



Dr Paul Clayton's Health Newsletter

The Pro-Vegetarian Diet

There are hard-core vegetarians, of course, but many of the folks I know who call themselves vegetarians eat chicken, fish, dairy and eggs. They tend to eschew red meat, and are more correctly diagnosed, even if they don't know the term, as **pro-vegetarians**. A pro-vegetarian diet doesn't make recommendations about eating or avoiding specific items, but generally increases the proportion of plant-based foods relative to animal-based foods.

It may not satisfy the purist, but pro-vegetarianism, which nods in the direction of the Mediterranean diet, is good enough to offer health benefits over and above the awful diet currently consumed by most Western people, and it has been shown to offer significant protection against heart disease and stroke. In a paper that was just presented at the American Heart Association EPI/Lifestyle 2015 meeting in Baltimore (Lassale '15), a team out of Imperial College London presented their analysis of the eating habits and health of 451,256 Europeans, part of an even larger study called the European Prospective Investigation into Cancer and Nutrition (EPIC) study which started in 1992.

The subjects, who were aged 35 to 70 years and free of chronic diseases at the start of the study, were monitored for an average of 12 years. People who ate the most pro-vegetarian style diets (more than 70 percent of food coming from plant sources) had a 20% lower risk of dying from cardiovascular disease and stroke than those who were the least pro-vegetarian (less than 45 percent of food from plant sources). This is in line with previous studies; the pro-vegetarian diet had previously been shown to reduce the risk of developing metabolic syndrome, the precursor to Type 2 diabetes, by a similar amount (Pimenta et al '14).

The pro-vegetarian diet is not as protective as a full-on traditional Mediterranean diet, which reduces risk by about 50% (Georgousopoulou et al '15),

and it is not nearly as protective as the mid-Victorian diet, which reduces risk by approximately 90% (Clayton & Rowbotham '08), but it is more easily achievable. Simply substituting vegetables for meat a few times each week is an easy step to take, and it could be a stepping-stone to even better eating habits.

How many calories must a man wolf down?

The answer, my friend, may surprise you. According to the UK's Advertising Standards Agency (ASA), it would be extremely difficult for consumers to devise a 600-calorie diet providing 100% of vitamin and mineral RDAs. What geniuses ...

... because the literature clearly shows that a minimum of 750 calories a day is needed, and that only works if the diet is highly specialised and made up of fish and molluscs combined with portions of quark, spinach, mushrooms, rye bread, strawberries, nuts, raisins and sunflower seeds. In any conventional diet, even 2,000 calories cannot provide all the recognised vitamins and minerals (FAO).

If you then extend the nutritional requirements to include recommended levels of other key micro- and phyto-nutrients such as the polyphenols, the 1-3, 1-6 beta glucans, prebiotic fibres, xanthophylls and carotenoids, this cannot be achieved in under 3,300 calories, and that too requires a highly specialised diet (IFBB Oxford, Out of the Fire '14).

This may seem an unfeasibly large number of calories but is easily consumed by physically active people such as athletes and our hard-working mid-Victorian ancestors. For today's urbanised and sedentary folk, however, fortified foods and/or supplements have become essential.

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The Paul Clayton Health Newsletter

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- All references on the back page
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In vitamin-D-deficient lung disease sufferers, vitamin D supplements reduced the number and severity of flare-ups by 40%.

Over a billion people are thought to be depleted in vitamin D!



Foods high in vitamin D include fish oil, oily fish (salmon, trout, mackerel etc), mushrooms (esp portabello, maitake), tofu, beef liver, cheese and egg yolks

Low vitamin D status has been linked to many inflammatory diseases.

Vitamin D—Yet more evidence of deficiency causing

Lung disease

Breathing comes so naturally that much of the time we don't even notice that we're doing it – unless we get out of breath after heavy exertion. That pressured feeling soon passes, and breathing becomes invisible again.

But for some that feeling never goes, and the constant struggle for air experienced by sufferers of chronic obstructive lung (pulmonary) disease (COPD), who tend to be progressively more out of breath until they die, is harrowing. Inhaling oxygen-enriched air helps up to a point, but the main medical focus on COPD has always been on prevention; and as the main causes of COPD are tobacco and occupational exposure to toxins such as asbestos, this has fed into smoking cessation campaigns, safer working practices, and compensation claims which have provided surprisingly large sums of money for the legal profession (Guardian '11). There has been very little that could be done to manage or improve COPD. Until now.

A randomised and placebo-controlled clinical trial was recently carried out at the Queen Mary University of London, looking at the effect of vitamin D supplementation on the severity and duration of COPD symptoms over a 12-month period (Martineau et al '15). This was a large trial involving 240 patients, who were given either placebo or oral vitamin D3 at doses of 3 mg given once every 2 months throughout the year¹.

In the sub-group of patients who were D-deficient at the start of the trial, vitamin D significantly lowered the number and severity of flare-ups; the 40% reduction in the number of flare-ups was described by the trial authors as 'dramatic'. D supplementation had no effects in the group who entered the trial with normal levels of the vitamin.

So how was vitamin D achieving these results? D is essential for immune function, and plays a role in increasing resistance to infection, but the incidence of upper respiratory tract infections did not change in this group.

Vitamin D has many other functions in the body, however, one of which is a role in **reducing inflammation**.

Low D status has been linked to many inflammatory diseases, and as vitamin D has potent anti-inflammatory effects, it consequently has been considered for adjunctive therapy for

numerous chronic diseases including asthma (Searing et al '10), arthritis (Plum et al '10), prostate cancer (Krishnan et al '10) and Type 1 diabetes (Mao et al '14) and chronic inflammatory pain (Hirani '12).

A good deal of research has investigated how D exerts its anti-inflammatory effects, and it appears to do so via many different mechanisms. D is known, for example, to enhance the function of regulatory T-suppressor cells, which dampen the activity of pro-inflammatory immune cells (Chambers & Hawrylowicz '11). A recent paper revealed another part of this complex story. A Chinese research team (Zhang et al '12) found that D also directly reduces the formation of pro-inflammatory

cytokines by various white blood cells that are involved in driving chronic inflammation, including macrophages and monocytes.

As over a billion people are thought to be D-depleted, and as D is both cheap and safe, there is a strong case for giving D supplements to anyone with an inflammatory condition such as COPD – but the case for better nutrition does not stop there.

Retinoids such as vitamin A modulate and enhance the effects of vitamin D (Carlberg '96), and they have direct anti-inflammatory effects of their own (Akdeniz et al '05). In a clinical investigation carried out at the Helmholtz Centre in Munich, vitamin A aerosols produced very significant improvements in lung function and quality of life in a patient with COPD (Frankenberg et al '09). This was only a single patient, and I do not normally report on such experiments, but the very detailed biochemistry

¹ This looks like a large dose, equating to 150 times the Recommended Nutrient Intake (RNI) of 800IU a day. Spread over 2 months, however, it is only 2.5 times RNI.

disease, and the case for D supplements

provided important insights into what was happening. The blood work showed that the vitamin A had a sufficiently strong anti-inflammatory effect to reduce the activity of a group of tissue-destructive enzymes called proteases. This not only stopped the lung damage from progressing, it also seemed to allow for repair/regeneration of a significant amount of lung tissue.

Regeneration of lung tissue is not classically thought to occur but I have long suspected that a degree of repair might be possible, given the right circumstances. The alveoli, where gas exchange takes place, are fragile and dynamic organelles, and are probably being constantly

exert, inter alia, by blocking the effects of the proteases referred to above. Add high dose fish oil, and the insidious process of chronic inflammation that drives COPD would be, in my estimation and limited experience, suppressed thoroughly enough to provide the best possible chance of lung tissue regeneration.

Effects on the brain

Research by the legendary Bruce Ames has thrown up new links between maternal vitamin D, or the lack of it, and **autism** (Patrick & Ames '15). Their work indicates that adequate levels of vitamin D may be required to produce neurotransmitters dopamine, oxytocin, vasopressin and especially serotonin in the brain, where they shape the structure and wiring of the central nervous system and affect social behaviour.

This could explain why autism, which has been previously linked to low levels of serotonin in the brain and to low vitamin D levels (Grant & Soles '09, Yang et al '14), has increased so markedly in the last three decades, in the wake of well-meaning but misguided government recommendations to minimise exposure to sunlight.

It could also help to explain the staggering increase in **depressive illness**, as depression is also linked to low D status (Penckofer et al '10); and why sunbathing makes us feel good, although the beta-endorphins formed when sunlight hits the skin also contribute. It may also explain why we are constructed in such a way that we find **sunbathing** pleasurable; the feel-good factor encourages us to expose our skin to sunlight, protecting us from the many diseases linked to low D status.

I describe the government guidelines as misguided because in my view they suffer from gross sampling error. While today's malnourished citizens may well be at increased risk of skin cancer after sun exposure, folks who are better nourished in terms of UV-protective phytonutrients are able to cope with sunlight much more easily (Stahl & Sies '12). This is why in the 19th century, agricultural labourers who worked long hours outdoors were relatively immune to skin cancer.

I should point out that although low maternal vitamin D status is linked to increased risk of autism, other scientists have found that is not associated with ADHD (Strom et al '14). [Although this paper's subjects were mothers in Denmark, where population D levels are very low and vitamin D supplements are disliked.]

re-modelled, as indeed all other tissues are, from bone to liver, muscle, cartilage and skin. In a patient whose biochemistry is pro-inflammatory, due to factors such as smoking and/or poor nutrition, the net loss of alveoli will always outstrip any regenerative capacity. But if that person's biochemistry can be amended to provide an anti-inflammatory and generally supportive environment, then healing should be able to predominate, as it can do after pneumonia. While extensive scarring and other major structural losses are probably irreparable, there seems no intrinsic reason why individual alveoli cannot be repaired or even regenerated.

Another consideration for any self-medicator with COPD is to **add polyphenols** to the mix. Not only do they enhance the effects of vitamin D (Dampf-Stone et al '14), they also have strong anti-inflammatory effects of their own which they

Adequate maternal vitamin D may be required to produce important neurotransmitters in a baby's brain such as dopamine, oxytocin, vasopressin and serotonin.

NutriShield contains vitamin D3, vitamin A, polyphenols (green tea, curcumin, grapeseed, bilberry) and **omega 3 fish oil**
nutrishield.com

ImmunoShield contains 1,3,1,6 beta glucans
immunoshield.com

JointShield contains vitamin D3 and polyphenols from curcumin
jointshield.com

The feel-good factor in sunbathing encourages us to expose our skin to sunlight, protecting us from the many diseases linked to low D status.

The Dr Paul Clayton Health Newsletter describes developments in the field of pharmaco-nutrition, where nature and science are combined to offer non-drug solutions to degenerative disease.

The newsletters are intended to increase knowledge and awareness of health issues and are for information only. No health claims for specific products are made or intended and the information should not be used as a substitute for medical advice.

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Emulsifiers—a new processed food problem?

A new paper in Nature (Chassaing et al '15) has shown that when mice consume high doses of the emulsifiers commonly used in processed foods, they develop changes in their microbiome and go on to develop gut inflammation, metabolic syndrome, and weight gain. At first sight this seems alarming, as emulsifiers are used in almost all processed foods; and diets rich in processed foods are very closely linked to all the above problems.

The link to human disease is not at all proven, however, as the mice were given doses of the emulsifiers many times higher than would occur in any normal diet. Nevertheless, the mechanism whereby emulsifiers caused the problems is interesting, and does hint that eating too much emulsifier could be an aggravating factor in various pathologies.

The researchers found that eating emulsifiers led to increased numbers of gram-negative bacteria in the mouse gut. As these bacteria produce highly pro-inflammatory compounds called lipopolysaccharides, the tendency of the mice to go on to develop gut inflammation and metabolic syndrome was quite logical.

And here is where the mice come closer to men ... because the modern diet rich in processed foods is low in fibre, which also causes a shift towards the pro-inflammatory gram-negative bacteria. As such a diet is also generally dense in calories and depleted in

anti-inflammatory micronutrients, it is no wonder that modern humans are so prone to gut inflammation, metabolic syndrome, overweight, diabetes and degenerative disease in general.

Professor Tom Sanders, the no-nonsense head of Diabetes and Nutritional Sciences at London's King's College, dismissed the emulsifier research out of hand as being based on unrealistic dosages. I am not so sure, and believe that in persons whose health and microbiome is already compromised by eating a Western diet, emulsifiers may well constitute an additional aggravating factor.

But I agree with Tom that one should concentrate on reducing calories and sugars, and switch to a pro-vegetarian diet or better, before focusing on specific food additives.



Most pre-packaged baked goods such as biscuits, cakes and cereal bars contain emulsifiers

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