uni-vite Health Library

Maximising your Health Span

Dr Paul Clayton

Dr Paul Clayton is the former chair of the **Royal Society of Medicine's** Forum on Food and Health and Senior Scientific Advisor to the UK government's Committee on the Safety of Medicines.

Colin Rose

Colin Rose is the publisher of Dr Clayton's bestselling book *Health Defence* and a member of the **Royal Society of Medicine.** In this four part series, Colin summarises Dr Clayton's concept of preventative health care for a lay audience.

Part 3. Cutting the risk of Cancer

In a recent review in the *New England Journal of Medicine* the authors concluded:

'The war against cancer is far from over. The effect of new treatments for cancer on mortality has been largely disappointing. The most promising approach to the control of cancer is a national commitment to prevention.'

Amen to that – because men in the West have a 1 in 2 chance of contracting cancer at some point in our lives. And for women it is a 1 in 3 chance.

The role of diet & nutrition

The World Cancer Research Fund recommends a "predominantly plant-based diet" and lists fruits and vegetables as risk reducers for cancer. It recommends five or more portions of vegetables and fruit daily, infrequent red meat and claims that "30 to 40 per cent of cancer cases could be prevented by making healthier food and lifestyle choices".

A more specific clinical review (Cummings & Bingham '98) concluded: "Up to 80% of bowel and breast cancer may be preventable by dietary change."

Conversely there is a clear correlation between meat intake and cancer. Those countries that have the highest intakes of meat (eg Denmark, UK, Canada, US) have the highest incidents of cancer. Those countries with the lowest intakes of meat (eg Japan, Hong Kong, Chile, Portugal) have the lowest incidents of cancer.

Fruit & veg – how many portions?

Although fruits and vegetables are generally agreed to be protective, there is substantial disagreement as to how much we need to eat.

All the major organisations support the five-a-day strategy. However, they were taken aback by an extensive study (Hung et al '04) which indicated that around 5 portions of fruit and vegetables a day slightly reduced the risk of heart disease, but this level of intake had little effect on cancer.

The US-based National Cancer Institute (NCI) now recommends that women should eat 7 portions of fruit and vegetables a day; men are instructed to eat 9 portions a day. http://www.5adaygov/9aday .

In 2005 the US Department of Health and Human Services issued new guidelines, recommending that every adult should eat:

- 3 portions of whole-grain foods per day

Cancer experts now recommend 9 -11 portions of fruits and vegetables a day!

- At least 3 portions of dark-green vegetables such as broccoli or spinach per week
- 2 portions of orange vegetables such as carrots and squash
- 3 portions of legumes such as lentils and chickpeas.
- 6 portions of starchy vegetables such as potatoes, corn and green peas
- 7 portions of other vegetables such as tomatoes, onions and lettuce.

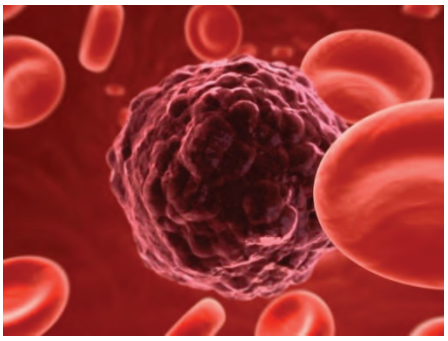
That is an admirable but challenging objective for most people. And why supplements can play an important part in preventative health care.

Cancer prevention via nutrition

We think of cancer as a single disease: a single accident produces a rogue cell that multiplies over time, growing into a tumour which eventually becomes large enough to cause symptoms. But it's not that simple.

A typical human body contains up to 100 trillion cells. Hundreds of these cells turn cancerous every day. So the real question is, why do so few cancers develop?

The answer is that we have very well organised and multiple defences against cancer – about 8 different defence systems; and when these defences are working properly, the vast majority of cancerous cells are neutralised before they can cause any problems.



A key to preventing cancer is to keep your multiple defences supplied with the nutritional elements they need to function properly.

Only an estimated 1 cancer cell in 4 million manages to overcome all of our many defences and grow successfully into a clinically significant entity **IF** your many defence systems are working well.

But if your defences are impaired, the odds may shorten, equating to a 1 in 2 life-time risk.

To begin with, it is actually very difficult for a cell to become cancerous. As each cell contains

many 'on' and 'off' switches, a single mutation is rarely sufficient to persuade a normal cell to 'jump the tracks'. It is estimated that between 6 and 8 genetic mutations must take place in order for a normal cell to become a cancer cell.

That's because our cells contain highly efficient DNA repair mechanisms which patrol the DNA looking for errors and repairing them. In addition our immune system will usually identify the cells as abnormal and kill them off.

Those cancer cells which manage to avoid these two lines of defence still have a long way to go ...

Our multiple anti-cancer defences – and why they are weakening

1. Antioxidants

Excessive free radicals cause DNA damage. Potentially dangerous free radicals are mopped up in the body by antioxidant enzymes and by antioxidant compounds such as vitamins C, E, K2, and nutrients such as lycopene, lutein and the flavonoids.

Flavonoids can create a protective 'shield' around DNA

The antioxidant enzymes that your body produces all require mineral 'co-factors' such as selenium, iron, copper, zinc and manganese. The characteristic Western diet is depleted (ie sub-optimal) in all of these and is typically inadequate in the antioxidants and nutrients from vegetables and fruits.

2. Enzyme detoxification

Our second line of defence consists of two groups of enzymes called Phase 1 and Phase 2 enzymes. The main role of Phase 2 enzymes is to make carcinogens more easily excreted from the body.

The Phase 2 enzymes are activated by various foods such as broccoli, cabbage and Brussels sprouts which contain powerful cancer-fighting nutrients.

Phase 2 enzymes are also activated by limonoids (found in citrus fruits), by coumarins (found in strawberries, apricots, cherries and cinnamon) and by turmeric. Turmeric contains curcuminoids, which not only activate the Phase 2 enzymes but can also switch off the potentially dangerous Phase 1 enzymes.

3. Suppression of oncogenes

There are certain genes in our DNA (called oncogenes) which switch cancers on. If these genes are methylated (chemically altered) they become less active. This methylation process depends on adequate dietary intake of nutrients such as the B vitamin family – B6, B12, folic acid and betaine (B10).

The Western diet is low in these nutrients, as shown by the prevalence of excess homocysteine – an unhealthy shift in blood chemistry which occurs when there are insufficient of B family vitamins in the diet. So this line of defence is below par, too.

B vitamins are found in whole grains, fish, eggs, kidney and liver, and meat.

4. 'Friendly' bacteria

A healthy population of bacteria in the gut is a powerful anti-cancer defence system; and by eating the right diet, (ie one which contains significant levels of pre-biotic fibre), the healthy bacteria are encouraged to grow and protect us.

Prebiotic fibre is found in legumes, lentils, beans, and chicory. Prebiotics have been shown to reduce the incidence of colorectal, bowel and breast cancer.

The Western diet is low in pre-biotic fibre; and so this line of defence is also impaired.

5. The innate immune system

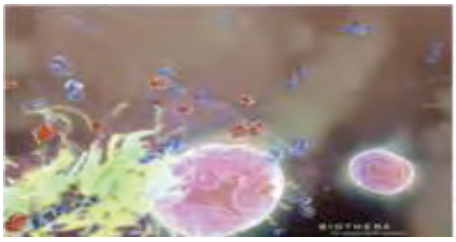
It is not commonly realised that we have two immune systems.

The **Acquired Immune System** responds to threats that it has experienced before – for example a bacteria or virus - and it produces antibodies to fight that threat.

The **Innate Immune System** evolved first. It is a 'first line of defence' and consists largely of macrophages and Natural Killer Cells, whose main function is to kill cancer cells.

Many researchers have shown that the innate immune system's ability to kill cancer cells is boosted by a compound called 1-3, 1-6 beta glucans derived from baker's yeast. It is also enhanced by vitamin D and, in certain situations, by beta sitosterol, derived from seeds and nuts.

A virus is attacked (above) by a Natural Killer Cell that has been primed by 1-3, 1-6 beta glucans (Wellmune)

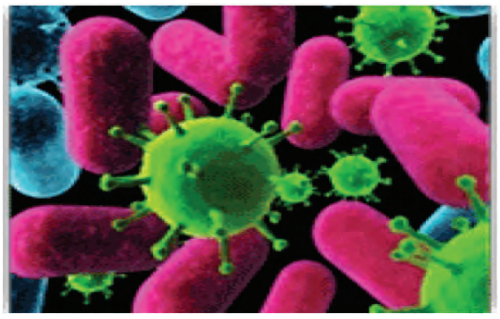


Above the killer cell destroys the virus.

Amounts of 1-3, 1-6 beta glucans in our diet have fallen greatly due to improved standards of food storage and hygiene. This has ensured that levels of yeasts, which contain beta glucans in their cell walls, are far below those we used to encounter before canning and freezing technology (and bactericidal cleaners) became universal.

So the Innate Immune System line of defence is normally impaired also.

6. The acquired immune system



Antibodies (represented purple) are produced to deal with a viral threat (green) that the body has encountered before.

This more recently evolved part of the immune system has 'memory' and is able to mount very specific antibody defences.

This system requires adequate calories and protein, but also omega 3 fatty acids and micronutrients like copper and zinc, the vitamins C, K2 and E (especially in the form of tocotrienols), and beta carotene in order to function at peak effectiveness.

7. Connexins in cell membranes

When normal cells come into contact with each other they stop growing. Molecules on the cells' membranes, called connexins, prevent the contacting cells from growing.

Cancer cells generally have lower levels of connexins on their membranes, and therefore when they come into contact with other cells they do not stop growing.

Some nutritional elements, however, have the ability to force cancer cells to renew their connexins; and thus stop growing. The carotenoids (eg. beta carotene, lycopene and lutein) are particularly effective in forcing cancer cells to re-grow connexins.

Lycopene is found in cooked tomatoes, and good sources of lutein are, kale, spinach, Brussels sprouts and chard. (High intakes of lutein are also associated with lower incidences of age related macular degeneration – a leading cause of blindness in over 60s).

Beta carotene is found in carrots, of course, but also in sweet potatoes, kale, spinach and leafy green vegetables.

8. Turning cancer cells back to normal – and stopping them dividing

When a cell turns cancerous it becomes formless and gradually loses its characteristic features.

There are a number of elements in our diet that seem to have the ability to force cancer cells to either commit suicide (called apoptosis), or to regain their normal form. Dietary elements which have the ability to do this include vitamins D and A, the carotenoids such as lycopene, the isoflavones derived from soy, such as genistein. Prebiotics can also trigger this process.

Some compounds not only induce apoptosis (ie they force the cancer cell to die), they can also stop cancer cells from dividing. They include flavonoids such as the curcuminoids, a compound

in green tea, isoflavones (derived from soy), carotenoids such as lycopene, a compound called salicylate (found in aspirin, blackcurrants, cherries and turmeric), selenium, omega 3 fatty acids, plus compounds found in broccoli, cauliflower, kale, collard greens, Brussels sprouts, cabbage.

9. Physical barriers to metastasis

Cancer begins to become really dangerous when it metastasises – ie. spreads from its original site. To do that it must break through a fine 'mesh' of micro-fibres which hold all of our cells in place.

As this 'mesh' is constantly being broken down, it must also constantly be repaired. This requires a variety of micronutrients including vitamins C and B6; the trace elements zinc, copper and manganese; and various amino sugars including glucosamine.

In addition some compounds in foods can block the chemicals that cancer cells use to break through the mesh. Especially important are the compounds found in dark berry fruits, like blackcurrant, blackberries, raspberries and also red cabbage.

Nutritional recommendations

Cells in our bodies are constantly becoming cancerous. The chances of these cancer cells surviving 'successfully' depend on their ability to overcome our multiple lines of anti-cancer defence. The way we live and eat has left these defence lines below par. This a reason for the historically high levels of cancer we see today.

However, if we provide our multiple defence systems with the multiple micro-nutrients they need to operate as they should, far more cancerous cells would be killed off before they could become clinically overt, and we could really start to win the war against cancer.

An ideal diet would bathe our cells in a sea of anti-cancer nutrients, and shore up all of our anti-cancer defences. In addition to as many daily fruits and vegetables as you can manage, Dr Clayton recommends an anti-cancer supplement that includes:

- Support for the Aquired Immune System from a wide spectrum of **vitamins and minerals** at optimum not just RDA levels - Vitamin K2 alone may reduce the risk of prostate cancer by 35%.
- **Anti-oxidants** – vitamin C, vitamin E (in the form of mixed tocoperols and toctrienols), beta carotene, lutein, lycopene, and the minerals zinc and selenium.
- **Flavonoids** – from green tea and berry fruits.
- **Curcuminoids** from turmeric
- **1–3, 1–6 beta glucan**, (plus shiitake and maitake mushrooms in the diet). A recommended beta glucan source is Wellmune (which has been granted a patent for use in certain cancer therapies) and which is available in a supplement called Immunoshield www.immunoshield.com
- **Lycopene and soy isoflavones**

More information on anti-cancer foods and how to combine them in easy-to-prepare dishes can be found in Dr Clayton's ***Health Defence Cookbook*** via www.healthdefence.com

Taking into account estimates currently provided by the WHO on the impact of diet on cancer risk, Dr Clayton has estimate that such a diet / programme could reduce the overall risk of clinical cancer by perhaps as much as 70%. Once again regular exercise is also important.

Note

Dr Clayton has advised Uni-Vite Healthcare Ltd on the formulation of a supplement called NutriShield. **NutriShield** supplies the full range and levels of nutrients that we believe will optimally support the body against the threat of most degenerative diseases and therefore extend healthy life expectancy. See www.nutrishield.com.

"Dr Paul Clayton has developed a multitude of creative and innovative solutions for the promotion of human health and wellbeing."
David Richardson, Visiting Professor, Food and Nutrition Science, University of Newcastle on Tyne
"An invaluable resource for those who want to improve their quality of life."
Maurice Hanssen, author of E for Additives

NOTE: To make this short series easier to read, we have placed the references at the end of Part 4.

Look out for Part 4 – Cutting the risk of Dementia

Please note : It is important that you do not refrain from taking any prescribed medication, or embark on any new treatment without first discussing it with your doctor or health advisor.