

Chapter 12

NUTRITIONAL THERAPY

Nutrition is not just the province of practitioners of alternative medicine or orthodox medicine. We are all vitally interested in our food and diet. Diets are critically important in the management by doctors and dietitians of a number of diseases. These include an appropriate diet in patients with diabetes mellitus, weight loss and salt restriction for patients with hypertension, reduction of cholesterol in patients with high cholesterol levels in the blood, and avoidance of gluten by those suffering from coeliac disease.

This chapter is not going to discuss such matters. Rather, we will look at various dietary practices promulgated by practitioners of alternative medicine. The variations on this theme are almost as innumerable as the hairs on your head. Consequently, in the space available, it is possible to provide only a cursory glance.

Of all the thousands of substances involved in the chemical reactions occurring in the human body, only about fifty are “essential”. This means that they cannot be made by the body so must be supplied in the diet. The rest are synthesized from the major nutrients that we eat - fat, protein and carbohydrate. The essential nutrients include a variety of vitamins, minerals, essential fatty acids (linoleic and arachidonic acids) and nine essential amino acids [building blocks for protein] (histidine, leucine, lysine, isoleucine, methionine, phenylalanine, threonine, tryptophane and valine). Adequate amounts of all of these substances are consumed in the normal well-balanced diet.

Do you need to take vitamin supplements?

Vitamins are a group of essential organic substances that are required in very small amounts for cells in the body to metabolise, that is, to function properly. Vitamins were generally discovered when illnesses were found to be due to the absence of a particular substance. This usually occurred when the vitamin concerned was absent from the diet. An exception is vitamin B₁₂ deficiency which is almost always due to an abnormality of the stomach or small intestine. The major deficiency states and their key clinical symptoms are listed in Tables 1 and 2.

Thus, in western society, provided a well-balanced diet is eaten, vitamin deficiency states are most uncommon with the exception of pernicious anaemia. Deficiencies of some vitamins such as Vitamin E and pantothenic acid are exceedingly rare under any circumstances. Apart from these deficiency syndromes, about 25 diseases have been described which are due to babies being born with defects in their metabolism but which

Table 1. The vitamins, their daily recommended allowances and the syndrome that result when they are deficient.

| Common name | Other name | Daily requirement | Deficiency syndrome |
|-------------------------|---------------|-------------------|--------------------------|
| vitamin A | carotene | 1 mg | night-blindness |
| vitamin B ₁ | thiamine | 1.5 mg | beriberi |
| vitamin B ₂ | riboflavine | 1.5 mg | ariboflavinosis |
| vitamin B ₆ | pyridoxine | 1.5 mg | |
| vitamin B ₁₂ | cobalamin | 0.002 mg | pernicious anaemia |
| vitamin C | ascorbic acid | 50 mg | scurvy |
| vitamin D | calciferol | 0.01 mg | rickets, osteomalacia |
| vitamin E | tocopherol | 10 mg | |
| vitamin K | | 0.05 mg | bleeding |
| folic acid | folacin | 0.2 mg | anaemia |
| nicotinic acid | niacin | 20 mg | pellagra |
| pantothenic acid | | 0.005 mg | |
| biotin | | 0.05 mg | |

respond to treatment with very large doses of vitamins.¹

In recent years, it has become popular to take a number of vitamins in doses exceeding the normal daily requirement (Table 1). Indeed, it has been estimated in the United States of America that more than 50% of all adults take vitamin and/or mineral supplements. The consumption of large or very large doses of vitamins is sometimes called *megadose therapy* where the term “mega” is used loosely to mean “a large amount” rather than a million times the recommended daily allowance.² Such treatment is also sometimes called *orthomolecular therapy*. This term was coined by Linus Pauling to mean “right” molecule. The theory is that large doses of vitamins drive the body’s metabolic functions in a favourable direction, but there is little evidence to support this idea.

¹Rudman D, Williams PJ. Megadose vitamins: use and misuse. *New England Journal of Medicine* 309: 488-490, 1983

²DiPalma JR, McMichael R. Assessing the value of meganutrients in disease. *Bulletin of the New York Academy of Medicine* 58: 254-262, 1982

Table 2. Major symptoms of the various vitamin deficiency syndromes.

| | |
|-------------------------------------|---------------------------------------|
| - ariboflavinosis | cracked lips, raw tongue |
| - beriberi | heart failure, nerve damage |
| - folic acid deficiency | anaemia |
| - pellagra | skin changes, diarrhoea, dementia |
| - pernicious anaemia | anaemia, nerve and spinal cord damage |
| - rickets | deformed limbs |
| - scurvy | bleeding gums, skin haemorrhages |
| - vitamin B ₆ deficiency | skin changes, sore tongue |
| - vitamin K deficiency | bleeding |

Four of the vitamins - A, D, E and K - are soluble in fat and are stored to a variable extent in the body. These vitamins are more likely to cause toxic reactions when taken in excess and diseases due to overdosage are well-recognised for vitamins A and D. The rest of the vitamins are water-soluble and are readily excreted in the urine so they are not stored in the body. Toxic reactions to these vitamins are only likely to occur if taken in very large amounts for a long time.

Antioxidants

One of the main reasons people take vitamin supplements is because they are antioxidants. What are antioxidants? Biochemical activity in the body produces substances called free radicals which have the capacity to change the chemical nature of certain substances by a process called oxidation. It is believed that these oxidised products may predispose to both atherosclerosis (hardening of the arteries which may cause heart attacks and strokes) and various forms of cancer (Figure 1). It has been suggested that if the concentration of free radicals were reduced, the chances of developing cancer and atherosclerosis would fall. It has also been postulated that ageing may be retarded.

Substances which eliminate free radicals are called antioxidants. Three vitamins - A, C and E - are antioxidants. Of these, vitamin E is the most powerful. Do they work? The jury is still out but there is some suggestive evidence.^{3,4} So much so, in fact, that Dr Robert Reynolds from the department of nutrition and medical dietetics at the University of Illinois has called for "a re-evaluation of the underlying philosophy of Recommended

³Meyers DG, Maloley PA. the antioxidant vitamins: impact on atherosclerosis. *Pharmacotherapy* 13: 574-582, 1993

⁴Barber DA, Harris SR. Oxygen free radicals and antioxidants: a review. *American Pharmacy* 34:26-35, 1994

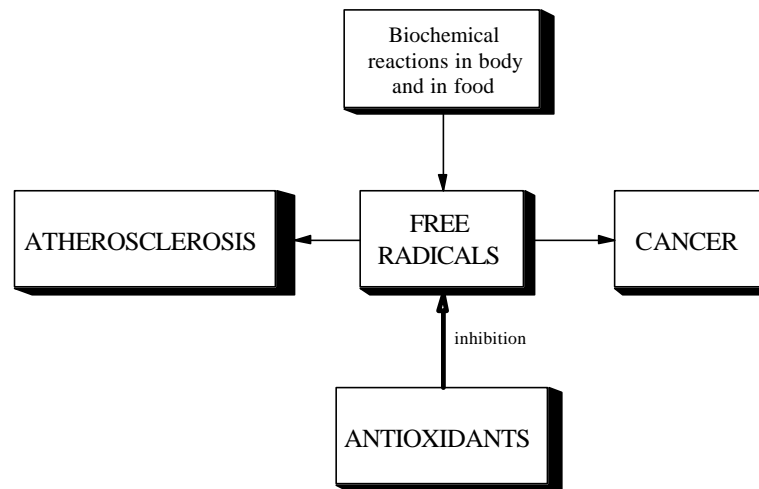


Figure 1. Possible interactions between antioxidants, free radicals, atherosclerosis and cancer.

Dietary Allowances, or consideration of their abolition, based on newly emerging data".⁵

Vitamin A

Vitamin A and other dietary substances (such as β -carotene) which can be turned into vitamin A have antioxidant effects. Epidemiological studies have yielded conflicting but generally depressing results on its effect in preventing heart disease or the development of cancer.^{6,7}

- A trial in China suggested that β -carotene (which is converted in the body into vitamin A) may be partly protective against stomach and gullet cancer.
- A study in the United States found that increased vitamin A was associated with a reduced risk of lung cancer.
- On the other hand, another trial in Finland of 20,000 male smokers found that β -

⁵Reynolds RD. Vitamin supplements: current controversies. *Journal of the American College of Nutrition* 13: 118-126, 1994

⁶Ewy, GA. Antioxidant therapy for coronary artery disease: don't paint the walls without treating the termites! *Archives of Internal Medicine* 159: 1279-1280, 1999

⁷Herberg S, Galan P, Preziosi P. Antioxidant vitamins and cardiovascular disease: Dr Jekyll or Mr Hyde? *American Journal of Public Health* 89: 289-291, 1999

carotene had no effect on heart disease and actually increased the incidence of lung cancer.

- Twenty thousand US doctors took 50 mg of beta carotene on alternate days for 12 years. There was no effect on heart disease
- A study of smokers and non-smokers exposed to asbestos found an increased risk of lung cancer in smokers who took vitamin A.

Vitamin A is probably the most toxic of all the vitamins when taken in high doses. Acute overdosage may cause nausea, vomiting and headache. Chronic ingestion of more than 30 mg a day may lead to bone and joint pain, hair loss, dry cracked lips, itch, weight loss and enlargement of the liver and spleen. It may also cause abnormalities in the baby when a pregnant mother takes too much vitamin A. β -carotene, the precursor of vitamin A, may be a more effective antioxidant and cause less toxicity than vitamin A. The International Agency for the Research in Cancer in Lyon, France reviewed all the evidence and found that vitamin A does not prevent cancer.⁸ Since it may actually increase mortality, large supplements with vitamin A are probably best avoided.

Vitamin B₆

It has been suggested that the administration of 100-200 mg of vitamin B₆ a day for three months may relieve the symptoms of carpal tunnel syndrome. This syndrome consists of tingling and pain in the fingers due to compression of nerves passing through the wrist. However, the results of controlled trials have been contradictory.⁵ There has been a suggestion that daily supplementation with 20 mg for three months may improve memory a little in elderly men.⁹ However, large doses of vitamin B₆ can be toxic. Consumption of 25 mg a day can antagonise some drugs used for the treatment of Parkinson's disease or epilepsy. If several grams a day are taken for prolonged periods, there may be incoordination and loss of feeling in the limbs.¹

Vitamin C

The recommended daily dosage for vitamin C is about 60 mg a day. When the daily dose rises above 200 mg (0.2 g), the blood level of vitamin C rises and it is excreted in the urine. Higher doses are therefore illogical as they are simply excreted by the kidneys rather than being stored in the body. If you take more than 2 g each day over a long

⁸Vainio H, Rautalahti M. An international evaluation of the cancer preventive potential of vitamin A. *Cancer Epidemiology, Biomarkers and Prevention* 8: 107-109, 1999

⁹Deijen JB, van der Beek EJ, Orlebeke JF, van den Berg H. Vitamin B-6 supplementation in elderly men: effects on mood, memory, performance and mental effort. *Psychopharmacology* 109: 489-496, 1992

period, you are at risk of causing diarrhoea or giving yourself stones in the kidney and bladder. The latter occurs because vitamin C (ascorbic acid) acidifies the urine and makes oxalate in the urine precipitate to form stones. However, megadoses of vitamin C have been suggested for the common cold and for cancer.

The common cold

In 1970, Linus Pauling, twice a Nobel laureate, popularised the idea that large doses of vitamin C would prevent the common cold.¹⁰ The notion caught on and the public has bought vast quantities of vitamin C, consuming 2-10 g each day to either prevent or reduce the severity of the common cold. Does it work? Dr H Hemila from the department of public health at the University of Helsinki in Finland has reviewed the evidence.¹¹ There have been 21 placebo-controlled trials of 1 g or more per day. Vitamin C in these doses does not appear to reduce the likelihood of catching a cold but the length and severity of symptoms are reduced by nearly 25%.

Cancer

Dr Pauling also recommended the use of high doses of vitamin C to prevent and treat cancer.¹² This idea was advanced upon the basis of uncontrolled clinical observations. Subsequent studies have indicated that large doses of vitamin C are not a useful treatment for established cancer.¹³ The data about the prevention of cancer are conflicting.¹⁴ High intakes of vitamin C may be associated with lower rates of cancer of the stomach, oesophagus, larynx, mouth and cervix but may be related to increased rates of cancer of the bladder.

High blood pressure

A group of investigators from the Boston University School of Medicine and the Linus Pauling Institute at Oregon State University in the United States studied the effect of vitamin C on high blood pressure. They conducted a randomised, double-blind, placebo-

¹⁰Pauling L. *Vitamin C and the common cold*, WH Freeman, San Francisco, 1970

¹¹Hemila H. Does vitamin C alleviate the symptoms of the common cold? - a review of current evidence. *Scandinavian Journal of Infectious Diseases* 26: 1-6, 1994

¹²Cameron E, Pauling L. Supplemental ascorbate in the supportive treatment of cancer: prolongation of survival in terminal human cancer. *Proceedings of the National Academy of Sciences* 73: 3685-3689, 1976

¹³American Cancer Society. Questionable methods of cancer management: 'nutritional' therapies. *Ca-A cancer Journal for Clinicians* 43: 309-349, 1993

¹⁴Mirvish S. Effects of vitamins C and E on n-nitroso compound formation, carcinogenesis and cancer. *Cancer* 58 (supplement 8): 1842-1850, 1986

Table 3. Reduction in mortality in men and women who took high doses of vitamin C for a long period.

| | Reduction in death rates | |
|-----------------------------|--------------------------|---------|
| | Males | Females |
| overall | 35% | 10% |
| from cancers | 22% | 14% |
| from cardiovascular disease | 42% | 25% |

controlled trial in 39 patients with high blood pressure. The blood pressure fell by about 10% in patients who took 500 mg of vitamin C a day.¹⁵ This study was then criticised by a number of correspondents to *The Lancet* but it is clearly worth further investigation.

Overall mortality

A fascinating study by James E Enstrom and colleagues from the school of public health of the University of California in Los Angeles examined the relationship between vitamin C intake and mortality over 10-13 years in more than 11,000 adults aged between 25 and 75 years. High intakes of vitamin C were associated with a reduction in death rates (Table 3). This effect was more prominent in men than in women.¹⁶ The major difficulty in understanding this paper is in deciding what is a high vitamin C intake as it is not defined simply. Anyone who eats fruit and vegetables each day and takes vitamin supplements would probably qualify as having a high intake of vitamin C.

Vitamin D

Vitamin D is unique in that not only is it present in the diet but it is also made in the skin in the presence of ultraviolet light. Thus, it does not meet the strict definition of a vitamin. Vitamin D is important in the control of calcium metabolism and bone formation. It is not an antioxidant and there is no evidence that high doses are of any clinical value. In fact, it may be toxic; rats and mice are killed within 48 hours when fed a dose of 0.1% in the diet.

¹⁵Duffy S. Treatment of hypertension with ascorbic acid. *Lancet* 354: 2048-2049, 1999

¹⁶Enstrom JE, Kanim LE, Klein MA. Vitamin C intake and mortality among a sample of the United States population. *Epidemiology* 3: 194-202, 1992

Vitamin E

Since vitamin E is an antioxidant, the use of large doses has been suggested to prevent degenerative diseases such as atherosclerosis and cancer. Vitamin E seems to be relatively non-toxic in large doses, although it should be avoided in people taking warfarin as it enhances the latter's anti-clotting action and may lead to bleeding.

Atherosclerosis

These effects are more apparent when vitamin E supplements of 100 mg (0.1 g) or more taken each day for more than two years.¹⁷ Its action seems to be mediated by a reduction in atherosclerosis and less stickiness of cells in the blood called platelets. Reduced platelet stickiness decreases the risk of blood clots.

- In a study of nurses in the United States, those who took more than three times the recommended daily allowance had a 34% lower risk of heart attacks.
- Similar results were seen in a study of heart attacks in 50,000 American men who were health care professionals.

Two recent review of the three main dietary sources of antioxidants, vitamin C, carotenoids (vitamin A precursors) and vitamin E, concluded that only vitamin E had any substantial effect on arterial disease. Long-term supplementation with at least 100 international units of vitamin E a day seemed to reduce the risk of coronary artery disease by about 40%.¹⁸ Unfortunately, this does not seem to translate into improved longevity because supplementation may actually increase the risk of having a stroke.¹⁹

Cancer

Epidemiological studies have provided conflicting evidence on cancer risk. The balance of evidence at the moment seems to indicate that vitamin E does not hinder the progression of cancer and probably does not reduce the risk of developing cancer. However, the evidence is not yet final.

- a study in the United States suggested that vitamin E consumption was associated

¹⁷Meydani M. Vitamin E. *The Lancet* 345: 170-175, 1995

¹⁸Rimm EB, Stampfer MJ. The role of antioxidants in preventive cardiology. *Current Opinion in Cardiology* 12: 188-194, 1997

¹⁹Spencer S, Carson D, Crouch M. Vitamin E and coronary heart disease. *Archives of Internal Medicine* 159: 159: 1313-1320, 1999

with a reduced risk of mouth and throat cancer.

- a trial in Finland showed no effect of vitamin E supplementation on the incidence of lung cancer.
- Another trial in Finland of 29,000 smokers found a 41% reduction in deaths from cancer of the prostate in those who took a precursor of vitamin E.
- vitamin E had no beneficial effect in patients with polyps in the colon who were at risk of developing intestinal cancer.

So what do all these studies mean? It is anybody's guess as to whether taking supplements of Vitamin A is good for you, bad for you, or merely a waste of money.

Vitamin K

Vitamin K is important for proper clotting of the blood. There is no evidence that vitamin K supplements for adults are of any value. Large doses may interfere with the action of anticoagulant drugs such as warfarin that are used to reduce clotting of the blood.

Folic acid

Daily supplementation with 0.4-4 mg of folic acid a day by a pregnant woman reduces the risk of her having a baby with spina bifida (a congenital abnormality of the spinal cord) by as much as 75%.⁵

Niacin

Pellagra, the deficiency syndrome resulting from a deficiency of niacin, is characterised by certain psychiatric symptoms. These symptoms resolve once niacin is given. This led to the idea that treatment with large doses of niacin may be useful for other mental disorders, especially schizophrenia. However, there is no evidence that it works and the American Psychiatric Association does not recommend orthomolecular treatment with niacin in mental illness.²⁰ Nicotinic acid, one form of niacin, is sometimes used for the treatment of raised cholesterol levels in the blood.⁵ Large doses may cause flushing and itching of the skin and liver damage.

²⁰A report of the American Psychiatric Association task force on vitamin therapy in psychiatry, megavitamins and orthomolecular therapy in psychiatry, Washington DC, 1973

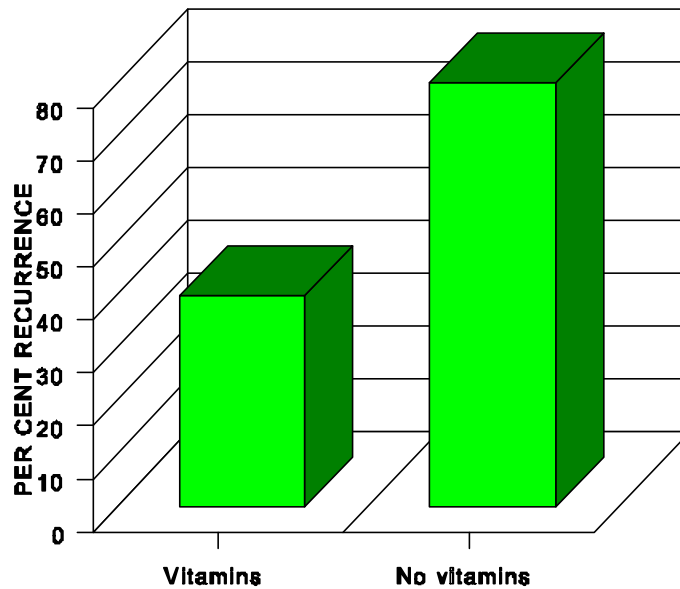


Figure 2. Recurrence rates of bladder cancer in patients who did or did not

Multiple vitamins

Although almost all of the evidence does not indicate that megadoses of vitamins retard the progress of established cancer, there is one published exception. Dr DL Lamb and colleagues from the department of urology at the West Virginia University School of Medicine in the United States randomly allocated 65 patients with bladder cancer to receive either standard treatment or standard treatment plus vitamins. Patients who received vitamin supplements were given 40,000 units (about 40 mg) of vitamin A, 100 mg of vitamin B₆, 2 g of vitamin C, 400 units (about 400 mg) of vitamin E and 90 mg of zinc each day.

They reported their results in 1994 in a paper²¹ entitled “Megadose vitamins in bladder cancer: a double-blind clinical trial”. The rate of recurrence of tumour was halved in patients who took multivitamin supplements (Figure 2). This important finding needs to be confirmed.

²¹Lamm DL, Riggs DR, Shriver JS, vanGilder PF, Rach JF, DeHaven JI. *Journal of Urology* 151:21-26, 1994

Conclusion

So what is the answer to the question? I can do no better than quote Dr Reynolds whom I mentioned earlier:

“Do I use vitamin supplements? Not at the present. Should I? I’m not certain, but for the first time in my scientific career I am beginning to feel that perhaps I should. Would I benefit from taking a multivitamin supplement, or specific vitamin supplements? After carefully reviewing the data in the preparation of this manuscript, I am giving very serious consideration to taking a daily supplement of a combination of the antioxidant vitamins.”⁵

As for me, several years ago I started taking a multivitamin capsule each day. I then replaced this with 250 mg of vitamin C and 500 international units (335 mg) of vitamin E each day. Now, I take only vitamin C. So, if you are going to use supplements, how much should you take? Manufacturers of vitamin supplements may suggest different doses for the prevention of various conditions but no-one really knows the answers to this question. It will probably be many years before reliable scientific data are available. In any case, it is likely that protective doses will vary for each condition that one is trying to prevent and may vary from person to person. In the meantime, a reasonable starting point would be the recommendations⁴ of Dr Barber and Mr Harris from the Mayo Clinic in Rochester, Minnesota (Table 4). How long should you take these supplements? Indefinitely.

Do you need to take mineral supplements?

By mineral supplements, we mean “trace elements”, that is metals that are present in body fluids in very low concentrations such as manganese and zinc, as well as those metals that are present in greater concentrations such as iron, calcium and magnesium. Many of these minerals are essential and cause disease if they are deficient. The most common example is anaemia from iron deficiency. Conversely, too much of many of these metals may also produce disease. For example, too much iron produces a condition called haemochromatosis. The short answer to the question is that most people who take a normal diet do not need mineral supplements.

- A major exception to this statement concerns people who are deficient in *iron* because they are losing blood in the bowel. This is often in microscopic amounts and the patient may not be aware of it. If you are deficient in iron, rather than just take iron supplements, it is very important that you visit your doctor for the cause of the blood loss to be diagnosed in case it is something serious such as bowel cancer.

Table 4. Supplemental doses of vitamins and minerals that have been recommended. With the exception of vitamin A and β -carotene which are possible dangerous, it may not be unreasonable to take them.

| | | | |
|-----------------------------------|--------------------|-----------|-----------|
| vitamin A or β -carotene | 1-7 mg 15-30 mg | copper | 103 mg |
| vitamin C | 100-500 mg | manganese | 1-10 mg |
| vitamin E | 200-800 mg | selenium | 10-100 mg |
| | | zinc | 7.5-15 mg |

- There is considerable debate and disagreement among the experts whether *calcium* supplements are beneficial in people suffering from osteoporosis (thinning of the bones). Supplementation probably does not work in many cases but is probably worth trying.
- *Selenium* is a trace element which has antioxidant properties like some of the vitamins and it has been suggested that it may reduce cancer and cardiovascular disease.²² On the other hand, one trial showed that it did not prevent the development of skin cancers in patients who had already had such cancers.²³

Should you eat more dietary fibre?

Dietary fibre is a household word. We often rate breakfast cereals by the amount of fibre listed on the box. What is fibre? It has been defined as the skeletal remains of plant cells that are resistant to breakdown in the gastrointestinal tract of humans. Another word for fibre is "roughage". The chemicals that make up fibre are a combination of polysaccharides (carbohydrates), especially cellulose and pectin, and a non-carbohydrate substance called lignin.²⁴ Fibres have sometimes simplistically been divided into two sorts - particulate and non-particulate. Particulate fibres are insoluble and are usually cereals such as wheat bran, corn bran and hulls of soy beans. Brans are the husks of grains separated from flour after grinding. Non-particulate, or viscous, fibres such as pectin have traditionally been used as food-thickening agents. However, some fibres such as oat bran are intermediate between the two types. Thus, fibre is present in plant foods that have had minimal processing but is largely absent from processed foods such as flour.

²²Nève J. Physiological and nutritional importance of selenium. *Experientia* 47: 187-193, 1991

²³Clark LC et al. Effects of selenium supplementation for cancer prevention in patients with carcinoma of the skin. A randomized controlled trial. *Journal of the American Medical Association* 276: 1957-1963, 1996

²⁴Schweizer TF, Würsch P. The physiological and nutritional importance of dietary fibre. *Experientia* 47: 181-186, 1991

Table 5. Conditions for which dietary fibre may be useful in prevention or treatment.

| | |
|--------------------------|------------------|
| - constipation | - diverticulitis |
| - haemorrhoids (piles) | - bowel cancer |
| - coronary heart disease | |

The importance of dietary fibre was emphasized by Drs Burkitt and Trowell, two British missionaries in Uganda, who realised that their patients had very little of the so-called “Western” diseases such as high blood pressure, diabetes, heart attacks, constipation, inflammation of the bowel called diverticulitis, and bowel cancer. They concluded that this was due to the fact that Africans have a lot of roughage in their diet.

Since that time, several controlled trials have shown that increased dietary fibre is valuable for the prevention and treatment of a number of conditions (Table 5). There has been much debate about the effects of fibre on blood cholesterol levels. It seems likely that particulate fibres, if they do lower the cholesterol levels, do so because there is less room left for the consumption of high fat, high cholesterol foods.²⁵ This may also apply to intermediate type fibres such as oat bran when taken in amounts of 40-100 g per day. On the other hand, soluble fibres such as pectin (10-20 g per day) may have a direct cholesterol lowering effect.

If you want to increase your fibre intake, how should you do it? Eat more relatively unprocessed plant foods instead of high-energy high-fat foods.

Can you have too much fibre?

Fibre is not all that pleasant to take in many cases. The most spectacular untoward effects have been in a few patients who have suffered intestinal obstruction because they took very large quantities of wheat bran or gum without drinking sufficient liquid.

Conclusion

Although there are many questions still unresolved, it is now generally agreed that a dietary intake of about 30 g per day would be beneficial for the general population in Western countries. It is important, however, that this is done by replacing high energy, high fat foods rather than just adding fibre to the diet.

²⁵Connor WE. Dietary fiber - nostrum or critical nutrient? *New England Journal of Medicine* 322:193-195, 1990

Table 6. Conditions in which fish oil supplements may be beneficial.

- cardiovascular diseases such as heart attacks and strokes
- high blood pressure
- rheumatoid arthritis
- IgA nephropathy (a kidney disease)

Are fish oil supplements helpful?

I take twelve 1 ml fish oil capsules every day. Why? I will explain in a moment. Oils obtained from fish are rich in certain essential polyunsaturated fatty acids. These are called omega-3 fatty acids and the important ones are eicosapentaenoic acid and docosahexaenoic acid. These substances reduce the production by the human body of chemicals involved in inflammation and lower the levels of triglyceride (a fat) and perhaps cholesterol in the blood.

It was suggested a number of years ago that the reason Eskimos have less heart attacks may be because they have a diet rich in fish oil content. Subsequent studies have suggested that fish oil may be valuable in a number of conditions (Table 6). Fish oil produces a small but useful reduction in blood pressure, especially if combined with a low salt diet. More importantly, fish oil seems to retard the development of atherosclerosis (hardening of the arteries) and reduces overall mortality.²⁶

By virtue of its anti-inflammatory effect, fish oil may have a mildly beneficial effect in rheumatoid arthritis.²⁷ It is this same action that accounts for its benefit in some forms of inflammation of the kidney. In June of 1994, I was diagnosed as having a condition called nephrotic syndrome due to a disease of the kidney called IgA nephropathy, and which was complicated by the development of hypertension. In November of that same year, Dr JV Donadio and colleagues from the Mayo Clinic in Rochester, Minnesota in the United States reported their findings in a study of patients with this condition who took fish oil. They conducted a double-blind placebo-controlled trial in which fish oil was compared with olive oil. They followed their patients for four years. In those who took fish oil, the rate of progression to kidney failure was reduced by 75%.²⁸ That was good enough for me.

Do weight-reducing diets work?

²⁶Kim DN, Eastman A, Baker JE *et al.* Fish oil, atherogenesis, and thrombogenesis. *Annals of the New York Academy of Science* 748: 474-480, 1995

²⁷McCarthy GM, Kenny D. Dietary fish oil and rheumatic diseases. *Seminars in Arthritis and Rheumatology* 21: 368-375, 1992

²⁸Donadio JV, Bergstralh EJ, Offord KP *et al.* A controlled trial of fish oil in IgA nephropathy. Mayo Nephrology Collaborative Group. *New England Journal of Medicine* 331: 1194-1199, 1994

It is a truism that there were no fat people in the Belsen or Auschwitz concentration camps. Any one who eats too much gets fat. Anyone who eats too little gets skinny. So what is too much or too little? It all depends upon how much activity you do and at what basal level your metabolism is set. The latter may perhaps be in part determined by your genes. Your body knows how much you need and it will show you by your weight. If you are overweight, then exercise more and eat less. You will lose weight slowly - it may take months or even years, but you will lose weight. So what should you eat less of? Everything, but especially foods with a high fat content because gram for gram, they give you more calories (now measured in joules) than do the other types of food, and unused calories are turned into body fat. One gram of carbohydrate and one gram of protein provides four calories each, but one gram of fat gives nine calories. The terminology is complicated even more by the fact that a Calorie (with a big "c") is in fact a thousand calories (with a little "c"); it is also called a kilocalorie. To make matters worse, one calorie = 4.185 joules. Thus, a Calorie is also equivalent to a kilocalorie, 4,185 joules, or 4.185 kilojoules.

But we all know that eating less is easier said than done. That is why there are the countless diets that have been proposed to help you lose weight. They promise rapid weight loss with renewed health and vigour. The question is whether or not they work. Many of these diets have been called "novelty diets" and rely on the belief that certain foods have previously undiscovered magical properties that facilitate weight loss.²⁹ Emphasis is often placed upon specific food combinations such as "bananas and skim milk diet", "pumpkin-carrot diet" and "egg and orange diet". In general, these diets culminate in weight loss by a reduction in caloric intake because the limited food choices are so boring and monotonous. Sometimes various supplements such as lecithin, kelp, apple-cider vinegar, vitamins, or injections of human chorionic gonadotrophin (a hormone) are added because they allegedly release "hidden metabolic energy". There is no basis whatever for such claims. Other forms of diets are based upon total fasting, modified fasting which spares protein, or consuming various defined chemicals. Some of these diets are summarised below. They are straight-forward to follow and hence become popular. Books describing many of these fads are sold in huge numbers for a short period until they are displaced by the next one.^{30,31}

²⁹Newark SR, Williamson B. Survey of very-low-calorie weight reduction diets. I. Novelty diets. *Archives of Internal Medicine* 143: 1195-1198, 1983

³⁰Newark SR, Williamson B. Survey of very-low-calorie weight reduction diets. II. Total, fasting, protein-sparing modified fasts, chemically defined diets *Archives of Internal Medicine* 143: 1423-1427, 1983

³¹Truswell AS. Shop diets for weight reduction. *British Medical Journal* ii: 1519-1520, 1982

- *The rice diet.* The original rice diet was published in the medical literature in 1949 and has had many popular modifications. Commonly, such diets consist of rice, fruits and vegetables only, often with mineral and vitamin supplementation.
- *Bieler's Diet for endocrine disorders* consists of raw goat's milk, shredded wheat biscuits, stewed prunes, vegetable soup, green beans and white bread. This diet is deficient in iron and the use of raw milk is dangerous as it may lead to serious infections.
- *Reuben's Save your life diet* is a high fibre diet with no caloric restriction. Preferred foods include bran, raw vegetables, whole grain cereals and yoghurt.
- *Wade's Enzyme catalyst diet* claims that certain foods provide enzymes that burn off body fat. These are supposed to be found in raw fruits, vegetables, seeds and plant juices.
- *Mazel's Beverly Hills diet.* This diet claims that it is not how much you eat but what combinations you consume that causes obesity. Mazel claims that there are only four rules: protein should be eaten only with other protein, carbohydrate with other carbohydrate, fruits by themselves, and fat with either protein or carbohydrate. This, of course, is intrinsically contradictory. The menu provides a six-week regimen followed by a maintenance programme. Mrs Mazel had weird unscientific theories to accompany this diet but she sold 800,000 copies of her book in one year in the USA alone. The *Journal of the American Medical Association* described it as "the latest and perhaps the worst entry in the diet-fad derby". The diet's major tenets fly in the face of all established medical knowledge about nutrition³²
- *The Dolly Parton diet.* This is a cyclical seven-day regimen that promises 5 kg or so weight loss per week. On day one, for example, you are allowed any fruits except bananas, while on day four, only bananas and skim milk are permitted. It is claimed that weight loss occurs because so much energy is consumed in digesting indigestible foods.
- *The K28 diet.* This diet replaces one or two meals a day with K28 powder mixed with milk.
- *Zen macrobiotic diet.* This diet is based upon Zen Buddhist principles. It is primarily

³²Mirkin GB, Shore RN. The Beverly Hills diet: dangers of the newest weight loss fad. *Journal of the American Medical Association* 246: 2235-2237, 1981

a vegetarian diet with seven to ten levels. Foods and chemicals are placed in a continuum in this order: meat-eggs-fish-grains-vegetables-fruits-dairy products-sugar-alcohol-drugs-chemicals. Items on the extreme right or left of this continuum are to be avoided. As the dieter progresses from one level to the next, food choices become extremely limited. Finally, the diet consists solely of brown rice. This most unbalanced diet is very dangerous leading to various vitamin and mineral deficiencies, kidney impairment and starvation. The American Medical Association Council on Foods and Nutrition issued the following statement:

“When a diet has been shown to cause irreversible damage to health and ultimately leads to death, it should be roundly condemned as a threat to human health... such is the case with the rigid dietary restrictions placed on the followers of Zen macrobiotic philosophy.”³³

- *Cambridge diet.* This is a formula diet with a variety of proteins, carbohydrates, vitamins, minerals and essential fatty acids. It is a flavoured powder mixed with water and taken three times daily. Up to 10 kg can be lost over an eight week period.
- *The Mini-cal diet.* This is similar to the Cambridge diet but is more restrictive in terms of nutrients and calorie intake.
- *Linn’s The last chance diet.* This is a liquid protein drink (Prolinn) with vitamin and mineral supplements that provides 600 Calories a day. One 38-year old woman died from a cardiac arrest after keeping this diet for eight months.³⁴
- *Pritikin diet.* This diet is a very high carbohydrate diet with minimal fat. It does not specify caloric intake but emphasizes fruits, vegetables, breads and cereals. No sugar, table fats, oils or dairy products other than skim milk are allowed. Exercise is encouraged. In 1982, people were paying \$US6,000 for 26 days at the Pritikin Longevity Center in California.
- *Israeli army diet.* This has no connection with the Israeli Army. It starts with apples for two days, as much cheese as you like for two days, then only chicken for two days, and lastly, salad for two days.
- *Starch blocking diets.* It has been known for over 50 years that wheat and kidney beans contain substances that inhibit some of the enzymes in the bowel that digest

³³Council and Foods and Nutrition. Zen macrobiotic diets. *Journal of the American Medical Association* 218: 397, 1971

³⁴Brown JM, Yetter JF, Spicer MJ *et al.* Cardiac complications of protein-sparing modified fast. *Journal of the American Medical Association* 240: 120-122, 1978

starches (carbohydrates). By the 1980's, there were over 100 products on the American market that purported to let you eat and enjoy whatever you wanted but still lose weight because these starches were not digested properly. Dr George Bo-Linn and colleagues from the department of internal medicine at Baylor University in Dallas, Texas undertook a placebo-controlled trial. The tablets had no effect whatsoever.³⁵ An accompanying editorial on the subject remarked there is still no free lunch.³⁶

- *United States of America, Incorporated diet*. This plan was marketed by a Dallas-based company and was said to be endorsed by a scientific advisory board of internationally renowned doctors and scientists. Analyses of the four dietary products revealed a fibre energy bar, an omega-3 fatty acid concentrate, a calorie-control formula and a master formula of mixed ingredients such as dahlia and yucca fibre. This diet was described by one expert as “the latest, but far from the last, health scheme foisted on a receptive and gullible public”.³⁷
- *Other low-carbohydrate, high-fat, high-protein diets*: “Calories don’t count”, “Dr Atkins diet revolution”, “The snack diet”, “Wisconsin diet”, “Doctor’s metabolic diet”, “The drinking man’s diet”, “Yudkin’s diet”.
- *Other low-carbohydrate, low-fat, high-protein diets*: “The Scarsdale diet”, “Stillman quick weight loss diet”.
- *Other high-carbohydrate, low-fat, low-protein diets*: “Stillman’s quick inches off diet”, “F plan”, “Dr Cooper’s fabulous fructose diet”.
- *Total fasting*. This practice was popularised by Cott in two books (*Fasting: the ultimate diet* and *Fasting is a way of life*). He claimed that fasting “brings a welcome physiological rest for the digestive tract” and “normalized metabolism” In fact, total fasting is very dangerous and may cause severe, sometimes fatal, metabolic abnormalities. Even with medical supervision, serious problems may be encountered. Weight loss may certainly be induced by this method when used by severely obese people. Unfortunately, a number of careful studies have shown that almost every patient puts weight back on over the next few years.

³⁵Bo-Linn GW, Santa Ana CA, Morawski SG, Fordtran JS. Starch blockers - their effect on calorie absorption from a high starch meal. *New England Journal of Medicine* 307: 1413-1416, 1982.

³⁶Rosenberg IH. Starch blockers - still no calorie-free lunch. *New England Journal of Medicine* 307: 1444-1445, 1982

³⁷Levine GM. Another diet revolution? The latest fashion in fad diets. *Annals of Internal Medicine* 107: 109-110, 1987

- *Very low calorie diet.* This is a diet that is restricted in calories but allows protein with high biological value such as meat, fish, poultry and eggs. Patients have died from heart disorders with this diet³⁸ so it should only be taken under medical supervision.
- Diet using *Sauropus androgynus*. Recently it has become popular in Taiwan, especially among young and middle-aged women, to drink juice made from the leaves of this plant as it allegedly helps to control weight. Dr RS Lai and his colleagues from the Veterans General Hospital-Kaohsiung in Taiwan recently reported a series of 23 women who developed progressive cough and shortness of breath after drinking this juice. Investigations showed that they had developed severe disease of the lung which was very difficult to treat.³⁹

Balanced diets

Popular balanced diets that are safe are the *Prudent diet* promoted by the anti-coronary club of New York, the La Costa Spa diet and diets advocated by TOPS (Take Off Pounds Sensibly) and *Weightwatchers*.⁴⁰

Slimming tablets

There are no such things. You can walk into a pharmacy or health food shop and see many brands of tablets that purport to help you lose weight by suppressing your appetite. Take a look at the ingredients on the label. You will find that they generally consist of a combination of vitamins, minerals and caffeine. Some contain herbs - these can be very dangerous. An example is the disaster that occurred in Belgium in which people developed severe kidney disease (see chapter on herbs).

Weight-reducing machines

A vast number of machines that purport to help lose weight have been promoted and sold to an ignorant and gullible public.⁴¹ Here are some examples:

- a machine that counts each bite and rings after a certain number
- a “subliminal” tape-recording to melt away your fat

³⁸Sours HE, Frattali VP, Brand CD *et al.* Sudden death associated with very low calorie weight reduction. *American Journal of Clinical Nutrition* 34: 453-461, 1981

³⁹Lai RS, Chiang AA, Wu MT *et al.* Outbreak of bronchiolitis obliterans associated with consumption of *Sauropus androgynus* in Taiwan. *The Lancet* 348: 83-85, 1996

⁴⁰Friedman RB. Fad diets. Evaluation of five common types. *Postgraduate Medicine* 79: 249-258, 1986

⁴¹Mogadam M. Nutritional fads. *American Journal of Gastroenterology* 85: 510-515, 1990

- a fork that lights up when you have too much food on it
- a crossbar to suspend yourself upside down so the calories will rush to your head and “not be absorbed in your intestines”
- a blanket that melts your fat away while you sleep
- “Vacu-pants” - a tube connected to a vacuum cleaner to suck away fat

If you pay good money for any one of these contraptions, it serves you right.

A trial of various forms of dieting

Dr TAB Sanders and colleagues from the department of nutritional dietetics at King’s College in London recruited 352 overweight men and women through a popular television programme. The participants were randomly assigned to receive one of six dietary treatments (one of which was a placebo) or were invited to join one of two commercial slimming clubs (*Slimming Club* or *Weightwatchers*). The dietary intervention consisted of one of:

- half a carrot daily before meals (placebo)
- bai-lin tea (Slimweight, UK)
- Grapefruit pill (Atlantico International)
- Natural Vitality (ornithine/arginine pill)
- Limmits meal replacement (Bayer)
- 1,000 kilocalories per day diet

Subjects were then re-weighed after six weeks.

The authors reported their findings in a paper⁴² entitled “Controlled evaluation of slimming diets: use of television for recruitment”. As can be seen from Figure 3, the most weight was lost by those who joined a commercial slimming club or took the 1,000 Calorie diet.

Similar results were found in Sweden. In that country, the results of a protein powder preparation, a kelp-lecithin-vitamin capsule, and the recommendations of the Stockholm Home Economics consultation service were poor; the best results were gained by those who joined a slimming club.⁴³

Conclusion

There have been no “amazing” scientific breakthroughs made to date, despite many claims to the contrary. Many popular diets have in common the fact that they are unbalanced, that is, that they do not give the right proportions of the various nutrients that are required

⁴²Sanders TAB, Woolfe R, Rantzen E. *The Lancet* ii: 918-920, 1990

⁴³Bjorvell H, Rossner S. Long-term effects of commonly available weight reducing programmes in Sweden. *International Journal for Obesity* 11: 67-71, 1987

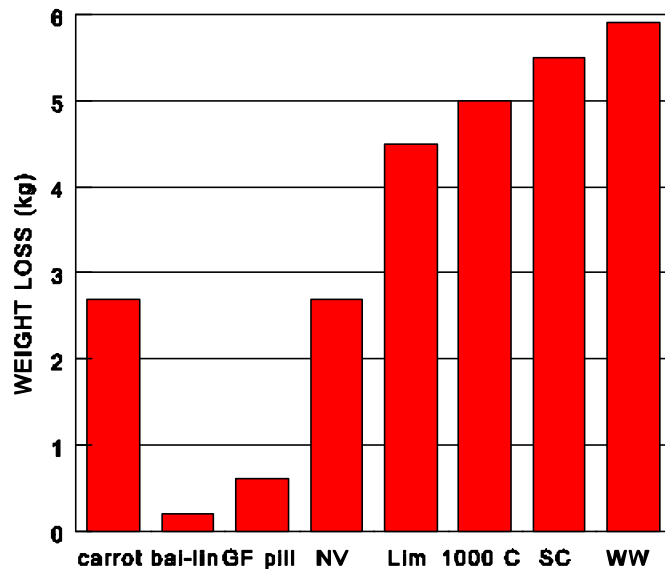


Figure 3. Weight loss in kilograms over 6 weeks in subjects who ate carrots, took bain-lin tea, consumed grapefruit pills (GF) or Natural Vitality tablets (NV), ate Limmits (LIM), kept a 1,000 Calorie diet (1000 C) or joined either Slimming Clubs (SC) or Weightwatchers (WW).

for health. Others simply make outlandish claims for which there is no evidence, or indeed, the evidence is to the contrary. Why is the public sucked in by all these diets? People throw science to the side and follow the latest fad. They want a free lunch. There is simply no such thing! Yet there are plenty of people in commerce who are willing and ready to exploit them. It is appalling that there is such an enormous waste of our resources on goods and services which are mostly useless and at times harmful.

Since these restricted diets must be followed for long periods of time, it is crucial to have a proper balance so that deficiencies of certain micronutrients (substances required in small amounts) do not occur. A mixed, balanced diet of about 1,000-1,200 Calories is a sensible and healthy approach to weight reduction as it is tolerable and effective and can be followed for months without serious side-effects.⁴⁴ Dieting is arduous and difficult to maintain but it is possible if the will is there. Joining slimming clubs such as *Weightwatchers* may give the encouragement that is necessary to go on.

⁴⁴Pi-Sunyer FX. Dietary practices in obesity. *Bulletin of the New York Academy of Medicine* 58:263-274, 1982

Vegetarian diets

The usual vegetarian diet which contains animal products such as eggs and milk (a lacto-vegetarian diet) is balanced and has no nutritional disadvantages, although body iron stores may be less than in non-vegetarians. In fact, a vegetarian diet may improve longevity, particularly if followed for twenty years or more.⁴⁵ Vegetarians have a lower risk of developing cancer of the intestines and perhaps the stomach, gall-stones, diverticular disease (inflammation of little out-pouchings of the large intestine) and constipation. A strict vegetarian diet with neither milk or eggs may lead to a deficiency of vitamin B₁₂. Such deficiencies have even been seen in the breast-fed infant of a mother who took such a diet.

- A six-month old infant was admitted to University of California Medical Center in San Diego comatose. On examination he was found to have pigmented skin and blood tests showed that he had marked pernicious anaemia. His mother was a strict vegetarian.⁴⁶
- A 13-month old boy was admitted to St George's Hospital in London, England with lethargy and swollen ankles. His parents belonged to a cult and since birth he had received only breast milk and uncooked fruit and vegetables. He was extremely small and was diagnosed as having kwashiorkor, a severe form of malnutrition.⁴⁷
- A 35-year old woman with an artificial heart valve was receiving treatment with warfarin, an anticoagulant (to thin the blood). She began a diet of lettuce, broccoli and turnip greens to lose weight. In the process, she ingested too much vitamin K which counteracted the warfarin and five weeks later she had a heart attack.⁴⁸

It is likely that you may get the benefits of a vegetarian diet if you are a non-vegetarian by increasing your intake of fruit, vegetables and fibre.⁴⁹

⁴⁵Chang CJ, Frentzel BR. Dietary and lifestyle determinants of mortality among German vegetarians. *International Journal for Epidemiology* 22: 228-236, 1993

⁴⁶Higginbottom MC, Sweetman L, Nyhan WL. A syndrome of methylmalonic aciduria, homocystinuria, megaloblastic anemia and neurologic abnormalities in a vitamin B₁₂-deficient breast-fed infant of a strict vegetarian. *New England Journal of Medicine* 299: 318-323, 1978

⁴⁷Roberts IF, West RJ, Ogilvie D, Dillon MJ. Malnutrition in infants receiving cult diets: a form of child abuse. *British Medical Journal* i: 296-298, 1979

⁴⁸Walker FB. Myocardial infarction after diet-induced warfarin resistance. *Archives of Internal Medicine* 144: 2089-2090, 1984

⁴⁹Nair P, Mayberry JF. Vegetarianism, dietary fibre and gastro-intestinal disease. *Digestive Diseases*

Table 7. Dietary recommendations of the American Cancer Society.

- maintain a desirable body weight
- eat a varied diet
- include a variety of both vegetables and fruits
- eat more high fibre foods such as whole grain cereals, legumes, vegetables and fruits
- cut down on total fat intake
- limit consumption of alcohol
- limit consumption of salt-cured, smoked and nitrite-preserved foods

of developing side-effects.⁵¹

What roles do diets have in cancer?

There are two aspects to diet and cancer - prevention and treatment. It is also important to remember that cancer is not a single disease but many different diseases and dietary influences are likely to vary from one form of cancer to another.

Can cancer be prevented by diet?

There is increasing evidence that dietary factors are important in the causation and prevention of various sorts of cancers. However, there is much that is not known and much that is written may just be wishful thinking.⁵²

- The possible roles of vitamins, especially A, C and E in preventing cancer have been discussed earlier under vitamin supplements
- The influence of dietary fibre on cancer of the bowel has also been canvassed in the section on dietary fibre
- Vegetarians may have a lower mortality rate from cancer
- High dietary fat intake appears to be related to increased frequencies of breast cancer, cancer of the bowel and cancer of the prostate⁵³

12: 177-185, 1994

⁵⁰Cerda JJ, Robbins FL, Burgin CW. The effects of grapefruit pectin on patients at risk for coronary heart disease without altering diet or lifestyle. *Clinical Cardiology* 11: 589-594, 1988

⁵¹Bailey DG, Arnold JMO, Spence JD. Grapefruit juice and drugs. How significant is the interaction? *Clinical Pharmacokinetics* 26: 91-98, 1994

⁵²Modan B. Diet and cancer: causal relation or just wishful thinking? *The Lancet* 340: 162-164, 1992

⁵³Miller AB. Diet and cancer - a review. *Acta Oncologica* 29: 87-95, 1990

In the light of all this, the American Cancer Society has made a number of recommendations to reduce the chances of developing cancer (Table 7). Incidentally, the Society noted that there is insufficient evidence to warrant a recommendation against the use of food additives. They also remarked that there is no indication that caffeine, a natural component of both coffee and tea, is a risk factor for human cancer.⁵⁴

Fortunately, the guidelines for reducing the risk of cancer are similar to the dietary guidelines for minimising heart attacks, strokes and diabetes. None of these guidelines guarantee that you will not get one of these diseases - merely that the chances of you getting one or more of them are reduced. Those foods that appear to protect against developing cancer contain substances called chemopreventers. The main way in which they probably work is as antioxidants. These chemopreventers are most commonly found in vegetables, fruits and grains.⁵⁵

Can cancer be treated by diet?

The short answer to this question is “no”. We have seen that a study was published in 1994 which appeared to show that large doses of vitamins and minerals may have beneficial effects in patients with cancer of the bladder. Unfortunately, this is an isolated observation. It clearly needs to be repeated. The best current advice is that promulgated by the American Cancer Society in 1993:

“After studying the literature and other available information, the American Cancer Society has found no evidence that any specific dietary regimen is useful as a cure for cancer in humans. Lacking such evidence, the American Cancer Society strongly urges individuals with cancer not to use a dietary program as an exclusive or primary means of treatment.”¹²

There are many diets that have been proposed and for which there is no evidence of benefit. Vitamins have been discussed earlier in this chapter while laetrile and pau c’ arco tea have been reviewed in the chapter 6. Some of the other diets are summarised below:

- *Hoxsey herbal treatment*. This remedy, proclaimed by Harry Hoxsey in the 1920's, has external and internal components. The external remedy is used for superficial cancers and is a red paste containing antimony, zinc, bloodroot, arsenic, sulphur and talc. These products are corrosive enough to destroy body tissues, whether normal or cancerous, on contact. The internal formula is a liquid containing liquorice, burdock root, *Stillingia* root, barberry, *Cascara* (a laxative), prickly ash bark, buckthorn bark, and potassium iodide. Vitamins and other substances may also be added.

⁵⁴The Work Study Group. American Cancer Society guidelines on diet, nutrition, and cancer. *Ca-A cancer Journal for Clinicians* 41: 334-338, 1991

⁵⁵Stavric B. Role of chemopreventers in human diet. *Clinical Biochemistry* 27: 319-322, 1994

Hoxsey was prosecuted numerous times for unlawfully practising medicine. His former head nurse later operated a clinic called the Bio-Medical Center in Tijuana, Mexico. The cost of treatment varies between \$US4,000 and \$5,000. In the early 1950's Hoxsey submitted case histories of 137 "cured" patients to the National Cancer Institute. None provided evidence of effectiveness.¹²

- *Macrobiotic diets.* These diets have been discussed earlier under weight-reducing diets. They were popularised in the USA by Michio Kushi who claimed that they also cured cancer. Much publicity was given in 1982 in a book by Anthony Sattilaro MD who claimed that his prostate cancer was cured by this diet. He died from the cancer in 1989. Not only does Kushi advocate his diet, but he claims that conventional cancer therapies are "violent and artificial". If someone heeds this dangerous advice, they may be giving themselves a death sentence. The American Cancer Society has reviewed 11 major scientific databases and found no authentic documentation that macrobiotic diets are effective in treating any type of cancer.⁵⁶ A similar conclusion was reached by the US Office of Technology Assessment.
- *Gerson diet.* Max Gerson, a German-born doctor, described this diet in 1945. His basic treatment included "detoxification" of the body with coffee enemas (instillation of coffee fluid into the bowel through a tube in the anus) or castor oil enemas followed by a special diet for the body to "heal itself". The diet consists of about 13 glasses of vegetable juice a day, plus tablespoons of linseed oil, acidophilus-pepsin capsules, potassium solution, laetrile, iodine solution, thyroid tablets, niacin, pancreatic enzymes, royal jelly capsules, castor oil and vitamin B₁₂ mixed with liver. Some patients are also given oral or rectal hydrogen peroxide or ozone. Gerson died in 1959 and his treatment was then continued by his daughter at the Gerson Institute in Tijuana, Mexico. The current cost is about \$US4,000 each week. There is no evidence that the Gerson regimen is effective in terms of prognosis⁵⁷ although some British investigators concluded that some patients taking this therapy may have a better sense of well-being and wondered whether this reflected their "fighting spirit".⁵⁸
- *Kelley metabolic therapy.* William Kelley, a Texas dentist, promoted this regimen in the late 1960's. His clinic is located south of Tijuana in Mexico. Patients are "detoxified" by colonic enemas, fasting, diuretics (passing of urine), nasal irrigation,

⁵⁶American Cancer Society. Unproven methods of cancer management: macrobiotic diets for the treatment of cancer. *Ca- A cancer journal for clinicians* 39: 248-251, 1989

⁵⁷American Cancer Society. Unproven methods of cancer management: Gerson method. *Ca-Cancer Journal for Clinicians* 40: 252-256, 1990

⁵⁸Reed A, James N, Sikora K. Mexico: juices, coffee enemas and cancer. *The Lancet* 336: 677-678, 1990

deep breathing and external cleansing. They are then given a diet which contains up to 300 supplements which costs about \$US1,000 a month.

· *Manner metabolic therapy.* Harold Manner, a zoologist in Louisiana, claimed he had caused tumours to regress in mice by injecting vitamin A, laetrile and digestive enzymes. He died in 1988 but a clinic offering his treatment is located in Tijuana, Mexico. Patients are given mineral supplements, “detoxification with a two-day juice fast”, coffee enemas, enzymes, laetrile and vitamins. Some of these materials are given by injection and some are taken orally. The American Cancer Society has been unable to verify any evidence of cure.¹²

Conclusion

None of the approaches detailed above is supported by clinical data. Some of them involve a diet that is nutritionally inadequate. Some are potentially toxic. Many are expensive. All of them pose a risk that patients will use them instead of effective orthodox treatment. Clearly, these specious diets are promoted by quacks who are either ignorant, irresponsible or simply fraudulent. Many of these diets and “therapeutic regimens” are simply the taking of money by false pretences from desperate and frightened patients.⁵⁹

Are dietary manipulations helpful in AIDS?

Infection with human immunodeficiency virus is often associated with wasting in the later stages of the illness. This may in part be due to poor nutritional intake in some patients, but is also a reflection of the disease itself and is sometimes due to inability to absorb nutrients properly from the gut. There have been several studies which have suggested that increased intake of the antioxidant vitamins A and C may slow the rate of progression of the disease. It is probably sensible for patients with HIV infection to supplement their diet with vitamins and minerals.

An “anti-Candida” diet (see chapter on miscellaneous therapies for a discussion of Candida) is also popular in patients with AIDS since this fungal infection is so common in this disease. The diet excludes carbohydrate-rich and yeast-containing food. It does not reduce the chances of developing a candida infection but, since it is poor in energy, may cause unwanted weight loss.⁶⁰

⁵⁹Herbert V. Unproven (questionable) dietary and nutritional methods in cancer prevention and treatment. *Cancer* 58: 1930-1941, 1986

⁶⁰Summerbell CD. Nutritional advice and support for individuals with incurable diseases. *British Journal of Biomedical Science* 51: 271-277, 1994

Does dieting help rheumatoid arthritis?

Some patients think that elimination of certain items from their diet helps relieve the symptoms of rheumatoid arthritis. However, clinical trials of “diet therapy” have yielded conflicting results. In a recent study, Dr Jens Kjeldsen-Kragh and colleagues from the University of Oslo in Norway studied 53 patients. Twenty-seven patients were randomly allocated to a four-week stay at a health farm. For the first week or so they were only allowed herbal teas and extracts of various vegetables. They were then gradually changed to a lactovegetarian diet (plant food plus milk and eggs). A control group of 26 patients had an ordinary diet. All patients were followed for one year. There was a slight improvement in symptoms in patients on the diet.⁶¹

Seatone (mussel extract)

Seatone is the trade name for an extract of the New Zealand green-lipped mussel (*Perna canaliculus*) which was said to be beneficial for patients with rheumatoid arthritis or osteoarthritis. However, this was not confirmed by Dr JG Larkin and colleagues from the Centre for Rheumatic Diseases in Glasgow, Scotland. They randomly allocated 35 patients with rheumatoid arthritis to receive either seatone or a placebo for six months. Unfortunately, no differences were seen between the two groups.⁶²

Is there really such a thing as food intolerance?

Naturopaths and other practitioners of alternative medicine are fond of telling their patients that they are “allergic” to certain foods, food additives or beverages. They might be right, but the chances that they pick on the correct foods are probably random. Some patients are indeed intolerant of some foods. Sometimes it is due to allergy whereas in other cases other mechanisms are operating such as deficiencies of enzymes. There are no reliable blood or skin tests to diagnose food intolerance. The diagnosis generally relies on eliminating the suspect item from the diet and then, if the symptoms resolve, seeing whether or not they recur when that food is eaten again. Even so, this can sometimes be very difficult to be sure about.⁶³

⁶¹Kjeldsen-Kragh J, Haugen M, Borchgrevink CF *et al.* Controlled trial of fasting and one-year vegetarian diet in rheumatoid arthritis. *The Lancet* 338: 899-902, 1991

⁶²Larkin JG, Capell HA, Sturrock RD. Seatone in rheumatoid arthritis: a six-month placebo-controlled study. *Annals of the Rheumatic Diseases* 44: 199-201, 1985

⁶³Ferguson A. Definitions and diagnosis of food intolerance and food allergy: consensus and controversy. *Journal of Pediatrics* 121, supplement: 7-11, 1992

Table 8. Percentages of people who reported intolerance to particular foods.

| | | | |
|------------------|------|--------------------|------|
| · additives | 4.9% | · meat | 1.7% |
| · citrus | 3.5% | · caffeine | 1.4% |
| · fish/shellfish | 2.9% | · tomatoes | 1.4% |
| · cow's milk | 2.9% | · non-citrus fruit | 1.0% |
| · cheese | 2.3% | · wheat | 0.9% |
| · eggs | 2.1% | · vegetables | 0.5% |
| · nuts | 1.7% | · soya | 0.3% |

It is surprising how many people think they are intolerant to some foods. A population survey of 15,000 households in England found that 20% of people thought that they had food intolerance. A sample of 93 of these people was then tested in a double-blind, placebo-controlled food challenge. These tests showed that only one-fifth of the subjects really had food intolerance. The authors concluded that “there is a discrepancy between perception of food intolerance and the results ... of food challenges” and this may have considerable consequences in financial, nutritional and health terms if the patients have not got it right.⁶⁴ If this study is correct, food intolerance is a major problem because it suggests that about 4% of the population is intolerant of one or more foods. The foods that caused reactions in this survey are listed in Table 8.

If you have some symptoms that seem to recur whenever you take a particular food but are absent otherwise, then avoid that food. Do not be too restrictive, however, or you might cause nutritional deficiency.

- A four-year old boy was investigated at St Luke's Hospital in Guildford, England for short stature. His thyroid gland was found to be underactive. He had been diagnosed at a centre for “alternative therapies” as being sensitive to cow's milk, dairy products, goat's milk, eggs, chocolate, sugar, food additives, fish, beef, lamb and pork. His mother had removed all these items from his diet. After a normal diet was re-introduced, he grew and his thyroid gland function returned to normal.⁶⁵

Tryptophane and the eosinophilia-myalgia syndrome

In 1989, several patients were recognised in the United States who complained of pains in their muscles and who were found to have increased numbers of white cells called

⁶⁴Young E, Stoneham MD, Petruckevitch A *et al.* A population study of food intolerance. *The Lancet* 343: 1127-1130, 1994

⁶⁵Labib M, Gama R, Wright J *et al.* Dietary maladvice as a cause of hypothyroidism and short stature. *British Medical Journal* 298: 232-233, 1989

eosinophils in their blood (this latter state is called eosinophilia) and often had evidence of nerve, lung or heart damage. Within six months, the Centers for Disease Control in Atlanta, Georgia had been notified of 1,500 cases. The syndrome was found to be due to patients ingesting supplements of tryptophane, an amino acid. The illness resolved in many but not all patients on stopping taking tryptophane supplements.⁶⁶

Miscellanea

- *Co-enzyme Q10*. This is an antioxidant that has been touted as being good for any number of conditions. Amongst them is the claim that it helps diseases of the gums. Mr Watts from Guy's Hospital in London reviewed the literature and found there was no evidence whatever to support this assertion.⁶⁷ There have, however, been some studies which suggest, although the data are conflicting, that co-enzyme Q10 supplements may have a mildly beneficial effect in patients with heart failure.⁶⁸
- *Germanium* is an element which is used in some "natural" products. It can cause kidney failure.⁶⁹

Conclusions

Diet is important to all of us. There are plenty of bogus diets around, especially for the treatment of cancer and weight reduction, and some of them are very dangerous. At other times, patients are advised to take certain diets when there is no evidence to support that course of action. It is important that we have a well-balanced food intake, not too much and not too little. When I was a medical student, it was taken for granted that one only needed a certain amount of vitamins and no more. There is increasing evidence that there is value for reducing the risk of cardiovascular diseases and cancer by supplementing your diet with vitamins, especially the antioxidant vitamins C and E. Certainly, increasing your fibre intake, provided you reduce fats, is valuable. The sheer variety of diets is bewildering and overwhelming. If you are in doubt about your diet, then ask someone knowledgeable such as a dietitian or your family doctor. As with all food, it is a question of:

⁶⁶Hertzman PA, Blevins WL, Mayer J *et al*. Association of the eosinophilia-myalgia syndrome with the ingestion of tryptophan. *New England Journal of Medicine* 322: 869-873, 1990

⁶⁷Watts TL. Coenzyme Q10 and periodontal treatment: is there any beneficial effect? *British Dental Journal* 178: 209-213, 1995

⁶⁸Soja AM, Morrtensen SA. [Treatment of congestive cardiac failure with coenzyme Q10 illuminated by meta-analyses of clinical trials. *Molecular Aspects of Medicine* 19 Suppl: 159-168, 1977

⁶⁹Van der Spoel JJ, Stricker BHC, Esseveld MR, Schipper MEI. Dangers of dietary germanium. *The Lancet* 336: 117, 1991?

Separating the wheat from the chaff.