



# Food for the Brain

Patrick Holford

## Food for the Brain - Mission



“To promote awareness of the link between learning, behaviour, mental health and nutrition.”

[www.foodforthebrain.org](http://www.foodforthebrain.org)



### Board of Trustees

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## Brain Bio Centre



Do you have depression, anxiety, schizophrenia, ADHD or autism?

The Brain Bio Centre offers:

State of the art treatment of mental health problems using the optimum nutrition approach

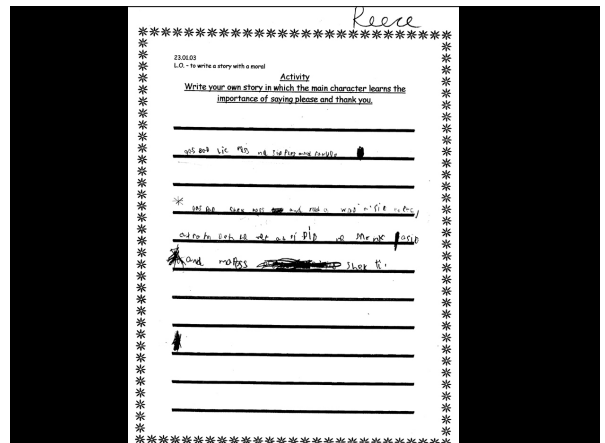
Full biochemical and psychometric testing before and after

Professional back up in consultation and by phone.

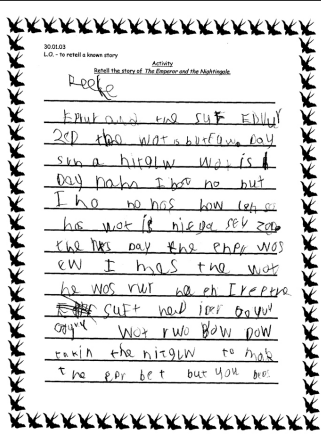
The Brain Bio Centre is at the Institute for Optimum Nutrition in Richmond, London

[www.brainbiocentre.com](http://www.brainbiocentre.com)

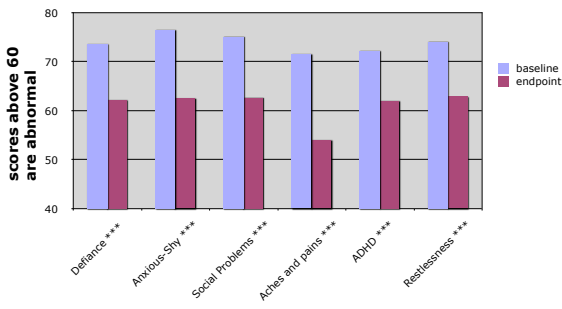
The Brain Bio Centre is a wholly owned subsidiary of the Food for the Brain Foundation



One Week Later..



Parent's behaviour ratings at Cricket Green School for children scoring 60 or higher at the start



\*\*\* means highly statistically significant  $p < .001$ \*

The percentage of people who answered 'frequently' or 'always':



Become quickly impatient	82%
Have low energy level	80%
Energy less than it used to be	76%
Feel have too much to do	67%
Become anxious or tense easily	64%
Have PMS/PMT (women only)	63%
Easily become angry	53%
Suffer from depression	44%
Have difficulty concentrating	43%
Become nervous/hyperactive	38%
Poor memory/difficulty learning	32%

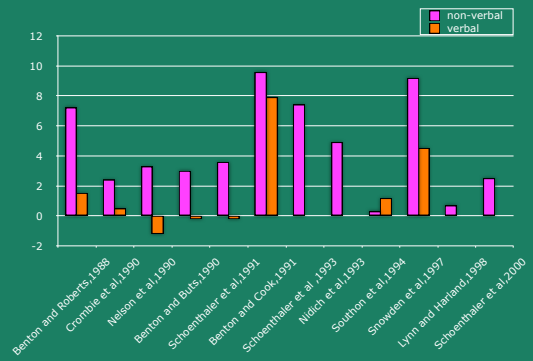


## FOOD FOR THE BRAIN

	Overall Health	Best Behaviour*	Best at School*	SAT Scores
<b>BEST FOODS</b>				
Fresh veg / salad	✓✓	✓✓	✓✓	✓✓
Green veg	✓✓	✓✓	✓✓	✓✓
Water	✓✓	✓✓	✓✓	✓✓
Whole grains	✓✓	✓✓	✓✓	✓✓
Seeds, nuts	✓✓	✓✓	✓✓	✓✓
Oily fish	✓✓	✓✓	✓✓	✓✓
Fresh Fruit	✓✓	✓✓	✓✓	✓✓
Dairy	✓✓			XX
<b>WORST FOODS</b>				
Processed foods	XX	XX	XX	XX
Sugar, sweets, choc	XX	XX	XX	XX
Fried / takeaway	XX	XX	XX	XX
Salt and salty	XX	XX	XX	XX
Sugared drinks	XX	XX	XX	
Add sugar	XX	XX	XX	
Refined foods	XX	XX	XX	
Tea, coffee, cola	XX	X	XX	

✓✓ = Highly significant positive ✓ = Positive X X = Highly significant negative X = negative  
 \* rated by parents

## Vitamins, minerals and IQ in Children



## Folic acid improves memory



818 people aged 50 to 75 given either a vitamin containing 800 mcg of folic acid a day, or a dummy pill. On memory tests, the supplement users had scores comparable to people 5.5 years younger. On tests of cognitive speed, the folic acid helped users perform as well as people 1.9 years younger.

Reference: Durga et al., Lancet, 2007

## High Homocysteine Worsens School Grades



A recent study compared the school grades, and sum of school grades, in ten core subjects, with homocysteine levels in a group of 692 Swedish school children age 9 to 15. Increasing homocysteine levels were strongly associated with reducing grades (p=0.004).

Reference: Borjel A et al. - pending publication

## Homocysteine predicts risk for...



- 🌿 Heart attacks (as good as cholesterol)
- 🌿 Strokes (better than cholesterol)
- 🌿 Alzheimer's disease (best indicator)
- 🌿 Depression (5unit increase doubles risk)
- 🌿 Osteoporosis (high level doubles risk)
- 🌿 Pregnancy problems (best indicator)
- 🌿 Birth defects (best indicator)
- 🌿 ... and is easily reversible with optimum nutrition

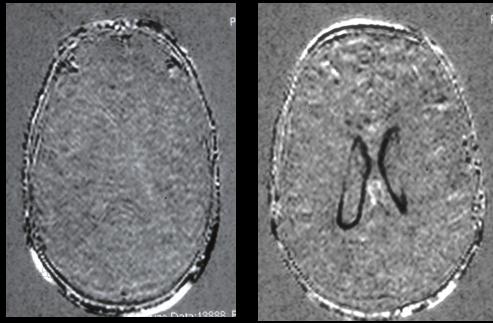
## Homocysteine Predicts Alzheimer's



A recent study in the New England Journal of Medicine charted the health of 1092 elderly people without dementia, measuring their homocysteine levels. Eight years later 111 were diagnosed with dementia, of which 83 were given the diagnosis of Alzheimer's. Those with high blood homocysteine levels (above 14µmol/l) had nearly double the risk of Alzheimer's.

Reference: Seshadri S et al., 2002 Plasma Homocysteine as a Risk Factor for Dementia and Alzheimers Disease. N.Engl.J.Med 346 (7): 476-483

## Subtraction of serial MRI scans at 6 month intervals



Control: Hcy 7.8

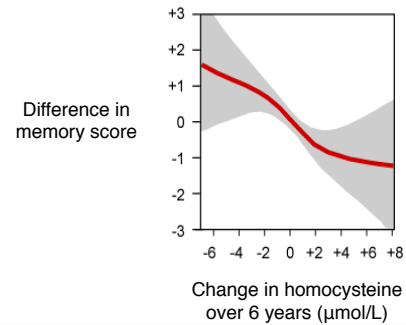
Alzheimer's disease Hcy 13.1

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## Effect of changes in homocysteine over time on episodic memory test scores



N = 1,670 tHcy levels at 0 & 6 years; memory test done at year 6



P = 0.003

## What's an optimum Level?



- 🌿 Below 6.3 means lowest risk of CAD
- 🌿 Below 7.3 means greatest chance of minimising chromosome damage, hence slowing aging.
- 🌿 Probably below 7 means greatest psychological function.
- 🌿 Research by Dr Ann Fenech, published by the New York Academy of Sciences, found that a high level of chromosomal damage was more prevalent in those with low folate or B12 status, and high homocysteine. From this they were able to work out the ideal blood homocysteine level for minimising chromosomal damage. Fenech's research sets the optimal homocysteine level at less than 7.5  $\mu\text{mol/L}$ .

## Coffee is Bad News



Grubben MJ et al. American Journal of Clinical Nutrition, Vol. 71, No. 2, 480-484, February 2000.

P. Verhoeve et al. American Journal of Clinical Nutrition, vol. 76, No. 6 (2002), pp. 1244-1248

- 🌿 A group of doctors from the University Hospital Nijmegen tested the effects of coffee by assigning volunteers to drink a litre of unfiltered coffee a day – that's about four cups – for two weeks. At the start of the two weeks their average H score was 12.8  $\mu\text{M}$ , slightly above the national average of 10 to 11. At the end of the two weeks their H score was 14.
- 🌿 A study by Dr Verhoeve and co. at the Wageningen Centre for Food Sciences in the Netherlands showed that two cups of regular coffee increased homocysteine by 11% after only four hours, while caffeine tablets without coffee increased it by 5%.

## Supplements or food?



▶ M Malinow Nutr Rev, volume 56, pp 294-299 (October 1998)

September FSA Newsletter 'Bioavailability of folic acid and natural folates: studies using the functional marker plasma homocysteine'

- 🌿 Homocysteine levels did not decrease significantly among patients given cereal containing 127 micrograms of folate daily. Hcy scores did decrease, however, when the patients were given larger supplemental amounts. Folate from oral supplements is 1.7 times more effective than folate from food. This means that supplementing 100mcg of folate is equivalent to eating 170mcg in food. This project investigated the effect on folate status in health people given equivalent amounts of folic acid (both as supplements in tablet form or as folic-acid-fortified food) or natural food folates. Overall, food folates were found to be significantly less effective at equivalent doses to folic acid supplements in raising the folate status and lowering homocysteine.

## How much B12 to correct deficiency?



Euseen SJ et al Arch Intern Med. 2005 May 23;165(10):1167-72.

- 🌿 A randomized, parallel-group, double-blind, dose-finding trial to determine the lowest oral dose of B12 required to normalize biochemical markers deficiency in older people with mild vitamin B12 deficiency. The main outcome measure was the dose of oral B12 that produced maximal reduction in the plasma methylmalonic acid concentration. RESULTS: Only doses of 647 to 1032  $\mu\text{g}$  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 normalize mild B12 deficiency is more than 200 times greater than the RDA, (3 $\mu\text{g}$ ).



## Which foods are high in folate?

## Food-Amount of Folic Acid (µg)



Lentils, cooked (1/2 cup)	179	Hazelnuts (1/2 cup)	76
Millet flakes (1 cup)	170	Romaine lettuce (1/2 cup)	68
Sunflower seeds (1/2 cup)	164	Broccoli (1/2 cup)	65
Chickpeas, cooked (1/2 cup)	141	Avocados (half)	62
Kidney beans (1/2 cup)	115	Brussels sprouts (1/2 cup)	60
Orange juice, fresh (1 glass)	109	Beetroot (1/2 cup)	63
Peanuts (1/2 cup)	106	Papaya (half)	58
Spinach (1/2 cup)	102	Parsnips (1/2 cup)	45
Artichoke (globe) (1 medium)	94	Oranges (one)	40
Miso soup (1 cup)	91	Melon (half small)	38
Oats (1 cup)	87	Leeks (1/2 cup)	32
Asparagus (1/2 cup)	80	Peas, frozen (1/2 cup)	30

## What to eat to get 400mcg of folate



- A salad with Romaine lettuce, endive, half an avocado and a handful of sunflower seeds, accompanied by a glass of orange juice
- Spinach and lentil or millet bake with a serving each of broccoli and parsnips
- A fruit salad with papaya, kiwi fruit, orange and cantaloupe melon in orange juice, plus a handful of unsalted peanuts
- Or an orange, a large serving of broccoli, spinach, Brussels sprouts and a bowl of miso soup.

## Homocysteine Lowering Nutrients



H SCORE	GOOD	LOW	HIGH	V.HIGH
	<6	6-9	9-15	>15
Connect per day		1	2	3
Folate		250µg	500µg	750µg
B12		250µg	500µg	750µg
B6		20mg	40mg	60mg
B2		10mg	15mg	20mg
Zinc		5mg	10mg	15mg
TMG		500mg	1g	1.5g
NAC		250mg	500mg	750mg

## Zinc Makes You Think



Researchers in North Dakota gave 200 school children in the 7th grade zinc supplements and found that those taking 20mg of zinc a day, as opposed to those taking 10mg (the RDA) or placebo, had faster and more accurate memories and better attention spans within three months.

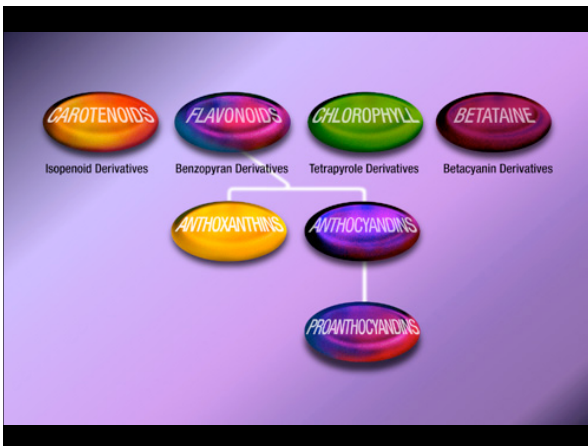
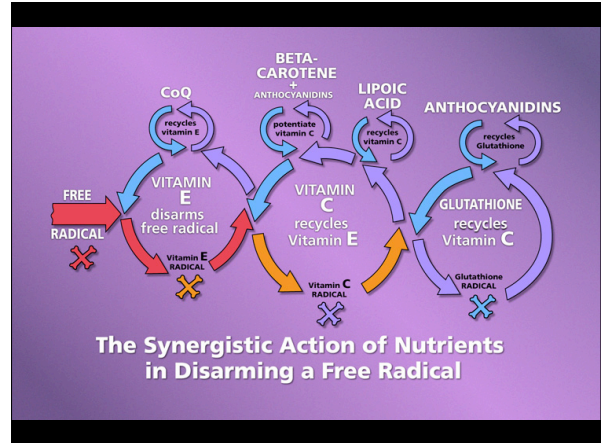
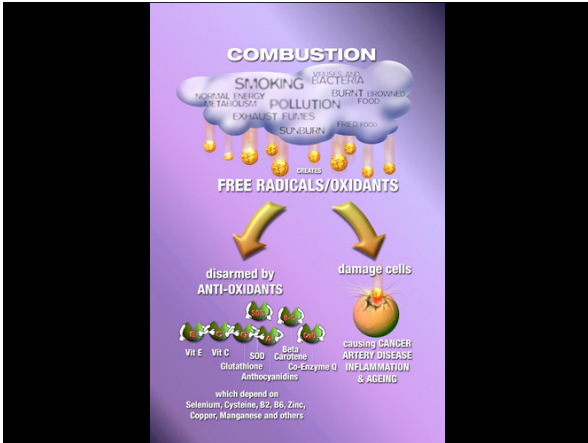
Zinc is rich in seeds and seed foods.

Reference: James G Penland, April 4, 2005, presentation, Experimental Biology 2005 meeting, San Diego

## Insomnia? Magnesium helps



- Magnesium helps insomnia, depression and muscle cramps. it also lowers blood pressure.
- Most people don't get enough. Magnesium is found in dark green vegetables, nuts and seeds. Pumpkin seeds are especially rich.
- An ideal intake is 300 - 500mg. You'll probably eat 200mg. Good multivitamin/mineral supplements deliver an additional 100mg.



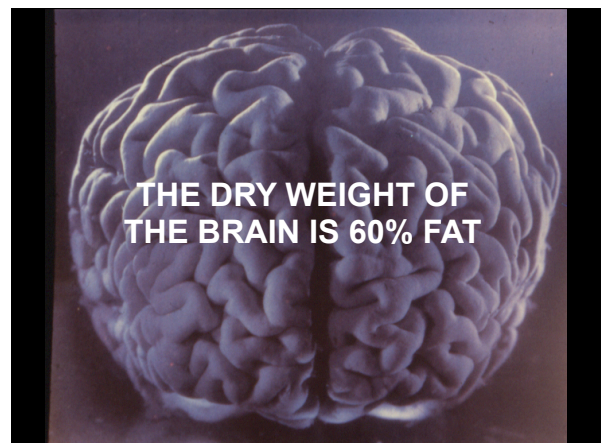
### Foods with Antioxidant Power

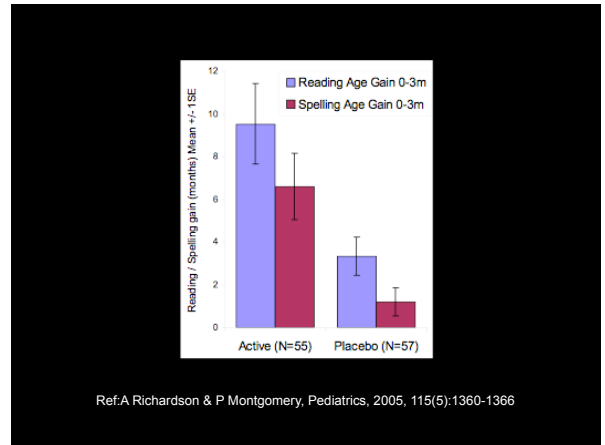
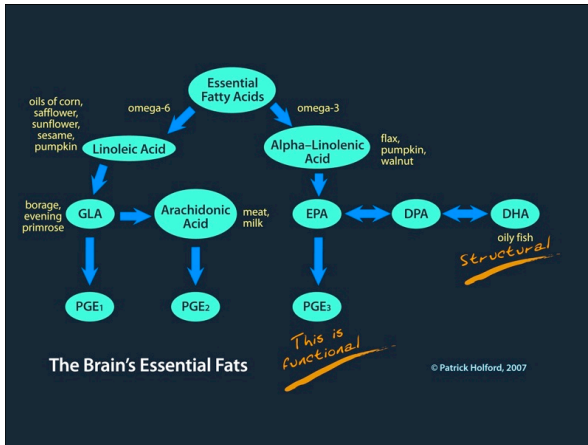
Per 100 grams			
Prunes	5770	Orange	750
Raisins	2830	Grape, red	739
Blueberries	2234	Pepper, red	731
Blackberries	2036	Cherry	670
Kale	1770	Kiwifruit	602
Strawberries	1536	Beans, baked	503
Spinach, raw	1210	Grapefruit, pink	483
Raspberries	1227	Beans, kidney	460
Plums	949	Onion	449
Alfalfa sprouts	931	Corn	402
Spinach, steamed	909	Peas, frozen	364
Broccoli	888	Potatoes, sweet	301
Beetroot	841	Cantaloupe	252
Avocado	782	Apple	281
		Carrots	207

### Each of these is 2,000 ORACs

1	1/3 tsp Cinnamon, ground	11	7 Walnut halves
2	1/2 tsp Oregano, dried	12	8 Pecan halves
3	1/2 tsp Turmeric, ground	13	1/2 cup Pistachos
4	1 heaped tsp Mustard	14	1/2 cup 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	1/2 cup Blackcurrants & berries, raspberries, strawberries	17	1/2 cup of red cabbage
8	Half a 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





Ref: A Richardson & P Montgomery, Pediatrics, 2005, 115(5):1360-1366

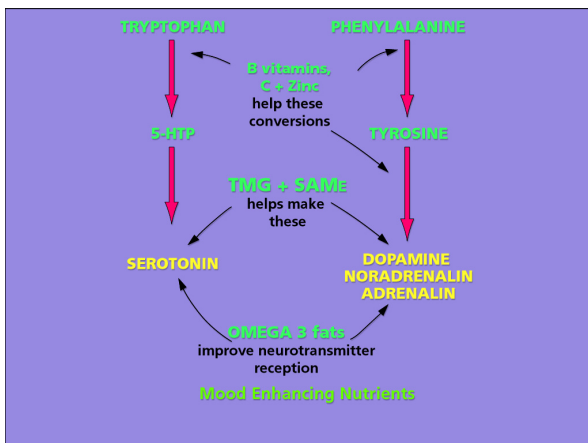
- ### Common other signs of EFA deficiency
- Poor coordination
  - Hyperactivity and inattention
  - Slower cognition and learning difficulties
  - Excessive thirst
  - Excessive urination
  - Chronic fatigue
  - Dry or rough skin, dry hair or dandruff
  - Eczema and asthma

### Omega 3 and Depression

Six out of eight clinical trials show significant improvement - about double that seen with SSRI anti-depressants, which double the risk of suicide. Best results are seen with 1000mg of EPA.

**Hamilton Rating Scale**

Stoll et al	49% improvement
Nemets et al	52% improvement
Osher et al	50% improvement



### 5-HTP Effective for Depression

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 Scale 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

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

## 5-HTP vs SSRI



A double-blind trial headed by Dr Poldinger at the Basel University of Psychiatry gave 34 depressed patients 300mg of 5-HTP and 29 patients fluvoxamine an SSRI antidepressant. At the end of the six weeks, both groups of patient had had a significant improvement in their depression, however those of 5-HTP had had a greater improvement in each of the four criteria assessed – depression, anxiety, insomnia and physical symptoms, as well as the patients self-assessment.

Ref: Poldinger, et al (1991). A functional-dimensional approach to depression: serotonin deficiency and target syndrome in a comparison of 5-hydroxytryptophan and fluvoxamine. *Psychopathology*, 24, 53-81

## Serotonin & Mood



- ☘ Sunlight/full spectrum light
- ☘ Exercise
- ☘ Low GL diet plus chromium
- ☘ Tryptophan/5-HTP
- ☘ Lack of stress
- ☘ Co-factor nutrients (eg B3, B6, folate, C zinc, magnesium)
- ☘ Methyl nutrients (SAmE, TMG, B6, B12, folic acid)
- ☘ Omega 3 (EPA)



## Omega 3 reduces heart attacks



- ☘ Omega 3 fatty acids from fish and fish oils can protect against coronary heart disease.
- ☘ There is evidence to support the use of fish or fish oil supplements after myocardial infarction.
- ☘ **The UK's National Institute of Clinical Excellence recommended all doctors to prescribe 1 gram of fish oil to patients who have had a heart attack.**

Reference: N. Din et al, *British Medical Journal*, Review, 2003

## Omega 3 reduces joint pain



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.

Reference: Goldberg R, *Pain*, May 2007

## 35% Reduction in Aggression ...in two weeks



In a double-blind trial young offenders in a maximum security prison were given either a multi-nutrient containing vitamins, minerals and essential fatty acids, or a placebo. The results, published in the *British Journal of Psychiatry*, showed a staggering 35 per cent decrease in acts of aggression after only two weeks. Since prison diets are, if anything, better than those most young offenders eat, this shows just how important optimum nutrition is for reducing violent and deviant behaviour. When the trial was over and the supplements were stopped, there was a 40 per cent increase in offences in the prison.

Ref: B. Gesch B, 2002, Influence of supplementary vitamins, minerals and essential fatty acids on the antisocial behaviour of young adult prisoners, *Brit J Psychiatry*, Vol 181, 2002, pp. 22-28.

## GOLDEN RULE NO.2

**ENSURE  
ESSENTIAL FATS**

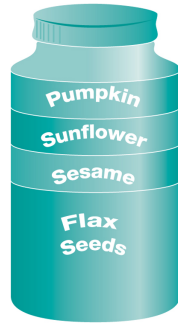




## Top Tip – Eat Seeds



1. Fill a glass jar with a sealing lid, half with flax seeds half with sesame, sunflower and pumpkin seeds.
2. Keep the jar sealed, and in the fridge to minimise damage from light, heat and oxygen.
3. Put a mixed handful in a coffee/seed grinder, grind up and put on cereals or soups or, alternatively, munch a handful.
4. You need a tablespoon a day, or dessertspoon for kids.

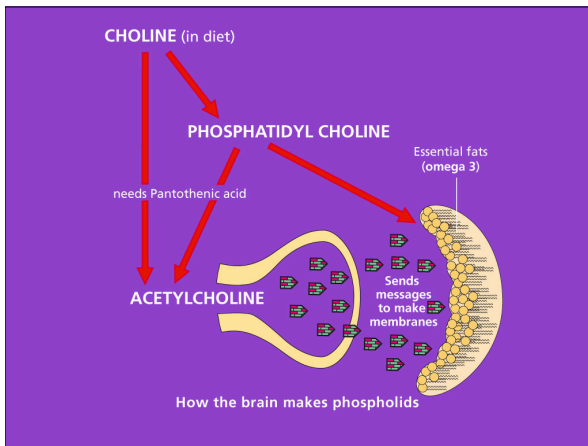


## Three Essential Actions



- 🌿 Eat oily fish three times a week
- 🌿 Eat seeds most days
- 🌿 Supplement both omega 3 (EPA, DPA, DHA) and omega 6 (GLA) everyday

There is no need to supplement omega 9 - it's in fish, seeds and is not essential



## Choline is Essential for the Brain



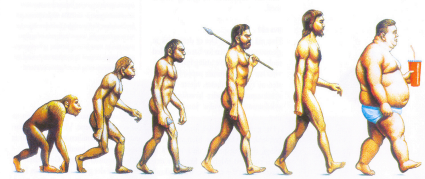
- 📍 Research, at Duke University Medical Center, fed pregnant rats choline half way through their pregnancy. The infant rats whose mothers were given choline had vastly superior brains with more dendrite connections, plus improved learning ability and better memory recall, all of which persisted into old age.
- 📍 80 college students given a single 25g dose of phosphatidylcholine (3.75g of choline) found a significant improvement in explicit memory 90 minutes later.
- 📍 "In general, treatment with choline induced favourable effects on cognitive function in dementia disorders".
- 📍 The lower your homocysteine the better your ability to make choline.
- 📍 If your choline levels are depleted, your body grabs the choline that you need to build your nerve cells to make more acetylcholine.

## Action



- 📍 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.
- 📍 Supplement a brain food formula providing phosphatidyl choline and phosphatidyl serine and DMAE.

## What are we programmed to eat?



Our genes have evolved during 7 million years  
Food was scarce and we had to struggle physically to get hold of it

## Health problems linked to diabetes

The World Health Organization (WHO):  
Globally, Overweight is a bigger problem than undernourishment

Overweight and obesity greatly increase risk of:

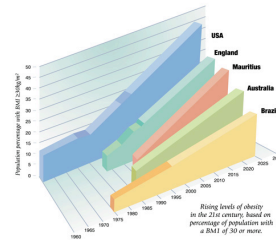
- Diabetes 2
- Cardiovascular disease
- High blood pressure
- High levels of cholesterol
- PCO (6-10% of adult females)
- Sleep Apnea Disorder
- Osteoarthritis
- Depression
- Alzheimer's Disease
- Several types of common cancers



Obesity is the second largest preventable cause of premature death after tobacco smoking

## The "American paradox"

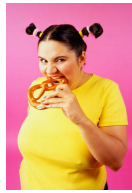
The traditional thinking has been to eat less calories from fat and more from carbohydrates. The result is that we do eat less fat and calories. Fat intake in US has decreased from 42 to 34 % of energy intake during last 30 years.



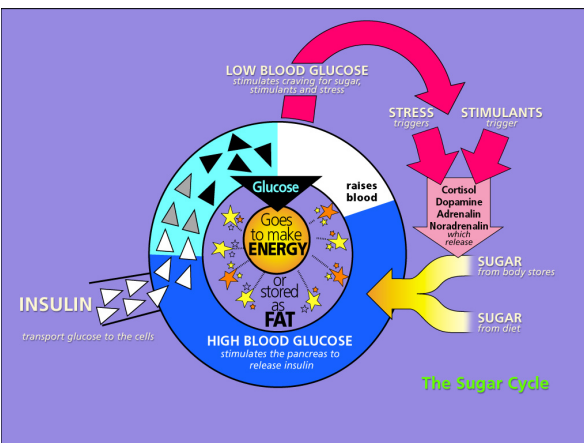
## Our diet has changed

Our diet is continuously drifting further away from what our genes once handled well

	The Stone Age	Today
Proteins	34%	13%
Fat	21%	35%
Carbs	45%	52%
Fibre	46g	21g/day
Sugar	0%	14%
Salt	1,7g	approx. 10g/day



## 1.2% sets us genetically apart from apes, but who is wiser?



## What's wrong with sugar?

Excessive sugar intake has been implicated in:

- aggressive behaviour
- anxiety
- hyperactivity and attention deficit
- depression
- eating disorders
- fatigue
- learning difficulties

**Sugar is an addictive anti-nutrient.**

## Glycemic Index of Common Foods

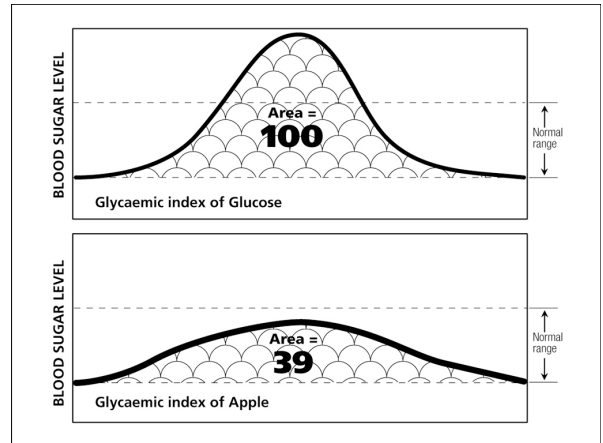


### Slow Releasing Foods

Fructose	20
Oats	49
Apple	39
Pear	38
Wholegrain rye bread	41
Wholewheat spaghetti	42
Brown basmati rice	58
Sweet potato	54
Soya beans	15
Rough oat cake	38
Carrots	47
Apple juice	40

### Fast Releasing Foods

Sucrose	59
Cornflakes	80
Banana	62
Raisins	64
White bread	70
White spaghetti	50
White rice	72
Potato(baked)	85
Chocolate	49
Rice cake	81
Fanta	68



## The Glycaemic 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

## 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 carbs per serving  
Its Glycemic Load is  $0.72 \times 6 = 4.32$ , rounded to 4, per serving.

## 10 GL serving of Common Foods

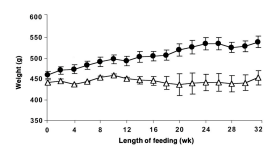


Low GL Foods	High GL Foods
2 large punnets of strawberries	2 dates
6 oat cakes	1 slice of white bread
4 bowls of oat flakes or porridge	1 bowl of cornflakes
A large bowl of peanuts	A packet of crisps
1 pint of tomato juice	Half glass of Lucozade
10 handfuls of green beans	10 french fries
6 tablespoons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

## Low GL Diets Cause More Weight Loss On Same Calories



Animals fed high calorie diets providing the identical number of calories show much less weight gain and fat gain on a low GL diet.

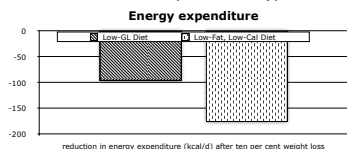


● = high GL    △ = low GL

## Low GL Diets Cause Less Rebound Reduction in the Body's Metabolic Rate



One of the main problems associated with 'dieting' is that the body responds to a low calorie intake by reducing its metabolic rate, hence burning fewer calories. This means that dieters find it increasingly difficult to lose weight the lower the calories. Low GL diets cause half the reduction in metabolic rate compared to a typical low fat diet.



Reference: Pereira M et al., JAMA, 2004, vol 292, pp.2482-2490

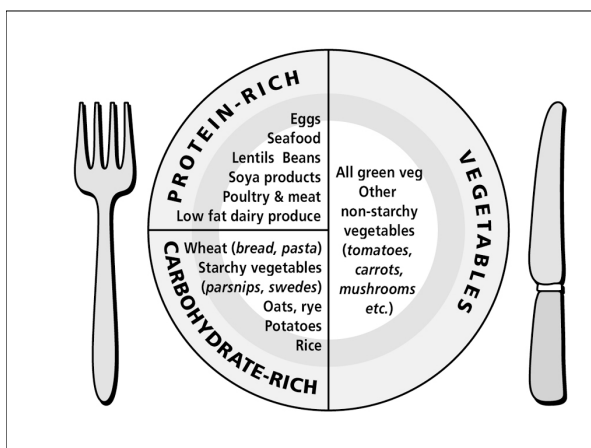
## Three simple rules



**Eat no more than 40/60 GLs a day.**

**Eat protein with carbohydrate.**

**Graze rather than gorge.**



## Low GL is the 'perfect' diet



- A Low GL diet is most effective for weight loss - more so than low calorie, low fat diets or high protein, low carb diets
- A low GL diet causes more weight loss on the same calories - by positively affecting metabolic rate
- A low GL diet is easy to maintain - by reducing hunger and craving for sweet foods
- A low GL diet is good for your health - creating rapid improvements in cardiovascular health and blood sugar control, and long-term reduced risk for cardiovascular disease, cancer and diabetes.

## Low GL better than low fat/cal



According to the authors "**Overweight or obese people lost more weight on a low Glycaemic Load diet and had more improvement in lipid profiles than those receiving conventional (low fat, low calorie) diets.**" The review compared the results of six well designed trials comparing low GL diets with conventional diet, based on reducing calories. Other benefits were greater loss in body fat, reductions in bad 'LDL' cholesterol, and increase in good 'HDL' cholesterol.

Reference: Thomas D et al., The Cochrane Library, 2007, issue 3

## Low GL Diet Makes You Feel Good



Sixteen participants placed on the Holford Low GL Diet for eight weeks loss 10.25lbs, equivalent to 1.3lbs per person per week. Body fat percentage dropped by an average of 2%. In addition:

- 94% reported greater energy**
- 67% had greater concentration, memory or alertness,**
- 67% had less indigestion/bloating and better skin**
- 50% had less depression or more stable moods.**

Reference: Holford et al, Journal of Orthomolecular Medicine Vol. 21, No. 2, 2006

## Why Chromium Helps Weight Loss

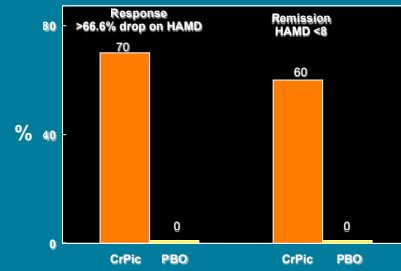


Many studies have shown that chromium helps reduce weight but how does it do it? Insulin cannot work properly without chromium. Also, there's some evidence that chromium may affect brain signals involving serotonin, that control both hunger and mood.

This study gave healthy, overweight women chromium or placebo for eight weeks. Those on chromium ate less, felt less hungry, craved fat less and also lost more weight than those taking the placebos.

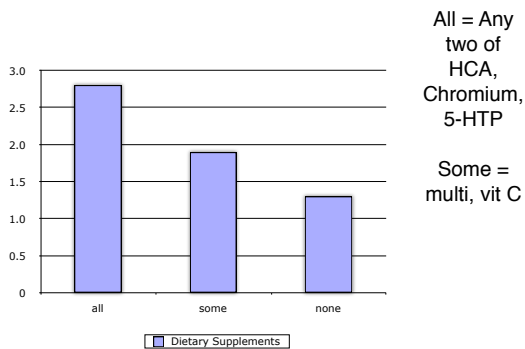
Reference: S. Anton et al Diabetes Technol Ther. 2008;10(5):405-12.

## Response and Remission Rates: Cr Picolinate in Atypical Depression



Ref: Davidson et al. 2003

## Effect of supplements on weight (lbs/week)

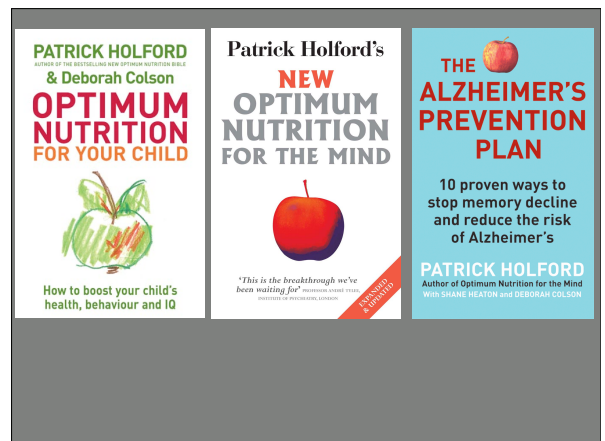


## GOLDEN RULE NO.3

**Eat a low GL diet and don't skip breakfast**



[www.holforddiet.com](http://www.holforddiet.com)



### What's the best brain food breakfast?



- 🌿 **Berry compote** - B vits plus antioxidants
- 🌿 **Scrambled 'omega 3' eggs** - protein plus phospholipids
- 🌿 **Smoked salmon** - omega 3
- 🌿 **Nairns rough oat cakes** - low GL carbs

### Golden Rules for a SUPERMIND



- 🌿 Up your intake of vitamins & minerals
- 🌿 Ensure essential fats
- 🌿 Eat a low GL diet  
and don't skip breakfast
- 🌿 Avoid sugar and chemical additives

