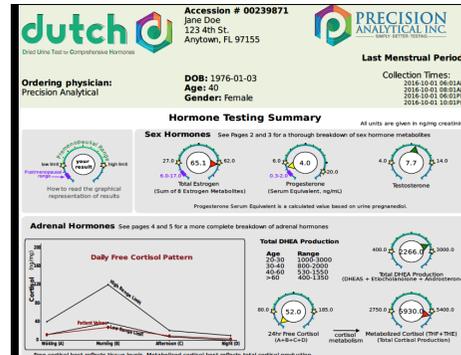
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### Homocysteine, bones & arthritis

Kim J et al. J Bone Metab. 2016 -/27622176, Ennerman A Calcif Tissue Int. 2015 -/25712255

- \* High homocysteine promotes inflammation
- \* High homocysteine damages bone
- \* High homocysteine doubles osteoporosis risk, as does B12 deficiency. In women <50 Hcy predicts bone mass density.
- \* Homocysteine is higher in rheumatoid arthritis (17.3 vs 7.6 in one study) and ankylosing spondylitis
- \* Taking homocysteine lowering B vitamins reduces pain
- \* B12 stimulates osteoblasts to build new bone. However, RCT giving 500mcg did not show improvement in BMD.

285

### Calcium, BMD & osteoporosis

Tai V et al BMJ 2015 -/26420598; Wu J Osteoporos Int. 2017 -/28337524;

- ▶ Increasing calcium intake from dietary sources or by taking calcium supplements produces small non-progressive increases in BMD, which are unlikely to lead to a clinically significant reduction in risk of fracture.
- ▶ Calcium intake can effectively postpone the tendency of BMD decrease in postmenopausal women. An increased calcium dose contributes to the shortening of the onset time. Menopausal women can be administered with a rational dose of 1200 mg/day to reduce bone loss.

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### What's driving osteoporosis?

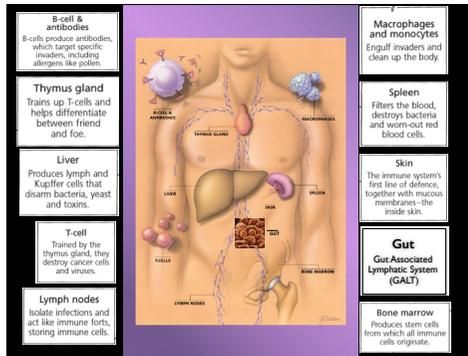
- ▶ Lack of vitamin D and K
- ▶ Lack of B12 and raised homocysteine
- ▶ Lack of weight bearing exercise
- ▶ Lack of hormones - progesterone
- ▶ Lack of bone building minerals - calcium, magnesium, zinc, boron

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## BOOST YOUR IMMUNE SYSTEM

SAY NO TO CANCER  
GET RID OF INFECTIONS FAST  
REDUCE YOUR ALLERGIC POTENTIAL

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### Immune depressors

- ▶ Pollution and high oxidant exposure (anything burnt)
- ▶ Smoking
- ▶ Alcohol
- ▶ Sugar
- ▶ Low nutrient diets
- ▶ Chronic infection, allergies and inflammation
- ▶ Certain medical drugs eg antibiotics, painkillers
- ▶ Lack of sleep
- ▶ Radiation

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### Immune heroes

- ▶ Vitamin C
- ▶ Other antioxidants, especially vitamin A, beta-carotene, selenium, zinc, B vitamins, N-acetyl cysteine or glutathione
- ▶ Vitamin D
- ▶ Essential (esp. omega 3) fats
- ▶ Black elderberry (for viruses)
- ▶ Herbs - Echinacea, Uncaria tomentosa (cats claw) etc.
- ▶ Beneficial bacteria (Acidophilus and Bifido bacteria)
- ▶ Foods rich in specific immune boosters - eg turmeric(curcumin), broccoli(I3C), oats (beta-glucans), garlic(isothiocyanates), red onions (quercetin) etc

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### Superfoods

- ▶ **Broccoli** contains I3C and DIM which mop up excess oestrogens. **Watercress** contains anti-cancer isothiocyanate
- ▶ **Strawberries** have more vitamin C than oranges, while **blueberries** have among the highest ORAC score due to their anthocyanidin bioflavonoids. Strawberries and raspberries also contain ellagic acid, which help protect against cancer.
- ▶ **Carrots**, and other orange foods such as **sweet potato** and **butternut squash** contain carotenoids and other anti-cancer nutrients.
- ▶ **Red onions** contain quercetin, a potent anti-inflammatory.
- ▶ **Turmeric** and **ginger** are anti-inflammatories. Curcumin, in turmeric, has anti-cancer properties (>3,000 studies).
- ▶ **Beans** contains genistein and beta-sisterols

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### Salvestrol rich foods

Fruits	Vegetables	Herbs
Apples	Artichokes (globe)	Basil
Blackberries	Aubergines	Chamomile
Blackcurrants	Avocado	Dandelion
Blueberries	Beansprouts	Milk thistle
Cranberries	Broccoli	Mint
Grapes (and wine)	Brussels sprouts	Parsley
Oranges and tangerines	Cabbage	Rosemary
Pears	Cauliflower	Sage
Strawberries	Celery	Thyme
Redcurrants	Chinese leaf	
	Olives	
	Red/yellow peppers	
	Rocket	
	Watercress	

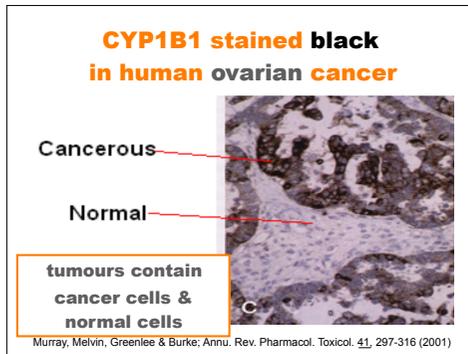
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### CYP 1B1 - an enzyme only in cancer

Murray et al *Cancer Research*, 57, 3026-3031 (1997)

- ▶ CYP 1B1 is an enzyme that is only found in cancer cells.
- ▶ Salvestrols, in plants, are compounds that the CYP 1B1 enzyme converts into compounds that kill cancer cells.
- ▶ Salvestrols are not converted into toxic agents in normal cells.
- ▶ In the future, your CYP 1B1 enzyme level will be measurable as an indicator of early risk of cancer.

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### Supplementing salvestrols

- ▶ **Salvestrol points per day**
  - Healthy (palaeolithic) diet 100
  - Extra protection 350
  - Rescue recovery (2 x 2000 doses) 4,000
- ▶ Salvestrols help trigger apoptosis of cancer cells.
- ▶ There is no toxicity.

Available from: [www.practitionerchoice.co.uk](http://www.practitionerchoice.co.uk)

296

### A dozen reasons to up vitamin C

- ▶ It is strongly anti-viral against every virus tested so far.
- ▶ It increases production of B-cells and T-cells.
- ▶ Infected cells produce more interferon when they have sufficient vitamin C.
- ▶ It is a neuramidase inhibitor stopping viruses from replicating.
- ▶ It is bacteriostatic or bactericidal, depending on the bug.
- ▶ It triggers B cells to manufacture more antibodies (IgA, IgG and IgM).
- ▶ It stimulates non-lysozyme anti-bacterial factor (NLAF) found in tears.
- ▶ Phagocytes use vitamin C to kill captured invaders.
- ▶ It enables phagocytic cells to carry out their clearing-up function.
- ▶ It detoxifies many bacterial toxins
- ▶ It also improves the performance of antibiotics.
- ▶ It is a natural anti-histamine.

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### Vitamin C and colds

H. Hemila et al Cochrane Library 2007

- ▶ Vitamin C supplementation (averaging 500 to 2,000mg per day):
  - ▶ Reduces the duration of symptoms
  - ▶ Reduces severity
  - ▶ No convincing evidence on reducing incidence
  - ▶ Strongest effect for immediate high doses on onset of a cold eg if 8 grams taken 46% of subjects have a cold for no more than a day.
  - ▶ "We believe there is a case for rigorous evaluation of the possibility that very large doses (of the order of 8 g daily in adults for periods up to five days after the onset of symptoms) could produce benefits that were not seen at lower doses."

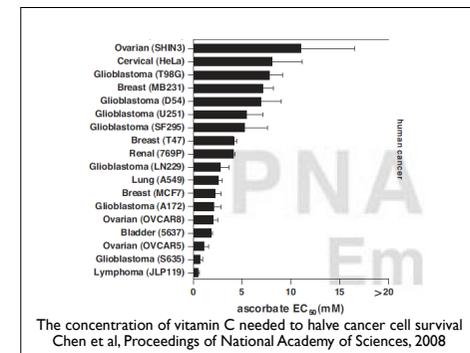
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### High dose vit C as cancer therapy

Cameron/Pauling Proc Natl Acad 1978; Padayatty SJ, et al.PLoS One. 2010 :20628650

- ▶ The first clinical study by Cameron and Pauling compared survival times between 100 patients with terminal cancer treated with i.v. and oral vitamin C, usually 10 g/d, and 1,000 comparable patients not given vitamin C. Patients treated with vitamin C **survived approximately four times longer** than controls (P 0.0001). Overall, 22% of vitamin C-treated patients but only 0.4% of controls survived for more than 1 year.
- ▶ A US survey of 9,328 patients treated reported 101 side-effects, mostly minor.
- ▶ Many cases published. Lack of trials. A few enhancing chemotherapy, or reducing toxicity. Vit C ten times more effective than 2DG (more later) on stem cancer cells. (Oncotarget, 2017)
- ▶ Normally 50-75g of vitamin C is given intravenously by IV, followed up with 10-20 grams of oral vitamin C a day (up to bowel tolerance).

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## Dynamics of vitamin C



- ▶ Blood levels continue to rise, certainly up to 5 grams a day. Under infection/cancer, up to 18 grams a day. 12g or more is needed for a really significant anti-viral effect.
- ▶ Vitamin C is in and out in 3 to 6 hours.
- ▶ Vitamin C is most profoundly anti-viral and anti-cancer if blood levels are maintained at high doses.
- ▶ This is most easily achieved by an initial dose of 2 to 3 grams then 1 to 2 grams every one or two hours
- ▶ The goal, in fighting disease, is to achieve blood levels of above 0.2mM. Intravenous vitamin C usually involves infusing 50 grams over an hour.

301

## Zinc is vital for immunity



Tolunay BJ *Leukoc Biol* 2009; J Am Pharm Assoc. Vol 44(5), pp. 594-603. Review 2004

- ▶ Zinc supports healthy immune function and enhances T-cell activity.
- ▶ Zinc deficiency causes the thymus to shrink.
- ▶ Zinc assists in the elimination of cancer cells.
- ▶ Zinc helps T-cells mature as a co-factor for thymulin production.
- ▶ The mineral zinc, in doses of 50 to 100mg a day, has also proved to be anti-viral and is available in lozenges for coughs and colds. I recommend half this level (50mg) in zinc lozenges, for short-term use only or supplementing 25mg a day

302

## Black Elderberry inhibits viruses



Z. Zakay-Rones et al., *Alt and Comp Med*, 1995; also J Int Med Res. 2004

- ▶ Viruses get into body cells by puncturing their walls with tiny spikes made of a substance called hemagglutinin. Black elderberry disarms these spikes by binding to them and preventing them from penetrating the cell membrane.
- ▶ In a double blind controlled trial elderberry extract, given to people with various strains of flu, showed a significant improvement in symptoms – fever, cough, muscle pain – in 20 per cent of patients within 24 hours, and in a further 73 per cent of patients within 48 hours. **After three days 90 per cent had complete relief of their symptoms** compared to another group on a placebo, who look at least six days to recover. A more recent study found that giving **elderberry extract 4 times a day, versus placebo, cut duration of flu symptoms by 4 days.**

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## Other key immune boosting nutrients



- ▶ **Vitamin D** - a lack of sunshine and vitamin D is a major likely reason for more infections in the winter. Aim to supplement 15mcg every day, plus eating oily fish and exposing yourself.
- ▶ **Selenium** is required for glutathione related activity and has anti-cancer properties. Found in seafood, it is frequently deficient. Aim to supplement 100mcg if compromised immunity.
- ▶ **N-acetyl cysteine** is the precursor of **glutathione**, the most critical antioxidant in cells. NAC improves the anti-viral function of vitamin C.
- ▶ **B6, B12, folic acid** are both anti-oxidants and required for methylation. Faulty methylation is required to repair DNA, and is associated with increased cancer risk.
- ▶ **Vitamin A**, both retinol and beta-carotene, is anti-viral, stimulates T-cell growth and makes cells strong. For example, transdermal vitamin protects against skin cancer.

304

## Combination nutrients work best



R.Janwalla, *BioFactors* 31 (2007); M. Roomi *BioFactors* 32 (2008)

- ▶ A study tested the effects of vitamin C combined with other nutrients on cells infected with Asian flu virus. According to the researchers the nutrient mixture(NM) " **demonstrated high antiviral activity evident even at prolonged periods after infection. NM antiviral properties were comparable to those of conventional drugs (amantadine and oseltamivir/Tamiflu); however, NM had the advantage of affecting viral replication at the late stages of the infection process.**"
- ▶ The other nutrients given included the amino acids lysine, proline, N-acetyl cysteine, and selenium. N-acetyl cysteine and selenium both promote glutathione levels within cells, which has anti-viral activity.
- ▶ **Combination nutrients more or less double efficacy.**

305

## Action to boost your immune system



- ▶ Don't smoke and minimise pollution exposure
- ▶ No more than one unit of alcohol a day, and preferably not every day
- ▶ Reduce stress and get enough sleep - between 6.5 and 8 hours
- ▶ Exercise regularly preferably in natural daylight - get outdoors
- ▶ Eat lots of fresh organic fruit and vegetables high in salvestrols
- ▶ Eat something orange/blue/red/dark green every day
- ▶ Eat a low GL, and low dairy diet (less meat, more fish)
- ▶ Don't eat foods you are allergic too
- ▶ Have half your diet raw and avoid fried foods
- ▶ Supplement 1-3 grams of vitamin C, plus zinc, berry extracts and other antioxidants and immune friendly nutrients, daily - twice a day

306

patrick  
**HOLFORD**  
Optimum Living Made Easy

**SAY NO TO CANCER**  
THE DRUG-FREE GUIDE TO PREVENTING AND HELPING FIGHT CANCER

BODY

- ▶ Cancer causes explained - carcinogens, promoters, weakened immunity
- ▶ Natural anti-cancer nutrients, herbs & enzymes
- ▶ Strategies for preventing and reversing the cancer process
- ▶ Strategies for minimising side-effects of chemotherapy and radiation, and non-toxic chemotherapies.
- ▶ Nutritional support for specific types of cancer.

307

### We are losing the war on cancer

- ▶ Lifetime risk for cancer has risen by 49% in 30 years and is currently 1 in 3, expected to be 1 in 2 by 2020.
- ▶ Breast cancer is up 80% and prostate cancer is up by 100%. Colo-rectal cancer incidence is expected to increase by over 100% in those aged 20 to 34 by 2030.
- ▶ The five year survival rate has increased from 49% to 54% since 1970. This allowed Cancer Research Campaign to say 'more people survive than die from cancer' ignoring actual survival.
- ▶ As such it will soon be the number 1 killer of people under age 50. Currently, cancer kills 1 in 4 people.
- ▶ The top five - lung, breast, stomach, colorectal and prostate - were almost unheard of before the 20th century.
- ▶ **85 to 90% of cancers are caused by environmental factors.**
- ▶ **You can cut your risk by 40% by changing your diet, says World Cancer Research Fund. Three out of four cancers are preventable.**

308

### Is cancer in the genes?

- ▶ The gene theory of cancer, known as Somatic Mutation Theory (SMT for short), proposes that single changes, known as mutations, in genes are passed on to offspring cells, resulting in the rapid growth of cancer cells, forming tumours. Yet, in almost all cases, **even people with the same kind of cancer have vastly different mutations in their DNA code strongly suggesting that DNA damage may be the consequence, not the cause, of the disease.**
- ▶ A research group headed by William Schaeffer at the University of Vermont, given that the SMT theory proposes that it is DNA changes in the nucleus of the cell that drive cancer, wondered what would happen if you put the nucleus of a mouse's cancer cell into a healthy cytoplasm.

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**mitochondria**  
energy-producing power plant that also releases damaging oxidants. Needs B vitamins and CoQ10 to function, and antioxidants to control oxidants

**lysosomes**  
(garbage disposal units) break things down with enzymes

**nucleus**  
contains the DNA genetic code. Needs B vitamins, zinc, magnesium and vitamins C, D and E

**ribosomes**  
(make proteins) need amino acids (from protein)

**telomeres**  
caps at the ends of chromosomes. Markers of healthy ageing. Need B vitamins and antioxidant vitamins A, C and E

**cell membrane**  
controls exit and entry to a cell. Needs various types of fats, such as phospholipids

**Out of sixty-eight mice only one developed a tumour.**

310

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controls exit and entry to a cell. Needs various types of fats, such as phospholipids

**Almost all, 97 per cent of the mice developed tumours.**

311

### Herceptin - proof of principle?

- ▶ One in five women with breast cancer have an oncogene called Human Epithelial Cell Receptor (Her-2)
- ▶ Most breast cells have 50,000 such HE-Receptors, activated by certain hormones such as oestrogens.
- ▶ The first trial shrunk half the tumours in women treated with the drug, compared to a third on placebo.
- ▶ A ten year follow up of the Herceptin treated patients reported a 2.9% increased survival at 4 years and an 8.8% increased survival at ten years, compared to standard chemotherapy.
- ▶ That means, of 100 women with breast cancer, 2 out of 20 (Her-positive) will survive 10 years as a consequence, one assumes, of Herceptin.

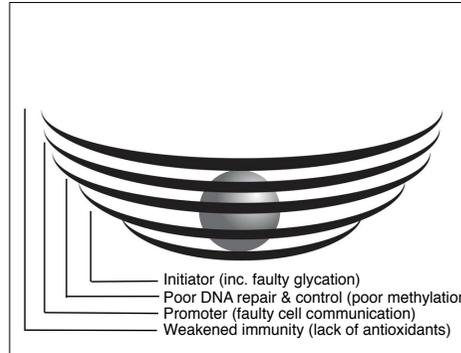
312

## Do oncogenes cause cancer?

K Kwang-Pil et al, American Journal of Clinical Nutrition, 2013

- ▶ The inheritance of so-called oncogenes, such as Her-2, BRCA1 and 2, account for 5 to 7% of all cancers, a small part of the overall equation.
- ▶ The faulty BRCA gene makes breast cancer cells grow. The rate of breast cancer is higher, 46-52%, however that means that half of all BRCA gene carriers don't get breast cancer. Why?
- ▶ 6-12% of BRCA carriers get ovarian cancer. The rest don't. Why?
- ▶ Not having dairy products inhibits breast cancer cell growth, as does a higher intake of soya in those with the BRCA gene, according to a study which found that a higher soya intake cut breast cancer risk by 60% in BRCA carriers. These genes do not cause cancer, they just make it more likely under certain circumstances – under your control.

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## The Metabolic Theory of Cancer

'Tripping Over the Truth' by Travis Christofferson

- ▶ The idea that the cytoplasm was the 'home' of whatever goes wrong was first proposed back in the 1920's by a brilliant medical scientist and recipient of a Nobel Prize, Dr Otto Warburg, a good friend of Albert Einstein. He observed that cancer cells make a lot of lactic acid compared to normal cells.
- ▶ Warburg showed that if you starved a healthy cell of oxygen it would become cancerous. Then giving the cancer cell enough oxygen wouldn't reverse the process. (Hence hyperbaric oxygen treatment.) Cancer, he reasoned, was caused by the permanent alteration of the cell's respiratory machinery, reverting the cell to anaerobic metabolism.
- ▶ In 1970, shortly before his death, "Cancer, above all other diseases, has countless secondary causes. Almost anything can cause cancer,

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## Sugar metabolism faulty in cancer cells

- ▶ Pete Pederson from John Hopkins School of Medicine in Baltimore discovered that **the faster a cancer cell grew the less mitochondria they had, and the more they fermented sugar**. With less mitochondria the only way the cancer cell could survive was to shunt glucose into fermentation with an enzyme called **hexokinase II**.
- ▶ **The build up of lactic acid** which leaks out and damaged and weakens surrounding material, paving the way for the cancer cell to divide and spread. **Hexokinase II also switches off the normal cell-suicide signal**, called apoptosis, which makes cancer cells die.
- ▶ And, on top of that, it became parasitic and would steal energy, ATP, from neighbouring healthy cells to keep itself alive.
- ▶ That sugar metabolism is key to cancer is illustrated by PET scans. After 6 hours fasting, the patient is injected with fluoridated glucose. This binds only to hexokinase II, hence detecting cancer cells.

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## Metabolic Syndrome & Cancer

Journal of the National Cancer Institute, Jan 2009; Dr. Walter C. Willett of the Harvard School of Public Health; J Ahn et al. Archives of Internal Medicine, 2007 and others...

- ▶ Postmenopausal women with high insulin levels have twice the risk of developing breast cancer.
- ▶ Being obese is associated with a 14% of cancer deaths in men and 20% in women, compared with about 30 percent each for smoking.
- ▶ Weight gain from age 18 doubles risk of cancer.
- ▶ Eating foods with a high GL is linked to a higher risk of breast, colorectal, pancreatic, ovarian, thyroid, endometrial and gastric cancer. Conversely, low-GL diets are associated with a reduced risk of breast, colorectal, ovarian, and endometrial cancers.
- ▶ Diabetics have an 82% increased risk of pancreatic cancer.

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## Sweet foods & breast cancer risk

Tavani A et al, Annals of Oncology, October, 2006

- ▶ Regularly eating sweet foods, including biscuits, ice cream, honey, and chocolate, may increase the risk of breast cancer. Results from a large case control study of more than 5000 Italian women have shown that the effects may be significant: **"If real, the excess risk for frequent sweet consumption may account for 12% of breast cancer cases** in this Italian population and, therefore, is far from negligible on a public health level," say the researchers.

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## New metabolic treatments

- ▶ Dr Thomas Seyfried proposed that a **ketogenic diet** could weaken cancer cells, without harming healthy cells. The fastest way to switch the metabolism of healthy cells from sugar to ketones is to fast for 2 or 3 days, followed by a period of a very low GL diet, strictly avoiding carbs but increasing fat. **This has proven good for brain cancer.**
- ▶ Prof Dominic D'Agostino, South Florida University, discovered that cancer cells cannot deal with an overload of oxygen. **When he put cancer cells in a hyperbaric oxygen chamber they rapidly died.**
- ▶ **There are also drugs that target cancer cells's inability to deal with glucose** that might prove promising in a metabolic approach to cancer such as 2-deoxyglucose (2DG), a molecule that looks like glucose but cannot be metabolised, rapidly bringing fermentation in cancer cells to a halt. Another is 3-bromopyruvate (3-BP) which looks like pyruvate, an essential chemical that cells readily take up, but 3-BP makes the faulty enzyme, hexokinase II, grind to a halt.

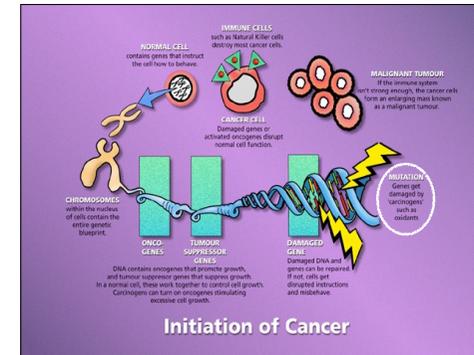
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## Environmental approach

M Bissell et al, Journal of Clinical Investigation 2014

- ▶ Professor Mina Bissell, at the University of California says **"Cancer is not a problem with growth. Instead it is a matter of context.** Like small-town kids who get lost in the big city, cancer cells become disoriented when their surroundings change. Soon, they run amok, behaving in ways they never would at home, where their neighbours keep them grounded.
- ▶ **"A dramatic increase in sugar intake could be a cause of oncogenesis,"** she says. The change involves a protein GLUT3, required to move glucose into cells, found in very high levels in cancerous breast tissue. Bissell's research showed that pushing up GLUT3 production in healthy cells turned them cancerous while damping it down in cancerous cells turned off the cancer causing genes. The result was that the cells became healthy

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## Common carcinogens

- ▶ Pollution - exhaust and industrial pollutants such as PCBs
- ▶ Smoking and passive smoking
- ▶ Pesticides, herbicides
- ▶ Food carcinogens - nitrosamines, PAHs, HCAs, free radicals, acrylamides
- ▶ Radiation - sun, radon, low level radiation eg x-rays, and 'non-ionising' radiation eg mobile phones
- ▶ ?Sugar/lack of oxygen

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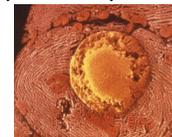
## Cancer and Methylation

Ronald dePinho The Age of Cancer, Nature, 408, p18-23, 2000; B. Shamon, Surgery, Uni of West Aus

- ▶ Epithelial carcinomas, including breast, prostate, lung and colon, account for 83.6% of adult cancers. 55% of these cancers shown telomere dysfunction, associated with poor methylation.
- ▶ Leukemias and dysplasias associated with high homocysteine.
- ▶ Those with colon cancer are more likely to have a faulty MTHFR gene, and raised homocysteine.

*"One in four gene mutations that cause human disease can be attributed to methyl groups on our genes."*

Dr Adrian Bird, Edinburgh University



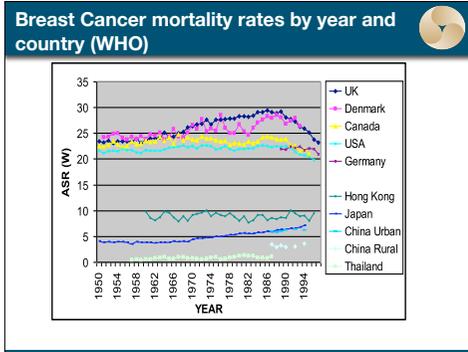
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## Hormonal Cancer incidence & Risk

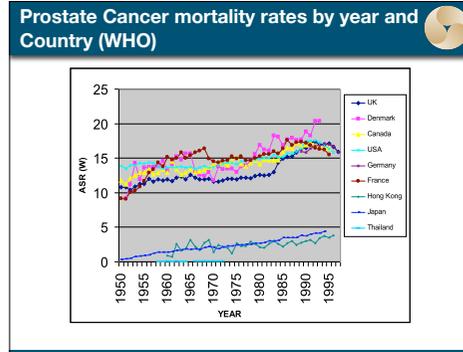
Source: Cancer Surveillance Unit, Cambridge University

	1985	2000	2015	1985-2015
Breast (women)	8.6%	10.6%	13.1%	52%
Uterine (women)	1.2%	1.8%	2.2%	83%
Prostate (men)	7.1%	13.5%	23.7%	234%
Testicular (men)	0.4%	0.4%	0.6%	50%
<b>CHINA</b>				
Breast	0.001%			
Prostate	0.0005%			

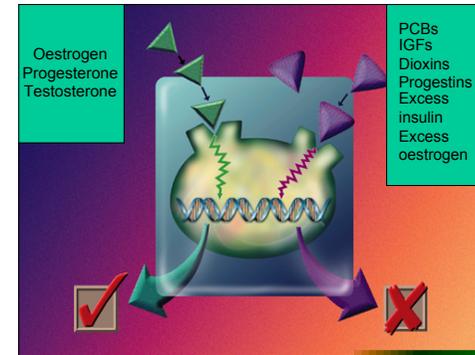
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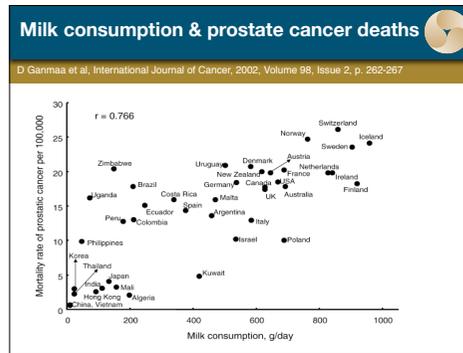
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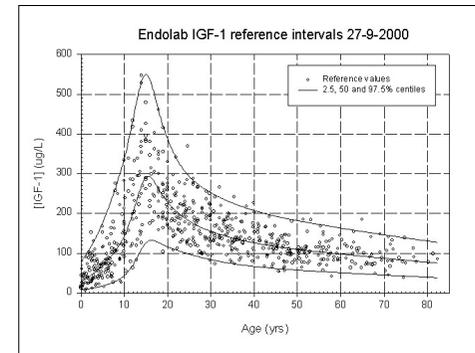
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- ### Growth promoters
- ▶ Too much insulin - sugar, high GL diets
  - ▶ Too much insulin-like growth factor (IGF-1) - dairy
  - ▶ Too much cortisol - stress, stimulants
  - ▶ Excess oestrogen - linked to excess body fat
  - ▶ Progesterone deficiency - linked to anovulation
  - ▶ Lack of oestrogen blockers/phytoestrogens - beans etc
  - ▶ Lack of oestrogen detoxifiers - greens, poor liver function
  - ▶ Excess hormone disruptors - pesticides, plasticisers, detergents, industrial compounds, pharmaceuticals

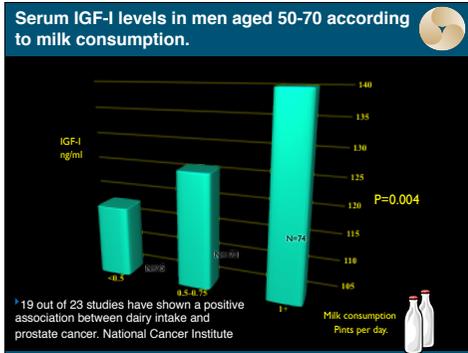
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### Actions to Cut Your Risk of Cancer

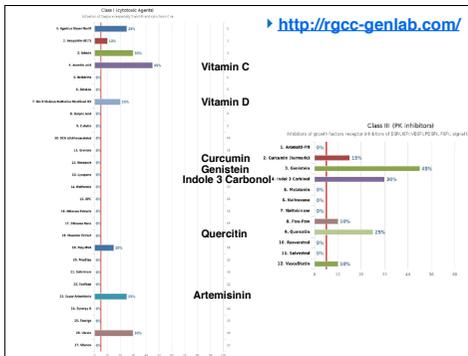
- Up intake of antioxidants and salvestrols, both with diet and supplements - more organic fruit, veg, herbs, spices
- Eat a low GL diet
- Supplement homocysteine lowering nutrients if H score is high
- Check your oestrogen/progesterone balance - consider progesterone HRT if oestrogen dominant
- Eat 15mg of phytoestrogens every day, plus cruciferous vegetables high in indoles
- Avoid or greatly limit dairy products, sugar, burnt meat, fried food, alcohol

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### Natural anti-cancer agents

- Vitamin A, C, D, K and B12
- Mistletoe
- Indole-3-carbonol (broccoli extract)
- Quercetin (red onions)
- Curcumin (turmeric)
- Green tea extract
- Alkalisating diets and sodium bicarb
- Ganoderma, Reishi Cordyceps, Maitake, AHCC
- Acemannan and Aloe arborescens
- Resveratrol and salvestrols
- Essiac
- Cat's claw (Uncaria tomentosa)
- Artemesia annua and Artemisinin
- Boswellia
- Grape seed extract
- Fulvic acid, Glutathione and NAC
- Polyphenols rich foods inc berry extracts

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Condition	Glycation	Methylation	Oxidation	Lipidation	Hydration	Digestion	Communication
Acne/psoriasis	**		*	**	*		**
ADHD	**	**		**			**
Alzheimer's	*		*	**			**
Arthritis	*		*	**			**
Autism	**	**	*	**			**
Autoimmune	*	**	**	**	*		**
Breast cancer	**	*	*	*			**
Cardiovascular	**	**	**	**			**
Chronic fatigue	**	**	*	*	*		**
Colorectal cancer	*	**	*	*			**
Constipation	**	**		**	**		**
Depression	**	**	*	**	*		**
Diabetes	**	*	*	*	*		**
Infections	*		*	*	*		**
IBS	*		*	*			**
Insomnia	**	**		**			**
Migraines	*	*		*	*		*
Menopause/PMS	**	*	*	**	*		**
Prostate cancer	*	**	*	*			**
Osteoporosis	**	**		**			**
Stress & anxiety	**	*	*	*			**
Thyroid(hypo)	**	*	*	*			**
Weight gain	**	*	*	*			**

Conditions with: \*some association \*\*strong association

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	Glycation	Methylation	Oxidation	Lipidation	Digestion	Communication
Best Test	HbA1C	Homocysteine	Glutathione peroxidase	Vit D & fatty acids	IgG food intolerance Coeliac blood analysis	Dutch test IgE/IgG Neurotransmitters Inflammatory markers Chemosenstivity
Supporting supplements	Cinnachrome Carboslow GL Support	Connect Mood Food Brain Food	AGE Antioxidant, ImmuneC Theracurmin Detox Pack	Essential Omega3, Vitamin D Brain Food Cu/Zn/Carnitine Noflush/Niacin	Digestpro Carboslow Detox Pack	Female Balance Aloe Glucosamine Support, Awake & Chai Theracurmin
Best foods	Oats, berries, beans, veg Protein with care	Lentils, beans, nuts, seeds, Fish & eggs	Brightly coloured fruit, veg, herbs & spices	Oily fish, walnuts, chia, seeds	Less dairy, gluten More Kamut products, soluble fibres (no cobalamin)	Anti-inflammatory foods Sufficient protein Isoflavones (beans) Indoles(greens)

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