



High Protein Diets

This answer is brought to you by many of the Australian nutrition professionals who regularly contribute to the Nutritionists Network ('Nut-Net'), a nutrition email discussion group.

The following review addresses the validity of some of the claims made by the originators of several 'high-protein' diets. These include the claims that such diets will assist with weight loss and lead to improved overall health. The high-protein diets that are reviewed are 'Slim Forever', the 'Atkins Diet', the 'Zone Diet' and 'Sugar Busters!'

In addition, the higher-protein, low-fat diet of the CSIRO—the Total Wellbeing Diet—is reviewed.

It is concluded that none of the high-protein diets considered here should be regarded as appropriate substitutes for the diet that Australians will obtain if they base their lifetime food intake on cereal foods (preferably whole grain), fruits and vegetables (including legumes), lean meat and fish, and dairy products (preferably low- or reduced-fat), and avoid high intakes of foods rich in saturated fat, salt or added sugar.

However, the higher-protein, low-fat diet (the Total Wellbeing Diet) does show promise as a possible alternative means for some people to safely and effectively lose weight.

The Slim Forever diet in particular is potentially dangerous and cannot be recommended even for short-term use.

Although unlikely to be harmful to health (at least in the short term), the Atkins Diet, and Sugar Busters! recommend low intakes of carbohydrate foods. Because of this emphasis, they are lacking foods of plant origin and so are likely to provide insufficient quantities of dietary fibre and some vitamins/minerals. They are not recommended for long-term use.

Although it is also not inherently dangerous in the short term, the Zone diet also places excessive emphasis on reducing carbohydrate intake, and is not recommended for long-term use. In the short term, the Zone diet is likely to lead to weight loss, partly because it is low in kilojoules.

The Total Wellbeing Diet has been shown in a small study to be as effective as the current orthodox high-carbohydrate, low-fat diet at reducing weight in the short term. It also led to greater reduction of abdominal fat (above the stomach) in women (but not in men) and to greater reductions in both men and women in blood 'triglycerides', compounds associated with increased risk of heart disease. Because it promotes the intake of nutritious carbohydrate foods and is low in fat, the Total Wellbeing Diet may be a suitable alternative for some people to the more usual high-carbohydrate, low-fat approach to safely and effectively losing weight.

In general, a diet that is based on the types and quantities of food recommended in the Australian Guide To Healthy Eating—the 'food plate'—is still believed to be the most appropriate diet for

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health and fitness.

It should also be noted that diet is only one aspect of lifestyle that affects health. Another vitally important one is physical activity. The recommended lifestyle for optimal health and wellness includes a diet based on a wide variety of nutritious foods (with the greatest emphasis on plant foods), and at least 30 minutes per day of moderately vigorous activity.

POPULAR DIETS

Over the past several years many diets have been recommended to the public, often with promises of improved health, greater life expectancy, and/or weight loss resulting from adoption of each particular diet. Most of these diets can be assigned to the 'high protein' or 'high carbohydrate' categories, although some don't fit neatly into either category.

The first point that needs to be made is that the term 'diet' doesn't have the meaning it may have had a few years ago—that is, a short-term change in eating patterns to attain a specific goal (such as losing weight). What is usually being advocated by the proponent of a diet nowadays is not a short-term means of overcoming a perceived problem (such as being overweight); rather, a diet is now an eating plan for a lifetime.

In this answer, the high protein diets are reviewed, with the high carbohydrate diets and the 'in between' diets being discussed in separate FAQ's

HIGH PROTEIN DIETS

The most popular high protein diets are 'Atkins Diet', the 'Zone Diet', and 'Sugar Busters!'. Another eating plan that has been given some exposure on Australian TV is the 'Slim Forever' diet. The inventors of these diets make different claims about their effects on health, ranging from weight loss to massive reduction in disease risk and vastly increased life expectancy.

The concept that it may be healthier to eat more high-protein foods such as meat, fish and eggs—at the expense of fruits, vegetables, potatoes, pasta and rice—has a high level of appeal to many people. But just how strong is the nutritional/ medical evidence that these are safe and healthy diets in the long term? The scientific evidence for and against these diets is addressed separately for each diet below.

One common feature of these diets is that they are likely to lead to some weight loss in the very short term (the first week or so). This is because, on a low-carbohydrate diet (and all the diets considered here are low in carbohydrate), the body is forced to use some of its glycogen (the form in which carbohydrate is stored in the liver and muscles) to maintain a normal blood sugar level. Some water that was stored with the glycogen is also released and excreted, adding to short-term 'weight' loss (but note that this is not 'fat' loss).

SLIM FOREVER

This is the brainchild of Dr Robert Harris. He believes that we should be eating an amount of protein equal to about 0.75% of our body weight each day. This is about six to eight times as much protein as we now eat. The major problem with this idea is that increasing protein intake leads to greater production of nitrogen waste products (particularly urea), increasing the load on the kidneys. Another result of high protein intakes—a higher level of uric acid in the blood—increases the risk of gout. High protein intake also has the potential to exacerbate 'osteoporosis' (chalkiness of the

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bones) through interference with calcium metabolism.

The quantity of protein that Dr Harris suggests we should eat is well into this potentially dangerous range, so the Slim Forever diet cannot be considered to be appropriate or health promoting.

Summary

The Forever Slim diet recommends a physiologically inappropriate intake of protein. This diet is potentially dangerous and should be avoided.

THE ATKINS DIET

Available in a series of books the diet advocated by the late Dr Robert Atkins is high in protein and fat, and low in carbohydrate foods such as potatoes, fruit, bread, rice, pasta and other cereal foods.

The explanation given for any weight loss that results from adoption of this diet plan is rather complicated. Dr Atkins believed that because low carbohydrate intake leads to 'ketosis' (the production of ketone bodies that replace glucose in the blood when carbohydrate intake is low), restricting carbohydrate intake will cause appetite to decrease, leading to lower food intake and hence to loss of body fat. Also, because ketones are derived from the body's fat stores, the production of ketones is claimed to contribute even further to body fat loss. Finally, Dr Atkins believed that eating fat causes the body to metabolise it for energy rather than store it as more body fat, while eating carbohydrate causes that carbohydrate to be converted to body fat.

The recommended fat intakes are very high—more than half the total kilojoule intake. This contrasts with the typical Australian intake of about one-third of total kilojoules as fat, and is inconsistent with the Australian Dietary Guideline to "Limit saturated fat and moderate total fat intake".

Dr Atkins' unorthodox approach to fat intake is also revealed in his claim that you can "eat all of the meat, cheese, eggs, fats (like butter and oils)". Most of these foods are high in saturated fat.

It is true that the fatty foods recommended for greatest consumption are those regarded by orthodox nutritionists as being health-promoting, such as salmon, tuna, sardines, nuts, seeds and olive oil. However, the main concern of the Atkins Diet is a reduction in the intake of carbohydrate foods—for example, on the Atkins website it is stated that eating "high fat foods such as eggs, cheese and a couple of pieces of bacon is fine only in the absence of refined carbs in your diet." In addition to its inconsistency with the dietary guideline on fat intake, this advice is not wholly consistent with the guideline to "Eat plenty of cereals (including breads, rice, pasta and noodles), preferably wholegrain".

Protein intake on the Dr Atkins Diet plan is also very high—about twice the current Australian average—and the recommendations on carbohydrate intake are much lower than either typical current intakes or current recommendations. However, the strict limits placed by Dr Atkins on high-carbohydrate foods apply largely during the period of weight loss. There is a concession that "once your weight loss slows and you are no longer primarily burning fat for energy, you will naturally start to replace some of the fat in your diet with nutrient-dense carbohydrates."

There is not much doubt that strictly following the Dr Atkins Diet plan would result in ketosis, which would reduce food intake. In fact, several recent studies have indicated that, at least in the short term, and in the small number of subjects studied, the Atkins Diet appears to be fairly effective at reducing weight. From these same studies it also appears to be reasonably safe in the short term, at least in terms of effects on risk factors for heart disease.

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But the only long-term study conducted so far (to July 2003) found no greater weight loss after 12 months than with a more conventional diet. In addition, the long-term safety of a diet that allows so much fat (including substantial proportions of saturated fat) and restricts intake of carbohydrate foods is still unresolved. For example, the Atkins Diet is very low in dietary fibre. [For information about the advantages of including plenty of dietary fibre in the diet, see the FAQ on 'Fibre in Food' in this series]. Also, because hardly any fruit or high-carbohydrate foods are permitted, a diet based strictly on Dr Atkins' advice may also be lacking in some vitamins, minerals and antioxidants.

Another potential problem is that because it is somewhat restrictive in the nature of the carbohydrate foods it allows, the Atkins Diet may not always be easy to follow, especially when eating away from home.

Summary

The generally negative view held by most nutritionists of this diet has been based more on reasonable assumptions than on direct experimental evidence. The recent positive studies mentioned above have generated substantial interest among nutritionists (and others) in high-protein diets, such as that of Dr Atkins. It would probably be fair to say that the safety and effectiveness of the Atkins Diet may be best described as 'unresolved'.

However, until convincing evidence becomes available from well-designed and long-term trials, the imbalance of protein, fat and carbohydrate in the Atkins Diet, and its lack of dietary fibre, mean that it would not be appropriate to recommend this diet.

THE ZONE DIET

Devised by Dr Barry Sears, various aspects of this diet are available in a series of at least five books, including "Enter the Zone", "Mastering the Zone" and "The Omega RX Zone".

The Zone Diet is based on the idea that carbohydrate, protein and fat should constitute a fixed percentage of food intake at each meal. These percentages are 40 (carbohydrate), 30 (fat) and 30 (protein). Hence the alternative name that is sometimes used: the "40: 30: 30 diet". These percentages contrast with the typical Australian diet, which provides more carbohydrate, considerably less protein and about the same amount of fat.

Dr Sears claims that his 40: 30: 30 diet helps to avoid 'insulin resistance' (a weakening of the ability of the body's insulin to clear nutrients such as glucose from the blood). It is also claimed to have beneficial effects on 'eicosanoids'—compounds that have profound effects on a wide range of biochemical parameters that influence health. As a result (claims Dr Sears) you will live longer and be in better health on the Zone Diet than on a more typical American (or Australian) diet. He also claims that his diet will lead to weight loss where other methods fail.

In fact, there is little scientific evidence to support any of these contentions. A recent (2003) review of the Zone Diet, in a reputable nutrition journal, included the following statement: "There is presently little scientific support for the connections made between diet, endocrinology and eicosanoid metabolism. In fact, a review of the literature suggests that there are scientific contradictions in the Zone Diet hypothesis that cast unquestionable doubt on its potential efficacy."

As one example, Dr Sears conveniently neglects to point out that his diet is actually a low energy (i.e., low kilojoule) diet. A relatively low kilojoule diet can be obtained just as easily—but with more appropriate intakes of dietary fibre and many micronutrients—by reducing fat intake, maintaining a moderate protein intake, and eating plenty of fruits, vegetables and cereal foods (preferably whole grain) such as bread, rice and pasta. Illustrating this is the observation that

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obesity is uncommon in areas of Asia where rice (a high-carbohydrate cereal food) is the most common staple.

The Zone Diet is not considered suitable for athletes or other active people, even in the short term, because carbohydrate is the preferred fuel for the working muscle. A seven-day study conducted in 2002 that compared a 'normal' diet (relatively high in carbohydrate, low in protein), with the Zone Diet for effects on physical stamina reported "a significant reduction ... in time to exhaustion ... for the Zone diet." That is, compared to eating a normal diet, just one week of the Zone diet was enough to significantly reduce the participants' ability to continue running at the same speed.

Summary

The Zone Diet is probably relatively harmless in the short term, but it doesn't have much to commend it, either. It may be effective in encouraging weight loss, at least partly because it is low in kilojoules. Its safety has not been demonstrated in the long term, so it is not recommended as the lifelong diet.

SUGAR BUSTERS

In their book entitled 'Sugar Busters!: Cut Sugar to Trim Fat', H. Leighton Steward and Morrison C. Bethea claim that 'sugar is toxic'. By eliminating sugar from the diet, and eating fewer refined and 'high glycemic index' (GI) foods, the authors promise that you will lose weight, lower cholesterol, achieve optimal wellness and have more energy.

The idea that sugar is somehow especially 'bad' for the body no longer has currency with orthodox nutritionists: the only health problem associated unequivocally with sugar intake is tooth decay.

The authors do point out (correctly) that high GI foods (such as bread and rice) lead to greater insulin production than do low GI foods (such as beans).

However, they make the mistake of assuming, with little or no valid scientific evidence, that reducing intake of sugar and other high GI foods will cure several of the major health problems afflicting many people in Western countries. If only it were so simple! The complex interrelationships between diet and health are not completely understood, but the evidence strongly suggests that eating moderate amounts of sugar and other high GI foods is NOT the cause of diabetes, overweight and high blood cholesterol. Sugar Busters! is another diet that is not based on solid scientific principles.

Summary

As applies to all low carbohydrate diets, the Sugar Busters! program may assist in weight loss (partly through the effects of ketosis on appetite) but it is deficient in carbohydrate foods and dietary fibre. It is not recommended as a long term eating plan.

TOTAL WELLBEING DIET

Most popular high-protein diets, including those reviewed above, also recommend low intake of carbohydrate and often promote (or at least allow) high fat consumption. As noted above, such diets are not considered suitable by most orthodox nutritionists, who emphasise the importance of

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lowering intake of fat (particularly saturated fat), and increasing consumption of vegetables, fruits, and cereal foods such as bread, rice and pasta—preferably wholegrain or wholemeal.

A new approach, and one that has received considerable publicity recently, is the higher-protein, low-fat diet developed by CSIRO, Australia's largest research and development organisation. Known as the 'Total Wellbeing Diet', the aim is to provide sound nutrition for life, and not simply a short-term diet for weight loss.

In addition to being relatively high in protein and low in fat, the Total Wellbeing Diet encourages moderate consumption of nutritious wholegrains and other low glycemic index (GI) carbohydrate foods.

When the desired weight has been achieved, and food intake must be slightly increased to maintain the new (reduced) weight, the Total Wellbeing Diet recommends that this extra food should come mostly from the bread and cereal food group. The recommendation is also made that some of the additional food should come in the form of low-fat milk or other dairy products and nutritious snack foods (e.g., nuts, fruit bars and low-fat pizzas). This advice is wholly consistent with current orthodox nutrition recommendations.

There is preliminary evidence that, at least for some people, this higher-protein, low-fat approach may be a healthy and effective alternative to the more orthodox high-carbohydrate, low-fat diet for losing excess body fat. For example, in a 12-week study conducted by CSIRO, a group of overweight men and women who followed the Total Wellbeing Diet lost approximately the same quantity of weight as another group who ate a high-carbohydrate, low-fat diet. However, only about 10% of the women following the Total Wellbeing Diet dropped out of the study, compared to more than 30% on the high-carbohydrate diet. Perhaps even more importantly, the women (but not the men) who followed the Total Wellbeing Diet had greater loss of fat from the abdomen (the region of the body directly over the stomach). This is the area where excessive body fat is most strongly associated with increased risk of conditions such as type 2 diabetes and heart disease. Blood lipids (including cholesterol and triglycerides) were also lowered to a greater extent in the women on the Total Wellbeing Diet.

The CSIRO researchers concluded that both approaches (higher-protein, low-fat and high-carbohydrate, low-fat) are effective at safely inducing weight loss, but that the Total Wellbeing Diet may have advantages for some people. For example, the finding that fewer women on the Total Wellbeing Diet dropped out of the study may be because many people experience a greater feeling of satiety with high-protein foods (i.e., they may appear to be more 'filling') than with foods that are rich in carbohydrate. Therefore, compared to the more orthodox high-carbohydrate, low-fat approach, some people may find it easier to maintain the Total Wellbeing Diet without feeling excessively hungry.

The finding that the Total Wellbeing Diet reduced abdominal fat in women to a greater extent than the high-carbohydrate, low-fat diet is also promising. However, it is unclear why this did not also occur in men. Because men have a greater tendency than women to deposit fat in the abdominal region, this finding is somewhat disappointing. Therefore, it is probably premature to claim that the Total Wellbeing Diet is universally more effective at lowering abdominal fat than current orthodox weight-loss diets.

Another criticism levelled at the *Total Wellbeing Diet* is that it is too high in red meat. There is some evidence that a high consumption of red meat, particularly processed red meats such as ham, bacon and salami, may increase the risk of bowel cancer. The CSIRO diet recommends that we: "***eat at least 4 serves (approx. 200 g raw weight) for dinner of lean red meat (beef, lamb or veal) each week***".

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It also recommends that we: “eat a 100 g serve of any lean-protein source (fish, chicken, pork, ham, beef, lamb or turkey) for lunch daily”. (2 eggs can be substituted twice a week for the lean-protein serve.)

In addition it says that: “you must eat the red meat quota and lunch meat/chicken/fish quota each day.”

However, both the Cancer Council Australia and the National Health and Medical Research Council through the *Dietary Guidelines for Australians* say that this is too much red meat. The Cancer Council New South Wales position (from their web site) is:

“How much meat should I eat?

The Cancer Council recommends eating only **moderate** amounts of red meat. A moderate intake of meat is 65-100 g of cooked red meat, 3-4 times a week – this is also the recommendation in the new *Dietary Guidelines for Australians* from the National Health and Medical Research Council.

“The Cancer Council recommends people **limit** consumption of processed meats, which are high in fat, salt and nitrates. Processed meats include sausages, frankfurts, salami, bacon and ham.”

The CSIRO diet suggests we eat at least twice that much without an option to reduce the red meat component.

In addition, high-protein diets may not be suitable for people with chronic kidney disease, some of which may be undetected. Overweight and obese people, who are likely candidates for the diet, may be more likely to suffer from undetected kidney disease.

Nutrition Australia recommends sticking to the *Dietary Guidelines for Australians* and the advice of the Cancer Councils. To achieve this, while still largely adhering to the Total Wellbeing Diet, it would be necessary to replace some of the red and processed meat with chicken, fish and vegetable protein such as beans, soy and nuts.

Other FAQs in this series discuss the importance of engaging in plenty of physical activity for health and weight control. The Total Wellbeing Diet also emphasises the need to be active, and provides useful tips on how you can achieve adequate levels of activity.

Although the CSIRO diet claims to be the "Total" Wellbeing Diet, it does not address all the nutritional problems faced by many Australians. It is also important to adhere to those aspects of the Dietary Guidelines for Australians not mentioned in the Total Wellbeing Diet. These include:

"Drink plenty of water";

"Choose foods low in salt"; and

"Limit your alcohol intake if you choose to drink".

In summary, although the Total Wellbeing Diet is new, and hasn't yet been subjected to long-term testing for efficacy and safety, it appears to be considerably superior to the high-protein diets reviewed above. Specifically, it promotes the intake of nutritious carbohydrate foods, is low in fat, and the results of a short-term study conducted by CSIRO suggest that for some people it may be a suitable alternative to the more usual high-carbohydrate, low-fat approach to safely and effectively losing weight. However, replacing or eliminating some of the recommended red and processed meat may help address concerns with other chronic conditions and would fall more in line with national guidelines for healthy eating.

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WEIGHT GAIN

Some people—such as body builders and weight lifters—adopt high protein diets on the grounds that muscle consists of protein, so high protein intake will lead to greater muscularity. This argument is analogous to the belief that if a little vitamin A is good for you, a lot of vitamin A is even better. In fact, high doses of vitamin A are toxic (for example, excessive vitamin A intake has led to deaths in stranded Antarctic explorers who ate the livers of their husky dogs).

Similarly, protein intake above about 1.5-1.7 grams per kilogram of body weight is not only pointless, but potentially dangerous (as described under the heading 'Slim Forever' above). [For more information on appropriate protein intake.

OVERALL CONCLUSIONS

In summary, carbohydrate is the most direct source of the glucose that not only powers our muscles, but is also the preferred fuel for the brain. This means that high-protein/low carbohydrate diets have the potential to interfere with efficiency of both mental and physical work.

Carbohydrate foods such as grain foods, fruits and vegetables are the major sources of glucose, fibre, and many vitamins and minerals in the diet. They also contain a myriad of other chemicals (known as 'phytochemicals') whose value to health is not yet fully understood, but which may also be of great importance. Nutritional science has established that increased consumption of a wide range of plant-based foods is associated with improved health and greater life expectancy. The advice given by the proponents of high-protein diets is not compatible with these scientific findings.

The inescapable conclusion from this brief review is that none of the high-protein diets considered here should be regarded as appropriate substitutes for the diet that Australians will obtain if they base their lifetime food intake on cereal foods (preferably whole grain), fruits and vegetables, lean meat and fish, and dairy products (preferably low- or reduced-fat), while avoiding high intakes of foods rich in saturated fat, salt or added sugar. However, the higher-protein, low-fat diet developed by the CSIRO, the Total Wellbeing Diet, may be a safe and effective alternative to the usual high-carbohydrate, low-fat approach to sustained weight loss, at least in some people.

It should also be noted that diet is only one aspect of lifestyle that affects health. Another vitally important one is physical activity. The recommended lifestyle for optimal health and wellness includes a diet based on a wide variety of nutritious foods (with the greatest emphasis on plant foods) and putting together at least 30 minutes of moderate-intensity physical activity on most days, and preferably every day. A good example of moderate-intensity activity is brisk walking at a pace where you are able to comfortably talk but not sing. Other examples including mowing the lawn, digging in the garden or medium-paced swimming or cycling. The 30 minutes of activity need not be carried out all at the one time. Ten minutes blocks of activity are fine. An easy way of achieving the 30 minutes can be through finding ways of increasing incidental physical activity e.g., walking rather than driving short distances, taking stairs instead of the elevator or escalator, and so on.

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