

A diet of hopes and half-truths

→ Peter McIntyre

The media often hype the benefits of ‘superfoods’ to protect against or even cure cancer. But keeping weight down and taking exercise are known to offer far greater protection than any individual food or nutrient – however full of antioxidants it may be. How can health professionals support their patients to sort fact from fiction and make the necessary changes?

The health messages that bombard our daily lives are ‘balanced’ between scare stories and miracle cures. Mass media, the main source of knowledge for most people, often oversimplify research findings to the extent that they present exaggerated and misleading accounts.

Perhaps nowhere is this more so than in reports of the ability of ‘superfoods’ to protect us from disease, especially cancer. Recent claims have been made for the protective, or even healing, powers of kiwi fruit (“repair damage to our DNA”), mushrooms, oregano, potatoes (“inhibit tumour growth”), tea, cauliflower, tomatoes and vitamin C.

Good foods all of them – but none is an adequate shield against cancer, still less a substitute for treatment.

People who have been diagnosed with cancer often focus on diet and complementary therapies, because these seem to be more under their control than chemotherapy, radiotherapy or surgery, and because patients have a natural desire to do everything possible to try to get better.

But the public health messages that people receive from the media, and perhaps even from the ‘five a day’ campaigns to increase consumption of fruit and vegetables, run counter to what the latest research says about cancer and diet.

While alcohol and red meat have been linked to some cancers, the overall message is that body weight and levels of exercise are much more significant than individual foods. Diet is important, but the link between diet, exercise, body mass and cancer is complex and cannot easily be picked apart.

As Walter Willett, professor of Epidemiology and Nutrition at Harvard School of Public Health and leader of the Nurses’ Health Study, described the current state of knowledge: “staying lean and active is the most important thing one can do to prevent cancer, after not smoking.” And while he finds a modest cancer prevention benefit from eating more fruit and vegetables, “it’s not the ‘big bang’ it was thought to be 15 or 20 years ago.”

In 2007, the World Cancer Research Fund and the American Institute for Cancer Research put



being overweight as the number one risk for cancer after smoking (World Cancer Research Fund 2007). Their report found convincing evidence to link obesity to colorectal, endometrial, oesophageal, kidney, liver, pancreatic and postmenopausal breast cancer. Having a fat stomach and eating red and processed meat are risks for colorectal cancer, but evidence of the protective powers of individual foods was equivocal. Its recommendations put emphasis on exercise and weight reduction.

The dangers of being overweight after a diagnosis of cancer are significant. A study reported in *Cancer* (Wright et al., February 2007), found that severely obese men had twice the risk of death

showed a 12% lower incidence of cancer for those who were two points 'better' in terms of the Mediterranean diet. In other words, reducing the amount of meat in the diet and increasing the amount of peas, beans and lentils, or substantially increasing intake of vegetables and substituting olive oil for butter, can produce a 12% reduction in risk.

Dimitrios Trichopoulos, of the Harvard School of Public Health and the Hellenic Health Foundation, reports on the Greek study that is contributing to the Europe-wide EPIC study of cancer and nutrition in half a million Europeans. He emphasises the 'traditional' Mediterranean diet eaten from the time of the Ancient Greeks to the start of

High risk or low risk? The five-a-day message has been heavily promoted, but the evidence shows it is diet as a whole rather than individual foods that matter – and exercise and keeping your weight down are crucial

from prostate cancer after diagnosis, even though they were not at increased risk of developing prostate cancer in the first place.

The evidence on diet is not all negative. Studies in Greece, Italy, Sweden and the US have shown that a 'traditional Mediterranean diet' does substantially reduce the risk of cancer, and indeed a US study (Mitrou et al., *Arch Intern Med* 2007) found that those who followed a Mediterranean diet had lower mortality from any cause.

A recent study by Benetou et al. (*Br J Cancer* 2008), which followed more than 28,000 Greeks for eight years,

Health messages people receive from the media run counter to what the latest research says about cancer

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package holidays in the 1960s, not the diet in most of the Mediterranean region today.

The diet must also be seen as a whole. “Our philosophy is that essentially the effects of diet should be looked at as an integrated entity, rather than as specific foods. There have been several studies indicating that the Mediterranean diet is effective in increasing life expectancy, whereas individual food groups or food items seem to have little effect, if any.”

Although his study may eventually track how those on different diets progress after a diagnosis of cancer, Trichopoulos says that it is difficult to separate dietary factors from the quality of treatment. “We have to recognise and make it clear that we don’t really know if the factors that affect survival or metastatic-free survival are the same dietary factors that are relevant to the occurrence of cancer. Cancer has a very long natural history and perhaps different factors operate early on and later on.”

INDIVIDUAL NUTRIENTS FAIL

What is clear is that attempts to package individual ingredients (‘supernutrients’) to protect against cancer have largely failed, and some have been disastrous.

In the 1990s, some people at high risk of lung cancer were given concentrated doses of beta carotene, an antioxidant found in carrots, spinach and broccoli. The ATBC Prevention Trial in Finland showed an 18% increase in lung cancer and an 8% increase in deaths

in those who had taken beta carotene and vitamin E, while a parallel (CARET) trial in the US was even worse – 28% more lung cancers and 17% more deaths in those who took beta carotene with vitamin A.

In 2007, an American study to test whether folic acid, found in green vegetables and potatoes, could prevent early-stage colon cancer instead found a slightly higher rate of colorectal adenomas (such as polyps) in the test group, leading to higher rates of the advanced lesions that lead to colorectal cancer.

A 2007 study of 28,000 men in the US did not find that lycopene (the ‘wonderfood’ in tomatoes) offered protection against prostate cancer.

Claims made for vitamin C as either a preventative or a cure for cancer remain unsubstantiated.

BREAST CANCER AND DIET

One of the most puzzling areas of study has been on the role of diet in women who have been diagnosed with breast cancer. Two large and well-respected studies appear to contradict each other.

The WINS study reported in December 2006 on 2,437 women who had been treated for early-stage breast cancer and randomised to a lower-fat or their usual diet (Chlebowski et al., *JNCI* 2006). At the end of five years, breast cancer returned in 9.8% of women on the low-fat diet, against 12.4% in the control group – a 24% reduction in risk. The following year, the Women’s Healthy Eating and Living

The traditional Mediterranean diet

The Greek study measures a traditional Mediterranean diet by nine factors:

1. The ratio of mono-unsaturated fats (as in olive oil) to saturated fats (as in red meat and biscuits)
- 2–5. High levels of fruit, vegetables, legumes and unrefined cereals
6. Moderate to high levels of fish
7. Low levels of meat
8. Low to moderate consumption of dairy products
9. Moderate consumption of ethanol (in wine)

(WHEL) study (Pierce et al., *JAMA* 2007) came up with opposite results. After four years, there was virtually no difference in the rate of metastases in women on a low fat/high vegetable, fruit and fibre diet, compared with women in the control group.

Perhaps one critical difference was that in the WIN study the diet group experienced significant weight loss, while in the 2007 WHEL study both the diet and control group experienced small weight gains. It is also significant that an earlier WHEL study showed that women who had been treated for breast cancer and who combined exercise (six half-hour walks a week) with a healthy diet (five servings of fruit and vegetables a day) halved their mortality rate compared to other women.

DIET, WEIGHT AND WAIST SIZE

Franco Berrino and his team at the National Cancer Institute in Milan say that overweight and obesity can be key factors in hormonal breast cancer after menopause (*Ann NY Acad Sci*, 2006). At greatest risk, says Berrino, are women who have metabolic syndrome – in other words any three of the following: low good cholesterol, high triglycerides, high glucose levels, high blood pressure and large waist circumference. “In short, sedentary lifestyle, overweight and a fat-rich diet are major determinants of metabolic syndrome which in turn is associated with insulin resistance and increased androgenic activity.”

Berrino has shown in two (smallish) studies of Italian women (the Diana studies) that a Mediterranean and macrobiotic diet can reduce body weight, metabolic syndrome and the bioavailability of sex hormones and growth factors. A group of 104 healthy women showed decreases of 29% and 23% in the amount of free testosterone and free oestradiol in their blood after five months of eating recommended foods. A study of 110 breast cancer patients showed reductions of 10% in testosterone

The Diana study recommendations

This is the advice given by the Franco Berrino's team at the National Cancer Institute in Milan to women who have been diagnosed with breast cancer:

1. Reduce calorie intake, by choosing filling foods such as unrefined cereals, legumes, and vegetables
2. Reduce high glycaemic index and high insulinaemic index foods, such as refined flours, potatoes, white rice, cornflakes, sugar and milk, and use instead wholegrain cereals (unrefined rice, barley, millet, oat, buckwheat, spelt, quinoa), legumes (including soya) and vegetables (except potatoes)
3. Reduce saturated fat (in red and processed meat, milk and dairy products), using instead vegetable fats such as olive oil, nuts and seeds
4. Reduce protein intake, especially animal proteins (except fish)

and 6% in oestradiol after a year on the diet.

Knowing what changes to make is one thing – making them is another. In the first Diana study, the women lost an average of 4 kg each with support from the Milan team.

“We never talk to these women about counting calories,” says Berrino. “The recommendation was: eat as much as you desire, but eat only this type of food, which is highly satiating. The strategy is to eat only low-calorie-dense food. No drink containing sugar. No flour made with refined wheat or potatoes, which are very high on the glycaemia index.”

The next study (Diana 5) of both diet and exercise will involve 2,000 Italian breast cancer patients who have either metabolic syndrome or high levels of testosterone or insulin in the blood. Berrino says that, whereas in the small trials they were able to give women support to stay on the diet, in the large trial it will prove difficult, especially if a husband or children do not want changes in the diet at home. “The world now behaves in a different way,” says Berrino. “If you go to a restaurant, it is difficult to find what we recommend.”

One problem is that people do not report everything they eat. Berrino says, “If you look at studies of this kind and you compute how many kilograms

“It could be especially difficult if a husband
or children do not want changes in the diet at home”

WORLD CANCER RESEARCH FUND RECOMMENDATIONS

1. Be as lean as possible without becoming underweight
2. Be physically active for at least 30 minutes every day. Any type of activity counts – try to build some into your everyday life
3. Avoid sugary drinks. Limit consumption of energy-dense foods, particularly fast foods and processed foods high in added sugar, low in fibre or high in fat
4. Eat a greater variety of vegetables, fruits, wholegrains and pulses such as beans. As well as five a day of fruit and vegetables, try to include wholegrains like brown rice, wholemeal bread and pasta and/or pulses with every meal
5. Limit consumption of red meat (beef, pork and lamb) and avoid processed meats
6. Limit alcoholic drinks (if any) to two a day for men and one a day for women
7. Limit consumption of salty foods and food processed with salt
8. Don't use supplements to protect against cancer (supplements may be advisable for other reasons)
9. It's best for mothers to breastfeed exclusively for up to six months
10. After treatment, cancer survivors should follow the recommendations for cancer prevention. The Report found growing evidence that maintaining a healthy weight through diet and physical activity may help to reduce the risk of cancer recurrence. All cancer survivors should receive nutritional care from an appropriately trained professional

they should have lost if what they declare is true, they have lost perhaps two kilograms, and they should have lost 20! It is funny, but it is not cheating. It is just the psychological aspect; you declare what you should eat not what you do eat. For measuring compliance, you must use objective studies, scales, cardio respiratory fitness and so on.”

HOW DO YOU MAKE CHANGES?

Heather Bryant, chair of the Institute of Cancer Research Advisory Board, at the Toronto Sunnybrook Regional Cancer Center in Canada, warned at the World Cancer Congress in Geneva that people find it

hard to act on dietary advice. What is a healthy diet? What is red meat? Her team encourages people to use their mobile phones to take pictures of what they eat, so they can show their dietician what a portion means to them and what they are actually eating. “Just because people buy something does not mean that they eat it. The amount of broccoli in landfill has increased in recent years!”

She summarises the key messages as: “Be as lean as possible within a normal range,” and “limit energy-dense and sugary foods and drinks.” People should be given specific advice – increase fruit and vegetables, decrease fat – rather than being told to eat a healthy diet.

Steve Pratt, a dietician and exercise physiologist with the Cancer Council in Western Australia, says that many patients need individual advice while undergoing treatment. “There are a lot of cancer patients for whom the message is the same healthy eating message you give the rest of the population: plenty of fruit and vegetables, plenty of plant-based foods. Other cancer patients need much more individualised clinical advice.

“There will be people who have relatively trouble-free treatment and a transition into survivorship in which we hope they adopt a healthy lifestyle. Others get knocked around by treatment and will have the nausea, fatigue and the loss of appetite that can accompany radiation therapy and chemotherapy.

“For many people, however, particularly those treated for breast or prostate cancer, one of the big concerns is weight gain. The drugs that are commonly used in the treatment of those two conditions interfere with hormone metabolism, and can actually lead to quite significant weight gain, compounded by feelings of fatigue. It can be a vicious cycle. The key is to break it somehow.

“Patients are asking for advice on these genuine and legitimate concerns. But diet and exercise fall between the cracks in the treatment world, though they do have an evidence base and are legitimate adjuvant therapies.”

People need support as well as advice. “It is hard to make long-term changes. People often revert to their original lifestyle habits, whether diet or exercise.”

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