

## Putting out the fire

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An Australian expert was heard to say recently that AIDS has been cured and HIV should now be thought of as a disease of inflammation. Neil McKellar-Stewart tends to agree.

More and more these days, health issues apart from HIV are taking centre stage in our lives. On top of the list are lifestyle changes that we are being encouraged to make to reduce our risk of contracting other illnesses.

One of the reasons why [PLHIV](#) [1] Person (or people) Living with HIV. This term is now preferred over the older PLWHA. are more susceptible to these diseases is thought to be because of the inflammation that HIV is constantly causing in our bodies – even when it is being successfully suppressed by [HAART](#) [2] Highly Active AntiRetroviral Therapy ??? aggressive treatment of HIV infection using several different drugs together..

Inflammation is a natural and usually desirable immune response to infection and cancerous cells. Ongoing, low-level (chronic) inflammation, however, has been strongly associated with cardiovascular disease, [liver](#) [3] A large organ, located in the upper right abdomen, which assists in digestion by metabolising carbohydrates, fats and proteins, stores vitamins and minerals, produces amino acids, bile and cholesterol, and removes toxins from the blood. disease and [diabetes](#) [4] [Diabetes mellitus] A disorder in which sugars in the diet cannot be metabolised into energy due to a lack of the enzyme insulin. Late-onset diabetes mellitus may be a long-term side effect of some anti-HIV drugs..

### The research story

The results of a major US study on inflammation in PLHIV have just been released. The study [1](#) looked at nearly 1000 positive people – 90% of whom were on treatment – and measured two blood ‘markers’ of inflammation: fibrogen and C-reactive protein (CRP). Fibrogen and CRP have been associated with a range of diseases in the general community. Higher levels of these inflammatory markers are associated with an increased risk of death, even when other risk factors (such as smoking, high [cholesterol](#) [5] An essential component of cell membranes and nerve fibre insulation, cholesterol is important for the metabolism and transport of fatty acids and the production of hormones and Vitamin D. Cholesterol is manufactured by the liver, and is also present in certain foods. High blood cholesterol levels have been linked to heart disease and may be a side effect of some anti-HIV medications. levels, hepatitis C infection, waist circumference and increased weight) are accounted for. Earlier research [2,3](#) suggested that PLHIV do tend to have elevated levels of fibrogen and CRP when compared to similar people without HIV but this study showed just how common it is. Approximately one-third of the PLHIV in the study had high levels of the two inflammatory markers and this included people whose CD4 counts were well above 500.

These findings confirm comments I read [4](#) recently in the International Journal of Infectious Diseases: ‘As treating clinicians, we may tell patients that their HIV disease can now effectively be considered to be in remission when their viral loads become undetectable and their CD4 cell counts improve, often to a reasonable or even normal range. We may even say that so long as patients do as they are told, they really should be fine. All they need to do is take all their pills; use condoms, sunscreen, and seat belts; quit smoking; eat five servings of fruits and vegetables per day; and exercise.’

Sound familiar? They then go on to say . . . ‘However, there are adverse outcomes associated with inflammation that initially may improve with effective ART but then may fail to normalise or may recur; in addition, other complications may appear later.’

The authors go on to discuss some of these complications of inflammation. They include changes in the way fats are processed (and stored), an increased risk of some cancers, minor losses in brain function (especially thinking and remembering), damage to blood vessel functioning, low levels of ‘good’ (HDL) cholesterol, and an increased risk of heart disease.

They summarise research [5](#) which found that younger PLHIV (aged between 33 and 44) who were on effective treatment had markers of inflammation that were 40% higher than those in the study without HIV.

In older PLHIV (those between 45 and 76 years old), inflammation biomarkers were up to 60% higher, markers of blood clotting were 50% higher and markers of reduced kidney function were 21% higher. Raised levels of such 'biomarkers' in the general population are linked to heart disease, diabetes and other diseases.

Not very cheery news, I know. And it all may seem very scary. Fortunately, however, through lots of research into a range of diseases, we know that there is a lot we can do to reduce some of the risk.

## Fibre, fibre, fibre!

Recent findings from a major European trial add to the growing body of evidence supporting the significant health benefits of a diet high in fibre.

This particular trial<sup>6</sup> looked at the benefits of psyllium husks and concluded that this simple and natural product not only reduces low-density lipoprotein LDL ('bad') cholesterol, triglycerides and blood pressure, but it also reduces some of the unhealthy products of 'oxidative stress'.



Oxidative

stress is a condition which occurs when the production of free radicals in the human body exceeds the body's ability to neutralise and eliminate them.

Oxidative stress can result from a lack of antioxidants or from an over-abundance of free radicals. A free radical is an atom or group of atoms that has at least one unpaired electron and is therefore unstable and highly reactive.

A review<sup>7</sup> of the research conducted in this field of nutrition concludes that a high level of fibre intake does have significant health-protective effects and disease-reversal benefits.

Compared to those who have a minimal fibre intake, people who consume generous amounts of dietary fibre are at lower risk for developing heart disease, stroke, [hypertension](#) [6] Persistently high blood pressure, an outwardly symptomless condition which carries an increased risk of serious illnesses such as stroke, heart disease and heart attack., diabetes, obesity, and gastrointestinal diseases (including reflux, irritable bowel syndrome, and some inflammatory bowel diseases such as Crohn's disease). Increasing the intake of high-fibre foods improves cholesterol levels, lowers blood pressure, improves blood glucose control for people with diabetes, aids weight loss, and of course improves regularity.

There is also some emerging research showing that consuming certain soluble fibres, such as 'inulin', enhances our immune function.

Inulin is a complex of sugars which is digested in the lower bowel (colon) and stimulates the growth of [bacteria](#) [7] A microscopic organism composed of a single cell. Many bacteria can cause disease in humans. In the gut, especially the so-called 'healthy' flora such as bifidobacteria. In various amounts, it is found naturally in Jerusalem artichoke, chicory, bananas, leeks, onions, garlic and asparagus. Inulin can also be taken as a food supplement.

Two 2009 reports out of the PREDIMED study (PREvención con Dieta MEDiterránea: a large [randomised](#) [8] A method based on chance by which study participants are assigned to a treatment group. Randomization minimizes the differences among groups by equally distributing people with particular characteristics among all the trial arms. The researchers do not know which treatment is better. From what is known at the time, any one of the treatments chosen could be of benefit to the participant 5-year [clinical trial](#) [9] A clinical trial is a research study to answer specific questions about vaccines or new therapies or new ways of using known treatments. Clinical trials are used to determine whether new drugs or treatments are both safe and effective. Carefully conducted clinical trials are the fastest and safest way to find treatments that work in people. Trials are in four phases: Phase I tests a new drug or

treatment in a small group; Phase II expands the study to a larger group of people; Phase III expands the study to an even larger group of people; and Phase IV takes place after the drug or treatment has been licensed and marketed. aimed at assessing the effects of the Mediterranean diet on the prevention of cardiovascular disease in Spain) found that dietary fibre reduces blood vessel damage<sup>8</sup> and other risk factors for heart disease. It also lowers bad and raises good (HDL) cholesterol.<sup>9</sup>

One review<sup>10</sup> of seven [clinical](#) [10]Pertaining to or founded on observation and treatment of participants, as distinguished from theoretical or basic science. trials which looked at the influence of dietary fibre found that six of the trials reported significantly lower CRP levels with increased fibre intake.

So, it's pretty basic: eat lots of fresh fruits and vegetables and consider additional fibre supplementation. One of the easiest (and costeffective) ways of doing this is with unflavoured psyllium husks which can be bought in the health food section of major supermarkets or at health food stores. Psyllium is included in products such as Metamucil, but note that these sorts of products may contain additional ingredients such as sucrose and artificial colours and flavour.

Three heaped teaspoons of psyllium stirred rapidly in a large glass of water and drunk quickly will normally be a sufficient supplement to a diet which includes lightly cooked vegetables, fruits and nuts. Be careful to take with plenty of water as psyllium swells when it comes into contact with liquids and forms a 'gluggy' mass which can stick in your throat unless it is diluted well.

Other dietary fibres you might consider are rolled oats or oat bran: there is a sound evidence base<sup>11</sup> that they reduce LDL ('bad') cholesterol, but recent evidence <sup>12</sup> suggests that they do not reduce inflammatory markers.

In these spring months, oatmeal porridge may still be part of your breakfast menu. Or you may prefer your oats in low-fat muesli with fresh fruit.

Inulin has received a lot of recent popular attention; it is the major active ingredient in some proprietary products (e.g., Fibersure, which is manufactured from chicory root). The evidence that it plays a role in a number of health issues is growing.<sup>1314</sup> Recent clinical trials on a small [cohort](#) [11]In epidemiology, a group of individuals with some characteristics in common. A cohort study is a special kind of clinical trial which looks at a treatment or treatment strategy in a cohort of people. indicate that supplementation up to 10g/day (2 teaspoons) with inulin derived from chicory root is safe and well tolerated.<sup>15</sup> For some people it does cause flatulence and bloating, so if you do use it it might be best to start with a lower amount each day.

## Fish oils

And finally a little word about fish oils. Recent Australian research<sup>16</sup> on dietary supplementation with omega-3 oils combined with plant sterols has confirmed their antiinflammatory effects. We all eat plant sterols in fruits, vegetables and oils; they are a group of chemicals which are somewhat like cholesterol in animal-based foods. They are contained in foods like wheat germ, rice bran, flax seeds, peanuts, banana, grapefruit, cucumber, onion, oats, potatoes and soy oil. In a recent Danish study,<sup>17</sup> PLHIV who took 3.4g of omega-3 fatty acids (EPA and DHA found in fish oil) had slightly reduced triglycerides and increased anti-inflammatory markers compared to those who didn't take fish oil.



The take-home story is that fish oil may help reduce some of the elevated blood sugars. To get a therapeutic dose, however, you may need to take 4-5 concentrated fish oil capsules or up to 8-10 normal-strength capsules daily.<sup>18</sup>

Just be sure to speak with a doctor or nutritionist before taking larger, therapeutic doses of any supplement.

In Australia, all fish oil supplements must be tested for heavy metals and must be below national standards, so mercury contamination should not be a problem. If fish oil helps you to reduce your triglycerides, daily supplementation should not pose any health risk for you; however, it's probably wise to check with your GP.

Check with your treating doctor, your local AIDS council or PLHIV organisation for information about how you can use diet and functional foods to ensure that you stay well with HIV as an inflammatory disease.

Photos: ISTOCKPHOTO.COM/ BrianBalster & MA-K

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[30]A clinical trial design in which neither the participating individuals nor the study staff knows which participants are receiving the experimental drug and which are receiving a placebo (or another therapy). Double-blind trials are thought to produce objective results, since the expectations of the doctor and the participant about the experimental drug do not affect the outcome; also called double-masked study., [placebo-controlled](#) [31]A method of investigation of drugs in which an inactive substance (the placebo) is given to one group of participants, while the drug being tested is given to another group. The results obtained in the two groups are then compared to see if the investigational treatment is more effective in treating the condition. *Scand J Infect Dis.* 2009; 41(10): 760-6. Abstract: <http://preview.ncbi.nlm.nih.gov/pubmed/19685375> [32] [www.integrative-medicine.com.au](http://www.integrative-medicine.com.au) [33] Which Fish Oil Should You Use? [Website content] 2010 February [34] [Downloaded 25/6/10]

- [Treating HIV](#)
- [nutrition](#)

**Links:**

- [1] <http://www.napwa.org.au/glossary/term/689>
- [2] <http://www.napwa.org.au/glossary/term/96>
- [3] <http://www.napwa.org.au/glossary/term/102>
- [4] <http://www.napwa.org.au/glossary/term/95>
- [5] <http://www.napwa.org.au/glossary/term/88>
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- [10] <http://www.napwa.org.au/glossary/term/475>
- [11] <http://www.napwa.org.au/glossary/term/477>
- [12] <http://preview.ncbi.nlm.nih.gov/pubmed/20581689>
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- [14] <http://www.napwa.org.au/glossary/term/122>
- [15] <http://preview.ncbi.nlm.nih.gov/pubmed/18356600>
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- [25] <http://preview.ncbi.nlm.nih.gov/pubmed/18979504>
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- [27] <http://jn.nutrition.org/content/vol137/issue11/index.dtl>
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