

INTERNATIONAL HEALTH NEWS

Your Gateway to Better Health!

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In this issue we present the final part of Bill Ware's "The Diet Zoo". Bill discusses six popular diets in detail – the Atkins Diet, the South Beach Diet, the Protein Power Lifepan, Dr. Sinatra's Modified Mediterranean Diet. If you are contemplating switching to a healthier diet this is a must read.

The risk of air travel related deep vein thrombosis (DVT) continues to headline the news. Fortunately, it appears that a solution, which completely eliminates this potentially serious problem, has already been found. A team of British and Italian researchers report that taking 2 capsules of Flite Tabs (a proprietary blend of nattokinase and pycnogenol) before and during a long flight completely eliminates the risk of DVT even in high-risk

passengers.

Also in this issue – fish oil therapy is effective for IgA nephropathy, magnesium deficiency is associated with an increased risk of type 2 diabetes, melatonin improves sleep, and lycopene helps prevent colon cancer. Last, but certainly not least, is the exciting discovery that many fibromyalgia sufferers may be able to completely eliminate their condition by avoiding aspartame (NutraSweet), and monosodium glutamate (MSG) in all its guises.

*Wishing you good health,
Hans Larsen, Editor*

March Highlights

Pinokinase prevents DVT and edema	p. 2
MSG implicated in fibromyalgia	p. 3
Melatonin improves sleep	p. 4
Lycopene helps prevent colon cancer	p. 5
Magnesium helps prevent diabetes	p. 6
Newsbriefs	p. 7
The Diet Zoo, Pt. III by William Ware	p. 8

sublingual tablets (1 mg) is absorbed just as effectively as from intramuscular injections.

After reading the information about vitamin B12 on your web site I decided to supplement with a vitamin B complex for my tremors and migraines, which were only getting worse. I am only 26 years old, the doctors could not figure out what was wrong, and I began to think my life was not worth living. Within days after taking the vitamin B complex I felt great – no tremors or migraines. I feel like a whole new man again. Thank you!

FP, UK

I have been reading about the benefits of vitamin C and decided to start taking 1000 mg/day. I have been doing this for a couple of weeks now and am noticing a problem with my bowels. I am constipated and have severe cramping in my stomach. Could this be caused by the vitamin C?

EB, USA

LETTERS TO THE EDITOR

I have a question about why intramuscular injections of vitamin B12 are mainly used, rather than intravenous injections.

HL, USA

Editor: *Intramuscular injections are used because the vitamin is absorbed more slowly this way. Giving it intravenously would have undesirable side effects. Research has shown that vitamin B12 from*

Editor: *Vitamin C should always be taken in divided doses throughout the day. I would suggest you take 400 mg with each main meal. You may*

want to try calcium ascorbate if you are now taking ascorbic acid. Vitamin C will not cause constipation quite the opposite.

ABSTRACTS

Pinokinase prevents DVT and edema

PESCARA, ITALY. It is estimated that as many as 5-7% of high-risk individuals experience vein thrombosis during a long airline flight. High-risk individuals are those who have experienced a previous episode of vein thrombosis or suffer from coagulation disorders, cancer, cardiovascular disease, varicose veins, severe obesity or limitation of mobility due to bone or joint problems. Thrombosis of the deep veins in the legs can lead to pulmonary embolism that can be fatal.

A group of British and Italian researchers now report that *Flite Tabs* (Aidan, Tempe, AZ, USA), a proprietary blend of nattokinase and pycnogenol, are effective in preventing edema and deep vein thrombosis during long-haul flights. Nattokinase is a fibrinolytic enzyme purified from the fermented soybean food Natto. Research has shown it to be highly effective in preventing the formation of blood clots and in rapidly dissolving existing clots. Pycnogenol is a water extract from the bark of the French maritime pine and has been found effective in controlling edema. It is a strong antioxidant, has significant anti-inflammatory effects, and increases capillary wall resistance. *Flite Tabs* contain 150 mg of a mixture of nattokinase and pycnogenol.

The clinical trial involved 204 high-risk airline passengers travelling between London and New York (a 7-8 hour flight). Half the passengers were randomized to receive 2 capsules of *Flite Tabs* 2 hours prior to the flight with 250 ml of water and another 2 capsules 6 hours later, also with 250 ml of water. The other half of the experimental group received placebo capsules in a similar fashion. The presence of blood clots in the veins of the leg was

determined with ultrasound scanning within 90 minutes of the beginning and completion of the flight. The degree of edema experienced during the flight was determined through a combined edema score including ankle circumference, discomfort, subjective swelling, and a standard edema test. All passengers were given suggestions as to how to avoid vein thrombosis. These suggestions included mild isometric exercise including standing and moving the legs for 5 to 10 minutes every hour, avoiding baggage under the seat, and drinking water regularly (100-150 ml every hour).

The researchers observed no thrombotic events in the *Flite Tabs* group, but discovered 5 cases of deep vein thrombosis and 2 cases of superficial thrombosis in the control group. Thus the total incidence of venous thrombosis was 7.6% in the control group versus 0% in the *Flite Tabs* group. The average edema score increased by 12% in the control group after the flight, but decreased by 15% in the *Flite Tabs* group. The researchers conclude that *Flite Tabs* are effective in controlling edema and reducing thrombotic events in high-risk airline passengers during long-haul flights.

Cesarone, MR, et al. Prevention of venous thrombosis in long-haul flights with Flite Tabs. Angiology, Vol. 54, No. 5, 2003, pp. 531-39

Editor's comment: Although this trial was specifically aimed at passengers known to be at high risk for venous thrombosis, there would seem to be much to gain and little to lose in making it a habit, even for low-risk passengers, to use *Flite Tabs* to eliminate the risk of venous thrombosis and edema during long-haul flights.

Low-dose fish oil therapy effective in IgA nephropathy

ROCHESTER, MINNESOTA. IgA nephropathy is a fairly common kidney disorder. It is caused by an inflammation (glomerulonephritis) in the network of blood capillaries involved in the filtration of waste products from the blood. More specifically, it

manifests itself through the deposit of the antibody immunoglobulin A (IgA) in the mesangial cells, which support the walls of the capillaries. The IgA deposits and accompanying lesions to the capillaries interfere with proper filtration of waste

products from the blood. IgA nephropathy is more common in men than in women and its incidence peaks between the ages of 16 and 35 years. IgA nephropathy is associated with a gradual decline in kidney function leading to end-stage renal disease within 5 to 25 years of diagnosis in 20-40% of patients. The disease is usually diagnosed after blood or excess protein is observed in the urine. Serum creatinine levels are abnormally high in IgA nephropathy because the kidneys are unable to filter creatinine (a waste byproduct of creatine, a protein that supplies energy for muscle contraction) out of the blood and excrete it in the urine. A doubling in serum creatinine level corresponds to a 50% decline in kidney function. There are no pharmaceutical drugs that will slow down or reverse the progression of IgA nephropathy.

Researchers at the Mayo Clinic previously reported that supplementation with 1.9 grams/day of EPA (eicosapentaenoic acid) plus 1.4 grams/day of DHA (docosahexaenoic acid) is effective in retarding the progression of IgA nephropathy. The researchers have now carried out another clinical trial to determine whether doubling the daily dose of fish oil supplement would be even more effective. Their randomized clinical trial involved 73 patients with biopsy-diagnosed IgA nephropathy. Ten of the patients had quite severe disease as indicated by a baseline serum creatinine level of 3.0-4.9 mg/dL while the remaining 63 patients had moderate disease (serum creatinine between 1.5-2.9 mg/dL). The fish oil supplement used in the trial was supplied by Pronova in Norway (trade name – *Omacor*) in the form of highly purified ethyl esters of EPA and DHA.

At the end of the 2-year study period the serum creatinine level in the low-dose group (1.9 g/day of EPA plus 1.5 g/day of DHA) had increased by 0.08 mg/dL per year while patients in the high-dose group (3.8 g/day of EPA plus 3.0 g/day of DHA) saw an average yearly increase of 0.10 mg/dL. Rapid deterioration in kidney function (creatinine increase of more than 0.5 mg/dL per year) was observed in 70% of the patients with severe disease as compared to only 23% in the group with moderate disease. There was no significant difference in the number of patients in the low and high dose groups who developed end-stage renal disease (ESRD). At the end of 2 years 86% in the low-dose group and 80% in the high-dose group were still free of ESRD. The corresponding numbers after 3 years were 73% and 76%. The 2-year number of about 85% ESRD-free compares to only 63% ESRD-free in a previously investigated placebo group.

The *Omacor* supplement was generally well-tolerated, but two patients (out of 73) did discontinue their treatment as a result of gastrointestinal intolerance. There were no unfavourable effects on serum lipid profiles (cholesterol levels), hematocrits, peripheral blood leucocytes or platelets. The researchers conclude that low-dose and high-dose fish oil supplementation is equally effective in slowing the progression of IgA nephropathy.

Donadio, JV, et al. A randomized trial of high-dose compared with low-dose omega-3 fatty acids in severe IgA nephropathy. Journal of the American Society of Nephrology, Vol. 12, 2001, pp. 791-99

MSG implicated in fibromyalgia

GAINESVILLE, FLORIDA. Fibromyalgia is the third most commonly diagnosed rheumatologic disorder (after osteoarthritis and rheumatoid arthritis). It affects mostly women with an average age of onset of between 29 and 37 years and diagnosis most often made between the ages of 34 and 53 years. It is estimated that fibromyalgia affects between 3 and 6 million people in the USA alone. The disorder is characterized by fatigue, morning stiffness, sleep disturbances, and widespread pain and tenderness.

Pharmacists at the University of Florida believe that monosodium glutamate (MSG) and aspartame (NutraSweet) are the underlying causes of fibromyalgia in a subset of patients. They describe

4 cases where patients completely eliminated their fibromyalgia and accompanying disorders by adhering to a diet free of MSG and aspartame. The symptoms reappeared when MSG was reintroduced into the diet and disappeared again when eliminated. The 4 patients were all women who had suffered from fibromyalgia for anywhere from 2 to 17 years. They all suffered from numerous other conditions including irritable bowel syndrome, carpal tunnel syndrome, allergic rhinitis (hay fever), TMJ, GERD, anxiety, depression, and headaches. All of these symptoms disappeared within a couple of months after MSG and aspartame were eliminated from the diet. One patient was able to reduce her number of medications from 15 to 1.

MSG is, unfortunately, an extremely common ingredient in most processed foods. It is also known under the aliases of gelatin, hydrolyzed vegetable protein, textured protein, and yeast extracts. Eliminating it and aspartame from the diet requires constant vigilance.

The researchers point out that MSG was classified as safe by the FDA in 1959. Because of its long history of "safe" usage it was approved automatically before new stringent test requirements for food additives went into effect in 1958. The researchers question the safety of MSG and suggest that much of the research performed to prove its safety for human consumption may have

been flawed. Both MSG and aspartame are now known to be potent neurotoxins (excitatory amino acids) and can affect the body through their action on central NMDA (N-methyl-D-aspartate) receptors and through the inappropriate release of pituitary hormones into the general circulation. The Florida pharmacists urge large scale clinical trials to further explore the connection between fibromyalgia and MSG and aspartame, but do point out that not all fibromyalgia patients may be sensitive to the two food additives.

Smith, JD, et al. Relief of fibromyalgia symptoms following discontinuation of dietary excitotoxins. Annals of Pharmacotherapy, Vol. 35, June 2001, pp. 702-06

Melatonin improves sleep

BERLIN, GERMANY. Whether or not melatonin improves sleep pattern is a subject of controversy. A team of Dutch and German researchers now weigh in with a new study that clearly shows that melatonin increases the duration of rapid-eye-movement (REM) sleep and helps alleviate disorders associated with disturbed REM sleep. The double-blind, placebo-controlled, parallel design study involved 5 women and 9 men with an average age of 50 years who suffered from reduced REM sleep duration and neuropsychiatric sleep disorders such as narcolepsy (daytime sleepiness), restless leg syndrome, insomnia, and periodic limb movement disorder. The participants took placebo or a 3-mg melatonin capsule as closely as possible to their normal bedtime, but always between the hours of 2200 and 2400 (10 p.m. to midnight) every night for 4 weeks and were then assigned to the opposite treatment after a 1-week washout period.

The researchers found that patients in the melatonin group increased the duration of their REM sleep by about 20% and also showed a significant drop in minimum rectal temperature during the night.

Eleven out of 14 patients reported clear improvements in their symptoms during melatonin treatment. Nine reported reduced daytime fatigue, 8 reported a stronger sense of feeling refreshed after awakening in the morning, and 8 reported increased sleepiness in the evening. None of the participants reported any side effects or changes in frequency, content, intensity or quality of their dreams. Of particular interest was the finding that the beneficial effect of melatonin lasted well beyond the time period in which the supplement was actually taken. In other words, once the circadian pacemaker is reset it remains this way for weeks or months after melatonin supplementation is discontinued. The researchers point out that it is crucial to keep the timing of melatonin administration constant. They also warn that melatonin may have undesirable long-term effects and should not be used for extended periods of time, except under the supervision of a physician.

Kunz, D, et al. Melatonin in patients with reduced REM sleep duration. Journal of Clinical Endocrinology & Metabolism, Vol. 89, January 2004, pp. 128-34

L-arginine cream may benefit diabetics

WELLESLEY, MASSACHUSETTS. Cold feet and toes are a major problem for diabetics. Research has shown that circulatory problems in diabetes patients are caused by a lack of nitric oxide (NO). NO causes vascular smooth muscle to relax resulting in increased blood flow. Nitric oxide is synthesized in the endothelium (the inner lining of blood vessels) through the oxidation of L-arginine by

the enzyme eNOS. American researchers have discovered that applying an L-arginine-based moisturizing cream to the feet can markedly increase the blood flow and temperature in both the feet and toes. The cream contains 12.5% L-arginine as well as high concentrations of choline chloride, sodium chloride, and magnesium chloride.

The cream was tested on 13 patients with diabetes and was found to be quite effective. The patients applied the cream morning and evening. After 3 weeks the temperature at the ball of the foot (metatarsal area) had increased from an average 82 degrees F (27.8 degrees C) to an average 87 degrees F (30.6 degrees C). The blood flow in the metatarsal area increased by 33% after 5 weeks of

treatment. The researchers conclude that the use of the cream significantly improved both blood flow and temperature and that the effect was surprisingly long lasting.

Fossel, ET. Improvement of temperature and flow in feet of subjects with diabetes with use of a transdermal preparation of L-arginine. Diabetes Care, Vol. 27, January 2004, pp. 284-85

All cheeses are not equal

ZURICH, SWITZERLAND. Swiss researchers report that cheese made from the milk of cows grazing freely in high alpine regions (alpine cheese) has a significantly better fatty acid profile than do other cheeses. The researchers analyzed the fatty acid content of 40 cheeses - 12 alpine cheeses, 7 industrial type Emmentals, 7 commercially available English cheddar cheeses, 6 cheeses from cows fed with linseed (flaxseed) supplements, and 8 alpine cheeses where the cows had received some stored fodder (silage).

They found that the pure alpine cheese contained 4 times more alpha-linolenic acid (ALA) than did the cheddar cheese and 60% more ALA than the Emmental cheese. ALA has been found to be beneficial in the primary and secondary prevention of fatal cardiovascular events. The Nurses' Health Study found that the daily consumption of just 1.36 grams of ALA reduced the risk of sudden cardiac death by 45%. Fresh alpine grass contains high amounts of ALA and the Swiss researchers believe

that this is what causes the alpine cheese to have an exceptionally high ALA content.

The alpine cheeses also contained 3 times more conjugated linoleic acid than did cheddar cheeses and had a favourable 1.1:1 ratio of omega-6 to omega-3 fatty acids. The alpine cheeses provided an average of 39 mg/100 grams cheese of beneficial eicosapentaenoic acid (also found in oily fish) and contained substantially less of the saturated fatty acid, palmitic acid. Somewhat surprisingly, the alpine cheeses also proved to be superior to cheeses made from the milk of cows whose fodder had been fortified with flaxseed. The researchers conclude that cheese made from cows grazing on alpine pastures have a favourable fatty acid profile and contains significant amounts of cardioprotective fatty acids.

Hauswirth, CB, et al. High omega-3 fatty acid content in alpine cheese. Circulation, Vol. 109, January 6/13, 2004, pp. 103-07

Lycopene helps prevent colon cancer

STUTTGART, GERMANY. Polyps are abnormal growths originating in the lining of the colon (large intestine). There are two kinds of polyps - adenomatous polyps (adenomas), which are believed to be precursors for colon cancer, and hyperplastic polyps, which are considered to be benign. The presence of polyps is usually established via colonoscopy.

German researchers now report that the presence of adenomas is associated with a low blood plasma level of lycopene. Lycopene, along with beta-carotene, is a member of the carotenoid family, and is a very powerful antioxidant, especially effective in neutralizing singlet oxygen radicals. Tomatoes and processed tomato products are good sources of lycopene. Other sources are watermelon, papaya,

guava, and pink grapefruit. Lycopene is also available in supplement form.

The researchers checked 165 patients for polyps with a complete colonoscopy and found that 63 (controls) had no polyps, 29 had hyperplastic polyps, and the remaining 73 had colorectal adenomas. The researchers also measured plasma levels of lycopene, beta-carotene, and alpha-tocopherol (vitamin E). They found that patients with adenomas had, on average, a significantly lower level of lycopene (52 micrograms/L) than did controls and patients with hyperplastic polyps (80 micrograms/L). There were no significant differences in the levels of beta-carotene and alpha-tocopherol among the three groups of patients. After adjusting for age, gender, alcohol

consumption, smoking, body mass index (BMI), and low concentrations of alpha-tocopherol and beta-carotene the researchers observed that only two variables were associated with a higher risk of adenomas. Smoking increased the risk by 300% and a plasma lycopene concentration below 70 micrograms/L increased it by 231% (odds ratio: 2.31). They conclude that plasma lycopene

concentrations are inversely associated with adenoma risk and point out that low lycopene levels have also been associated with an increased risk of lung, stomach and prostate cancers.

Erhardt, JG, et al. Lycopene, beta-carotene, and colorectal adenomas. American Journal of Clinical Nutrition, Vol. 78, December 2003, pp. 1219-24

Magnesium helps prevent diabetes

BOSTON, MASSACHUSETTS. The incidence of type 2 diabetes is growing rapidly throughout the world and diabetes is now a major global health problem. Researchers at the Harvard School of Public Health believe that a magnesium deficiency could well be part of the problem. Their study involved 85,060 female nurses and 42,872 male health professionals who were free of diabetes, cancer and cardiovascular disease at baseline. The participants completed food frequency questionnaires every 2 years throughout the study. After 18 years of follow-up 4,085 of the nurses had developed type 2 diabetes corresponding to an annual incidence of 0.3%. Among the men 1,333 cases were reported after 12 years of follow-up, also corresponding to an annual incidence of 0.3%.

After adjusting for age, family history of diabetes, smoking, alcohol consumption, body mass index (BMI), physical activity, high cholesterol levels, and a history of hypertension the researchers concluded that diabetes is associated with a low intake of magnesium. Women (female nurses) with an average daily intake of 377 mg of elemental magnesium had a 34% lower risk of developing diabetes than did those with an average daily intake of only 217 mg. Among the men (male health professionals) those with an average intake of 458 mg/day had a 33% lower risk of developing diabetes than did those with an average daily intake of 268 mg. Daily magnesium intake was positively associated with intakes of fiber and inversely associated with intake of processed meat and fat.

Only 3.1% of women and 3.6% of men used magnesium supplements, so it is not possible to say from this study whether supplements would be beneficial. There was no association between the use of multivitamins and diabetes risk.

The average magnesium intake among all women was 290 mg/day and that among men was 349 mg/day. The RDA for a 70 kg man is 420 mg/day. At least 84% of the male study participants had an intake below 420 mg/day. The RDA for a 57 kg woman is 340 mg/day. At least 84% of the female participants had an intake below 340 mg/day. In other words, at least 84% of all the study participants were likely deficient in magnesium intake. The researchers suggest clinical trials to evaluate the effect of magnesium supplementation on diabetes risk.

Lopez-Ridaura, R, et al. Magnesium intake and risk of type 2 diabetes in men and women. Diabetes Care, Vol. 27, January 2004, pp. 134-40

Editor's comment: Whole grains, nuts and green leafy vegetables are good sources of magnesium. However, the study clearly shows that the average American diet is seriously deficient in magnesium. The most common magnesium supplement, magnesium oxide, is very poorly absorbed; so widespread supplementation with this product is unlikely to show much benefit. The most absorbable supplements are magnesium glycinate (chelated magnesium), magnesium taurate, and magnesium citrate.

NEWSBRIEFS

Sudden death from snow shoveling. Studies of healthy, physically inactive men have shown that snow removal can be classified as an extremely vigorous exercise with heart rates reaching 175 beats/min and systolic blood pressure approaching 200 mm Hg. Researchers in Detroit now report that the incidence of sudden cardiac death rises dramatically when physically inactive men with atherosclerosis engage in manual or automated snow removal. They found that snow removal (manual or with a snow blower) was directly implicated in at least 35 sudden cardiac deaths during two recent snowstorms in the Detroit area. The most vulnerable times were between 6 and 10 AM and between 2 and 6 PM. Clearly removing snow, whether manually or with a snow blower, is not advisable for usually inactive men with a heart condition (atherosclerosis).

American Journal of Cardiology, Vol. 92, October 1, 2003, pp. 833-35

Reuse of cooking oils linked to hypertension. Spanish researchers report that people who reuse their cooking oils, especially sunflower oil, have twice the incidence of hypertension than do those who do not reuse their oils. Olive oil was found to be more stable than sunflower oil and its use less likely to be associated with hypertension. Obesity and abnormal glucose tolerance were also found to be associated with a higher risk of hypertension.

Editor: *One shudders when thinking of the hypertension-causing potential of oils used and reused in fast food places!*

American Journal of Clinical Nutrition, Vol. 78, December 2003, pp. 1092-97

Cigarettes with filters are safer. The results of a massive study involving cigarette smoking and lung cancer are now in. The study began in 1982 and involved 364,239 men and 576,535 women aged 30

years and older. The researchers found that current smokers were at least 5 times more likely to die from lung cancer than were non-smokers or former smokers. There were no significant differences in death rates among smokers who smoked high-tar, low-tar or medium-tar cigarettes; however, the mortality among smokers who used cigarettes with filters was substantially lower than among those smoking non-filtered cigarettes. The highest death rate was found among smokers who smoked high-tar cigarettes (more than 22 mg of tar) without a filter.

British Medical Journal, Vol. 328, January 10, 2004, pp. 72-76

Reassuring news? Guidelines just issued by the US Food and Drug Administration ban parts of cattle too sick or hurt to walk from being used in cosmetics and dietary supplements. The same guidelines also prohibit the use of animal blood in cattle feed – a measure aimed at preventing the spread of mad cow disease.

New Scientist, January 31, 2004, p. 5

Cleaning fluid linked to cancer. Danish researchers have linked exposure to the cleaning fluid trichloroethylene to an increased risk of certain cancers. Their study included over 40,000 blue-collar workers in 347 Danish companies with known use of trichloroethylene. The workers in these companies had a 20% higher risk of non-Hodgkin's lymphoma and renal cell carcinoma. However, workers in industries where trichloroethylene use was particularly heavy were found to have a 50% increased risk of non-Hodgkin's lymphoma, a 40% increased risk of renal cell carcinoma, and a 70% increased risk of esophageal cancer.

American Journal of Epidemiology, Vol. 158, December 15, 2003, pp. 1182-92

The Diet Zoo: Does Science Provide Guidance? – Part III

by William R. Ware, Emeritus Professor of Chemistry, University of Western Ontario

“Leben ohne Brot.” Wolfgang Lutz, M.D., 1967

A DISCUSSION OF SELECTED DIETS

In this last part of the review, we will briefly examine selected diets based on the clinical experience of practicing MDs, as well as the current recommendations from The Establishment. Lack of space prohibits a complete review of the Zoo. The above quote, the title of Lutz’s original book (see English version, *Life Without Bread* [109]), neatly summarizes one of the main themes of the low-carb school.

THE ATKINS DIET [110,111] The Atkins diet (AD) is the lowest carb diet in the menagerie. It will be discussed in more detail than similar diets because of its status as the poster child of the low-carb diets, and the low-carb diet that is most frequently compared in studies to Establishment diets and low-fat diets. The mere mention of the Atkins diet in some circles produces a vitriolic and totally irrational response with some of those taking up the argument risking a stroke or dangerous hypertension. It is doubtful that any other diet is seen in such black and white terms. The induction diet typically consists of 20 grams of low GI carbs per day for two weeks, which is indeed a very low amount. As the dieter moves from induction to eventual maintenance, the carb allowance increases to whatever the individual can tolerate while maintaining an ideal or target weight. Thus low GI fruits and vegetables are slowly introduced. The amounts of fat, protein and calories are more or less up to the individual, although this type of diet generally results in a calorie reduction. Contrary to the frequently heard statements of critics of the AD, there have indeed been recent studies that addressed the question of the efficacy and safety of this protocol, and as well there is a recent review suggesting that low carb diets such as this one deserve further and serious study and that the criticisms lack scientific evidence [112]. Highlights of five recent studies are as follows:

- Brehm et al [113]. Fifty-three obese healthy women were randomized to either a low-carb or a slightly reduced fat diet (30% of energy, which is only 8-10% below normal Western diets) which the authors call a low-fat diet, for a period

of 6 months. The low-carb diet started with the 20g of carb a day for two weeks and then progressed to 40 to 60 g/d if ketosis (ketones in the urine indicating fat metabolism) was maintained. Fat and protein were *ad libitum*. Each group reduced caloric intake by about 400 calories. The low-carb group lost 8.5 kg vs. 3.9 for the “low-fat” group, and as well the low carb group had twice the loss of body fat. There were no significant changes in either group in total cholesterol, or LDL cholesterol. The low-carb group has a significant decrease in triglycerides as well as a modest increase in HDL cholesterol, as compared to the low-fat group. The change in the ratio of TG/HDL in the low-carb group was in a direction and of a magnitude that was very favorable for CHD risk reduction.

- Foster et al [114]. Sixty-three men and women were randomized into two groups, one consuming a low-carb (Atkins model) diet, the other a conventional diet. The low-carb group was started with 20g/day of carbs for the first two weeks, and then allowed to increase carbs until a “stable and desired weight was achieved.” It is unclear what the desired weight was, since the subjects were all obese. The low-carb group was given a copy of Atkins’ book and told to read and follow the diet described. The “conventional diet” group was encouraged to eat a diet with 25% energy from fat, 60% from carbs and 15% from proteins, with 1200-1500 cal/day for women, 1500-1800 for men. Subjects on the low-carb diet lost more weight, 7 vs. 3.2 kg at 6 months, but at 12 months the numbers were 4.6 vs 2.5 kg, which was not a significant difference. The decrease in TG and the increase in HDL concentrations were greater among subjects on the low-carb diet as compared to the conventional diet throughout most of the study. Both diets significantly decreased diastolic blood pressure and the serum insulin response to an OGTT. No information is provided as to the 6 or 12 month carb consumption of the low-carb group seeking their “desired weight.” The low-carb diet

was associated with greater improvement in some risk factors for CHD. These positive results were in spite of poor adherence, high attrition and apparently little control of carbs as the low-carb diet progressed.

- Samaha et al [115]. Published simultaneously in the *New England Journal of Medicine* with Foster et al [114]. Seventy-nine severely obese men and woman completed this six-month study. The authors randomly assigned subjects to a low-carb diet or a calorie and fat-restricted diet, with the goal of comparing weight loss, changes in blood lipids and markers of glucose metabolism. However, examination of their Table 3 indicates the puzzling fact that the low-fat group consumed on average almost identical amounts of fat, protein and carbohydrate at six-months as compared to baseline, based on percent of energy. However, there was a decrease in calorie consumption in the low-fat group, but there was also a similar decrease in the low-carb group. The low-carb diet increased fat, decreased carbs and increased protein as a percentage of energy, as would be expected. In spite of these aspects of the study design, the low-carb group had a significant decrease in TG levels as compared to the low-fat group, but TC, HDL and LDL were little changed at six-months in both groups. The low-carb group, which included a high prevalence of diabetics and those with the metabolic syndrome lost more weight and experienced a relative improvement in insulin sensitivity, even after adjustment for weight loss, as compared to the low-fat group. Incidentally, the low fat group consumed 33% of their calories as fat, which is rather close to the Western diet average, and would not be considered by some as “low-fat.”
- Westman et al [116]. Fifty-one overweight healthy volunteers who wanted to lose weight were placed on a very low-carb diet (<25 g/day), with no limit on caloric intake. Carbohydrate intake was increased to about 50 g/day when the 40% of the subject's self determined target weight loss was achieved. This study included nutritional supplementation and recommendation to exercise. The average weight loss on an average daily caloric intake of about 1500 calories was about 20 pounds over 6 months. BMI dropped by 3.2 units, moving the group on average from obese to simply overweight. Changes in blood lipids were: Total cholesterol, 214 to 203; LDL, 136 to 126; HDL, 52 to 62, TG, 130 to 74 (all in mg/dL). These are clearly very favorable blood lipid changes.

There were no serious adverse effects observed.

- Sharman et al [117]. This study examined the effect of a ketogenic (producing ketosis) diet on serum biomarkers for CVD in normal weight men. The study lasted six weeks. Twelve men switched from their habitual diet (17% protein, 47% carb, and 32% fat) to a ketogenic diet of 30% protein, 8% carb and 61% fat. This would be close to the Atkins induction diet. Total and LDL cholesterol were unaffected, TG significantly decreased and HDL tended to increase. There were favorable changes in LDL particle size in subjects with small LDL particles. These results, according to the authors, suggest that a short-term ketogenic diet does not have a harmful effect on CVD risk factors and may improve lipid disorders characteristic of an unfavorable blood lipid profile.

These studies, while short term, indicate that greater weight loss is obtained with the Atkins' protocol than less restrictive or high carb diets with beneficial or neutral changes in the blood lipid profile. These five studies, all reported in 2002 or 2003, fail to support some of the criticisms of low-carb diets (bad breath is not considered a serious adverse result), and in particular the very restrictive AD. The long-term picture for the AD can only be obtained from Atkins' own clinical records. His clinic has treated over 60,000 patients over several decades, many with weight, cardiovascular or blood sugar problems. He claims a high success rate. There is no reason to not believe this, unless one considers him to have been a charlatan, dedicated only to making money and selling books. Anyone who has met this man would have a hard time accepting such a negative view. His enemies even claim that he recently had a heart attack because of adherence to his own diet, which is not true—his heart problem stemmed from an infection. He recently died from cerebral complications following a head injury due to a fall on the sidewalk in New York City during icy conditions. The critics also point to the high protein content, the high fat content, the lack of fruits and vegetables, the dangers of ketosis, etc, but they neglect to take into account the fact that the diet they are criticizing is not the maintenance diet, which offers the patient ample choice of both fruits and vegetables, although not 200-300 grams of carbs per day, which the typical American eats. The protein and fat objections have been discussed in detail in Part II. There is reason for some to be concerned with his lax attitude about saturated fat and red meat,

processed meat and high-fat dairy products, but the Atkins principles can be equally well applied while substituting more fish and poultry for the protein component. However, it should be mentioned that constipation is a common complaint associated with induction-phase type low-carb diets and it is generally suggested that soluble fiber such as psyllium be used, taken with large quantities of water, as a supplement to eliminate this problem.

THE SOUTH BEACH DIET [118]. This is a relatively new diet developed by Dr. Arthur Agatston, M.D, a cardiologist who lives in Miami Beach. He found that low-fat high-carb diets advocated by the AHA, while giving initial modest improvements in weight and cholesterol levels, invariably were followed by a return to the initial state, or even worse. With his patients, both the Pritikin and Ornish diets also failed, and these observations were not only based on his experience, but also that of some of his colleagues. Patients were unable to sustain cholesterol and/or weight reductions using low-fat high-carb diets. Agatston also had a weight problem himself and feared the development of insulin resistance and obesity. The South Beach Diet (SBD) is the result of his research, experimentation and clinical observations. It appears to be rapidly gaining popularity.

Like the AD, the SBD has three phases. Phase one last two weeks and includes normal-size portions of meat, chicken, turkey, fish, shellfish, eggs, cheese, nuts and vegetables. Salads are made with olive oil dressing. Certain snacks and desserts are OK, as is coffee or tea. But, no bread, rice, potatoes, pasta, baked goods or fruit. No candy, cake, cookies, ice cream, or sugar. No beer or alcohol. That's it. No estimates of grams of carbs or calories. This sounds a lot like the AD except there is no quantitative limit on the grams of carbs per day. In Agatston's experience, there will be a weight loss of 8-13 pounds in phase 1, and some of this will be from fat loss. Phase 2 starts adding foods intelligently selected from the forbidden list as long as weight loss continues, albeit at a slower rate of one to two pounds per week—actually the generally recommended rate that is considered healthy. Wine is recommended. Phase 3 kicks in when one hits their target weight. Then the amounts of added foods are adjusted to stabilize weight and prevent weight gain.

Agatston organized a small clinical study involving 60 patients. Almost all experienced weight loss, lowered TG, lowered LDL, raised HDL and an

improved waist-to-hip ratio. The results were presented at a symposium at an annual AHA meeting. He also conducted a randomized study pitting the SBD against the AHA step 2 diet. The favorable results observed in the first study also appeared in this study when the two groups were compared. This work was presented at a meeting of the American College of Cardiology.

Agatston's book contains chapters that guide the reader in the selection of good vs. bad fats and carbs. The philosophy is similar to that of most low-carb diets and follows in general the principles outlined above in the discussion of fats and carbohydrates. For example, he cautions against *trans*-fats and saturated fats, and high GI carbs. The book also contains case histories and is half recipes and meal plans.

THE SCHWARZBEIN PRINCIPLE [9]. The subtitle of this book by Dr. Diana Schwarzbein, M.D. and Nancy Deville is *The Truth About Losing Weight, Being Healthy and Feeling Younger*. Dr. Schwarzbein is an internist specializing in endocrinology who founded the Endocrinology Institute of Santa Barbara in 1993. She subspecializes in metabolism, diabetes, osteoporosis, menopause and thyroid conditions. The "principle" in question is "*Degenerative diseases are not genetic but acquired. Because the systems of the human body are interconnected and because one imbalance creates another imbalance, poor eating and lifestyle habits, not genetics, are the cause of degenerative disease.*"

When Schwarzbein first started practicing it was in a clinic where she saw only diabetics. This was in 1990 and she treated them according to the standard practice of the day, which included low-fat high-carbohydrate diets. When she actually experienced the phenomenon of making her patients sicker on the American Diabetes Association (ADA) diet, she began to study this undesirable outcome and experiment with alternatives, using her patients as subjects for diet variations. The ADA diet and the notion that low-fat high-carb diets were the gateway to health for everyone was so deeply imbedded in her training that it took a while to realize that "by recommending a high-carbohydrate diet *we were giving sugar to diabetics* (italics from original text)." Space does not permit a detailed discussion of her development of the diet, but suffice to say that over more than a decade of treating both diabetics and non-diabetics with weight, cholesterol, heart, glucose metabolism and other problems, the optimum diet was found to

be a low-carb diet with emphasis on low GI foods, but which did not limit protein or fat. This sounds remarkably like Agatston's story, but in the context of diabetics rather than cardiac patients. But both this diet and the SBD apply in general, not just to the patient populations that led to their development.

This diet is called the Schwarzbein Healing and Maintenance program. The basic guidelines are (a) Do not skip meals—five a day are ok; (b) Eat “real food” that you could in theory pick, gather, milk, hunt or acquire by fishing; (c) Choose from the four nutrient groups at each meal by eating as much good fat and protein as needed and a variety of non-starchy vegetables. Carb consumption (the fourth category, differentiated from non-starchy vegetables) should be in accord with metabolic and activity levels; (d) Avoid caffeine, alcohol and stimulants; (e) Make the elimination of over-the-counter and prescription medication a goal with the help of your physician. The healing phase is similar to Phase 1 of the SBD, since the emphasis is on low GI carb sources, the avoidance of starchy foods, and the consumption of ample fat and protein. This diet separates non-starchy vegetables, for which there is no limit on consumption, and what Schwarzbein terms *carbohydrates*, a category that includes starchy vegetables, legumes, grains, whole grain flour and meals, yogurt, fruit, bread and crackers. Tables of “carbohydrate foods” are presented giving the portions that contain 15 grams of carbohydrate, and a table is given that provides quantitative guidance as to consumption. This interesting table (pp 260, paperback edition) takes into account how active a person is, how overweight the person is, and how much fat has collected around the mid-section, which she calls the “insulin meter.” The numbers range from 15 to 75 grams per meal, the latter for normal body composition and extreme activity. Thus this diet is quite low-carb, and the numbers, for overweight individuals, compare more or less to the AD ongoing and maintenance stages, but the non-starchy vegetables do not count in determining the grams of carb per meal. The healing phase lasts until the health problems have been rectified, e.g. a return to normal blood lipid profile, weight loss, normal glucose metabolism, increased insulin sensitivity, etc. The Nutritional Maintenance program is simply intended to prevent the “cured” problems from recurring or new problems from developing. This diet also shares a basic philosophy with the AD and the SBD

Readers interested in Schwarzbein's approach should read the book. It also contains extensive justification of the approach based on elementary endocrinology and the role of high insulin levels in the development of health problems. The case histories are compelling. Some of her patients who were on nearly zero-fat diets were in fact slowly killing themselves, were prematurely aged, and could be frequently identified at a glance as they walked into the consulting room.

THE PROTEIN POWER LIFEPLAN [119,120]. Developed by Michael and Mary Eades, two MDs who practice weight loss medicine in Boulder, Colorado. Their diet is described in two popular books. They examine questions of nutrition and lifestyle through the “Paleolithic lens”, and are concerned not only with weight loss but with many other health problems including diabetes, cholesterol and triglyceride disorders, autoimmune syndromes, etc. The Eades belong to the low-carb school and have found through years of clinical practice that that dramatically decreasing the carbohydrate content of meals from the typical Western diet (50-60% of energy) frequently leads to a decrease in blood insulin and glucose, and improves the blood lipid picture, including the type of LDL present, and in general contributes to improved health. They emphasize that the decrease in insulin decreases the fat storage process and increases the fat utilization process, as the body burns fat to get energy. While the low-carbohydrate diet is a weight reducing diet, this can be thwarted by consuming too many calories, and thus from the point of view of the Eades, calories do count. According to their clinical experience, if you want or need to lose weight but still can't on a typical low-carb diet, then it is necessary to restrict calories or use more energy in physical or mental activity, or both. While they place no limits on fat consumption, calorie restriction is most easily done by fat restriction because of the large number of calories per gram in fat, but they hold that it is very important to get proper amounts of the essential fatty acids in the daily diet, and keep the omega-3 to omega-6 ratio near one to two. According to their clinical experience, for the vast majority of people, simply following a low-carb diet will create enough of a calorie deficit to result in significant weight loss. If a person has small caloric demands, then weight loss can become a problem. Once a weight goal has been reached, one should be able to increase the caloric intake to halt weight loss by eating more protein and fat, as well as additional carbohydrate, as long as the carbohydrate consumption keeps the insulin and blood sugar levels in the normal range.

They use an in-office insulin response test based on the blood glucose response to a small IV dose of insulin.

The Protein Power Lifeplan differs from those described above in that the diet involves setting a *minimum* for protein intake per meal. The calculation of minimum protein intake per meal takes into account an individual's weight, gender and height. For example, the following numbers have been taken from their table: 125 lb woman, 5' to 6' in height—26 g/meal; 200 lb woman, 5' to 6' in height—34 g/meal, 150 lb man, 5'4" to 6'6" in height—34 g/meal, 200 lb man, 5'8" to 6'10" in height—40 g/meal. Now examine the protein content of common foods: beef, poultry, pork and fish, 7 g/oz; eggs, 6 g/egg; hard cheese, 6-7 g/oz; cottage cheese, 7 g/1/2 cup.

Obviously, breakfast is the only real problem, since two eggs provide only 12 grams of protein. One can make a cheese omelet and approach the numbers given. Other authors of diet plans suggest that the protein problem can be partly solved by using a protein concentrate such as whey in the form of a low carbohydrate protein drink, either alone or mixed with other things. Health food stores have whole walls devoted to displaying huge, half-empty containers of protein powders, but it is important to read the labels and select low-carb products. Certain products also contain aspartame, which some refuse to consume. This is an easy way to boost the protein content of snacks and especially breakfast without resorting to steak and eggs or a tuna melt at 7 or 8 AM while in a rush to get to work. To put these protein numbers in perspective, consider a maintenance diet with 30g carbs/meal or 90 g/day. If the person is on a 1500 calorie diet, then this is 24% of calories from carbs, leaving 76% from protein and fat. If we take 40% from fat, then the remaining 36% from protein translates into 135g/day, which is close to but above the minimum for a 200 lb man who is tall.

Now the crux of the matter, *carbohydrate limitation*. The initiation level of their diet involves 7-10 grams per meal of carbohydrates, but they count only the non-fiber part of the carbohydrate that is convertible into glucose (the ECC, the effective carbohydrate content). The 7-10 grams per meal translates into about 20-30 grams of ECC per day, which is similar to the Atkins induction diet. Very small amounts of commonly consumed foods will meet or exceed this limit. The Eades set no specific time limit on the initiation phase. It depends on why one is on the diet. Their patients stay on it until the underlying

health problems are solved, and this generally involves repeated blood tests for triglycerides, HDL, LDL, blood sugar, insulin etc., as well as the observation of weight loss and loss of body fat. Like the Atkins approach, one then increases the carbohydrate intake and watches to see what happens. The transition period involves 15 grams ECC per meal, and maintenance 20-30 ECC grams per meal if there are no undesirable effects. At this point their protocol becomes somewhat more complicated since they offer different approaches depending on the dieter's philosophy. Consulting their books is necessary at this point. While some critics call this simply a high-protein diet, it is really a low-carb diet with the balance of calories made up from protein and fat. They simply set what they consider to be the minimum on the protein content—a different philosophy than some of the diets discussed which simply allow fat and protein amounts to be decided on an *ad lib* basis. However, in many instances, followers of other low carb diets will without knowing it meet their protein minimums.

THE NEW SUGAR BUSTERS! [61]. Of the four individuals involved in the development and promotion of this diet, three are MDs, including a cardiovascular surgeon, an endocrinologist, and a gastroenterologist. The basic concepts are as follows. They encourage the reader to avoid refined sugar and processed grain products (i.e. made from flour), and instead select what they call "low-insulin producing carbohydrates," i.e. low GI carbs. They hold that most of the fat in our bodies comes from sugar or indirectly from sugar derived from starch, not fat. They recommend fruits, green vegetables, dried beans, and whole grains. Such action provides a high-fiber content. They recommend lean and well-trimmed meat, with "careful attention to saturated fats." Consumption of low fat milk and cheese is suggested, and *trans*-fats are to be avoided. Three meals a day are suggested, along with appropriate snacks, with attention to moderate portions sizes. Late night snacking is discouraged. The similarity between Sugar Busters and the diets described above cannot escape recognition. However, Sugar Busters does not spell out amounts, or require counting grams of carbs or calories. The chapter on "Acceptable foods and substitutes" does not give quantitative guidance as to amounts. They do, however, suggest 30-40% calories from fat if most of the fat is mono- or polyunsaturated, and see nothing wrong with 30% of calories from protein. Clearly, a lot is left up to the individual to adjust portion sizes to achieve slow but steady weight loss. Their point is that the main

hurdle is passed when one switches to low GI carbs and eliminates sugar and starchy foods. By now this should sound familiar!

DR. SINATRA'S MODIFIED MEDITERRANEAN DIET [121]. Dr. Stephen Sinatra is a board certified cardiologist and Assistant Clinical Professor of Medicine at the University of Connecticut School of Medicine. He is also in private practice at his New England Heart Center in Manchester, Connecticut. In his book *Heart Sense for Women* [121], published in 2000, he endorses only the Mediterranean diet for both heart health and weight loss. Like Schwartzbein and Agatston, a decade ago or more he recommended the standard low-fat high-carb diet to his cardiac patients. His comments are worth quoting: "Boy, was I off the mark! Many of my patients did initially lose weight on the no-fat, low-fat diets, but over time their HDL 'good' cholesterol decreased and their triglycerides shot up, and they often regained weight."

The diet he now recommends involves decreasing intake of (a) processed foods containing white flour and sugar, such as breads, cereals, flour-based pastas, pastries and bagels; (b) foods containing *trans*-fats, especially commercially prepared crackers, cakes, candies cookies, doughnuts, chips and processed cheese; (c) starchy, high GI cooked vegetables such as potatoes and corn; (d) processed canned vegetables; (e) processed fruit juices which are generally high in sugar; (e) red meats and organ meats; (f) corn, safflower, sunflower, peanut and canola oil; (g) whole milk, high-fat cheese, and whole-milk yogurt.

He recommends increasing the intake of (a) oatmeal and high fiber pastas; (b) low GI vegetables such as asparagus, broccoli, kale, spinach, cabbage, Brussels sprouts, and legumes such as lentils, soybeans and chickpeas; (c) onions and garlic; (d) herbs such as rosemary, basil and oregano; (e) fruits such as cherries, peaches, grapefruit, plums, dried apricots, rhubarb, pears, apples, cantaloupes, grapes and kiwi, although the latter three are somewhat high in sugar; (f) protein such as fish, especially fatty cold water fish like salmon, mackerel, sardines and shellfish, and eggs, up to 6 per week; (g) soy products like tofu, soybeans and soy milk; (h) extra-virgin olive oil on salads and vegetables; (i) nuts and seeds, including walnuts, almonds and flaxseed; (j) low-fat cottage cheese, feta cheese, and small amounts of parmesan grated.

On his website (www.drsinatra.com) Dr Sinatra estimates his Mediterranean diet has 20-25% protein, 30-35% healthy fats, and 45-50% low GI carbs, which includes some fruit. Thus this is not a low-carb diet, but approaches the low end of the high-carb type diets, with the qualification that the carbs suggested are mostly low GI. Nevertheless, the allowed and discouraged food items are very similar to the above diets. In many respects, it is like a maintenance diet of the low-carb school if the individual can maintain a desired weight on 45-50% energy from selected carbs. The principles can also be applied with reduced carb consumption. No detailed information is given as to amounts, calories, or what to do if this diet does not result in weight loss, although presumably one simply cuts down on portions. Sinatra also recommends supplements (as do most proponents of low-carb diets) to aid in weight loss (see his website). The website contains a good summary of the research backing up the healthful aspects of this type of diet. A whole review could be devoted to the Mediterranean diet.

THE ESTABLISHMENT POSITION

The following is presented as evidence that The Establishment is changing its views to some extent in the direction of the diets described above and the philosophy promoted by Willett and others. For example, mention of low-fat diets per se is now uncommon, and the National Cholesterol Education Program (NCEP) has set 35% as the upper limit for calories from fat, which by standards of a decade or two ago is revolutionary. As regards fat, all the AHA discusses is saturated and *trans*-fats, with no total fat limit.

AMERICAN HEART ASSOCIATION. The AHA position as of 2002 regarding the *primary* prevention of CVD and stroke through the manipulation of macronutrients: Consume a variety of fruits, vegetables, grains, low-fat dairy products, fish, legumes, poultry and lean meats. Match energy intake with needs and make changes to achieve weight loss if needed. Reduce saturated fats to < 10% of calories, and reduce *trans*-fatty acids by substituting grains and unsaturated fats from vegetables, fish, legumes and nuts [122].

NATIONAL CHOLESTEROL EDUCATION PROGRAM (ADULT TREATMENT PANEL III).

Recommended distribution and sources of macronutrients (in the context of LDL lowering therapy): Saturated fat 7%; protein approximately 15% and carbohydrates 50-60% of total calories.

Total fat is allowed to range from 25-35% of total calories provided saturated fats and *trans*-fats are kept low. “A higher intake of total fat, mostly in the form of unsaturated fat, can help reduce triglycerides and raise HDL cholesterol in persons with metabolic syndrome (*italics not in original*).” Carbohydrates should be obtained predominantly from foods rich in complex carbohydrates including whole grains, fruits and vegetables [123].

AMERICAN DIABETES ASSOCIATION.

Recommendations for the *prevention* of type 2 (adult onset) diabetes: Reduce the intake of total fat, particularly saturated fat. Increase the intake of polyunsaturated fat, keeping in mind the appropriate energy intake for weight management. Increase the intake of whole grains and dietary fiber. Author’s note: examination of the source reference will reveal that each of these recommendations is carefully worded to indicate uncertainty in the connection between the indicated macronutrient and the risk of developing diabetes. No quantitative guidelines are given for fat or carbohydrates [124].

US DIETARY GUIDELINES, USDA/US DEPARTMENT OF HEALTH AND HUMAN SERVICES.

These are the recommendations from the 2000 Edition that relate to the choice of macronutrients (from [125]): Choose a variety of grains daily, especially whole grains. Choose a variety of fruits and vegetables daily. Choose a diet that is low in saturated fat and cholesterol and moderate in total fat. Choose beverages and foods to moderate your intake of sugars. Author’s note: In the 1995 Edition, the fat recommendation was to choose a diet low in fat, saturated fat and cholesterol. The 2000 Edition recommendations also indicate that one should “let the pyramid guide your food choices.” See [27] an alternative view on the pyramid, and [125] for a discussion of the deficiencies in these Guidelines.

CONCLUSIONS

The so-called fad-diets selected to be reviewed were all developed by practicing physicians to meet what they considered to be a need for something that worked. The patients were probably followed as carefully or even more carefully than they would have been in formal studies, with attention to blood lipids, fasting glucose, blood pressure kidney function, etc. The record of success observed by these physicians is unfortunately not material acceptable to the major peer-reviewed journals. These were uncontrolled observations on non-randomized populations, what is generally painted

with the term “anecdotal”, and mainstream medicine has been taught to ignore, ridicule and even fight such “research” and regard the results as unproven, undeserving of their attention, and perhaps even dangerous. Historically, mainstream medicine listened to The Establishment, whose recommendations regarding both fat and carbohydrates they believed were based on sound science. This turned out by and large not to be true, as both Gary Taubes and Walter Willett have taken pains to point out in a very public way. Meanwhile, the developers of the much-maligned fad-diets, it would appear, were in fact on the right track. In fact it now seems quite inappropriate to continue calling them fad-diets.

All the reviewed diets are rather similar in their basic philosophy, which simply stated is that sugar, starchy foods, processed foods and baked goods containing refined grains and sugar, and high GI fruits and vegetables should be eaten in limited amounts or not at all, depending on the individual circumstances. This philosophy is similar to the prudent diet pattern discussed above. The extent to which the lost calories are replaced by fat and protein depends on why one is dieting, but in general, this substitution results in a lower calorie diet and may contribute to weight loss, better glucose metabolism, and a better blood lipid profile. In spite of the fact that the diets differ in detail, this common thread is important because this appears to be the same direction The Establishment is headed and as well corresponds with the general conclusions from the large nutritional epidemiology studies from Harvard and elsewhere which are so well summarized in Willett’s book. One difference, however, is that the guidelines quoted above from Willett’s book do not directly address the problem of weight loss. While the authors of the various diet books would no doubt be quick to point out their unique features, and the critics quickly state their favorite complaints, the common philosophy is nevertheless clear. In addition, to call the Atkins, South Beach, Schwarzbein, Protein Power, and Sugarbusters diets simply low-carb is an oversimplification, since in the maintenance phase they become what might be termed moderate carbohydrate diets, with the carb consumption geared to the individual’s metabolic requirements so that weight is stabilized. Thus food selection and portion sizes become the central problem, both with regard to fruits and vegetables, but also with regard to fat and protein. Also, it is important to recognize that these diets in general address blood lipid and glucose metabolism problems as well as weight loss. There is a certain irony in the fact that the

general public is being drawn closer to many of the current Establishment recommendations by following the very diets the Establishment was condemning a few years ago. The emphasis has dramatically shifted to a recognition of the importance of selecting types of fats and carbohydrates, rather than advocating a diet simply low in fat, which means in practice, high in carbohydrates, frequently indiscriminately selected.

There is a huge variation in individual reactions to the macronutrient content of a diet, both with regard to weight gain or loss and the clinical parameters related to glucose metabolism and blood lipids. It is possible to take the general principles of the reviewed diets and manipulate the distribution of macronutrients, bearing in mind the considerations associated with the selection of each class, and experiment to determine if a successful, individually tailored formula can be achieved. In this scenario periodic glucose and blood lipid tests are as important for some as the number that appears on the scale.

Some individuals like diets that are spelled out in detail, perhaps even meal by meal, whereas at the opposite extreme is Willett's book which puts forward an eating philosophy as a guide to selection of macronutrients—those to emphasize, those to avoid or limit, and thus allows a creative and individualized approach consistent with the personal goals involved. What is important is the basic philosophy which relates to the question of what is a healthy diet, a subject that has been emphasized in this review. Readers interested in pursuing one of the discussed diets or making up their own unique diet are encouraged to purchase some of the diet books mentioned, if for no other reason than that they contain valuable lists of foods classified according to the type of fat or carbohydrate that predominates. Such food tables are very valuable in making up lists of acceptable foods, given a preconceived diet philosophy one has decided to follow.

Nutritional epidemiology and nutritional science are difficult areas because of the extreme complexity of food on the one hand, and the individual variability on the other. After all, the adult population in North America consists of a grand mixture of the slim to the obese, a large racial mix, and there is a range from the really healthy to those with a assortment of ailments, some diet related, some not, some life threatening, some only offering the potential. However, it must be kept in mind that in the areas of cardiovascular disease and diabetes, diet plays a

significant role both in prevention and treatment. When a healthy diet is combined with other lifestyle aspects such as exercise, not smoking, and stress reduction, the reduction in risk for both CVD and diabetes can be dramatic.

This review has only touched on the highlights of the subject of popular diets. The fact that a number of popular diets have not been discussed should in no way be taken to indicate a positive or negative attitude of the author toward these omitted diets, but rather simply space limitations and selection criteria. Detailed discussion of important subjects such as the role of supplements and exercise has been omitted. This review should not be viewed in any way as providing medical advice, but rather a guide to a selected segment of the "popular" and peer reviewed literature. This review deals with various aspects of diet as they relate to adults, and should not be extrapolated to diet questions concerning children, since neither the literature quoted nor the diets reviewed deal with either pediatric nutrition or the problem of teenage obesity. Individuals embarking on significant dietary changes should consult with their health care provider, especially if they are on any medications or have health problems.

POSTSCRIPT—ALL IS FAIR IN LOVE AND WAR, IN THIS CASE THE DIET WARS

The recent media furor over the physical condition of Dr. Robert Atkins at the time of his fall and subsequent death deserves a comment. The media have gone wild over a mistakenly released report from the New York Medical Examiners (ME) Office which passed through the hands of a Nebraska physician and on to an association called the "Physicians Committee for Responsible Medicine," or PCRM, a group known to actively promote vegetarian diets and to have a strong anti-Atkins agenda. They released the report to the media. While the dedicated vegetarian connection was pointed out in the *New York Times* article (Feb 11), as well in an article in the *Wall Street Journal* (Feb13), this aspect of the PCRM may not be generally known either in the medical or lay communities. The lead editorial in *The Globe and Mail* on February 16 failed to mention this connection. The PCRM have used their platform of apparent medical respectability to help create what appears to be a quite unnecessary and in fact a seemingly irresponsible furor. At issue is Atkins' reported weight at death, 258 lbs, and brief, scribbled notes by a medical examiner indicating a history of heart attack, congestive heart failure and

hypertension (see www.smokinggun.com for copies of the documents). The ME's observations were not based on an autopsy—one was not performed according to a spokesperson from the ME's office quoted in the Times. Hospital records provided by the family indicate that he weighed 195 pounds when admitted to hospital after the fall. In addition, Dr Patrick Fratellone, Atkins' personal cardiologist, is quoted in the WSJ (Feb 13) as saying that his weight fluctuated within 5 to 10 pounds of 195 during the three years that he cared for him until June 2002. At six-foot height, this puts him as just slightly overweight, not obese due to following his own diet, as his critics are now claiming. Dr. Fratellone commented that a viral infection had resulted in cardiomyopathy and thus heart weakness, and was quoted as saying that "Under

my care, he never had a heart attack and I did not treat him for hypertension." The WSJ also reports that Fratellone indicated an angiogram in 2002 revealed only a minor narrowing of the arteries that did not cause any symptoms. Atkins was 72 at the time of his death. The public dissemination of medically confidential records presumably violates medical ethics. According to the New York Times article this release to the media was called, by the Atkins supporters, illegal and in violation of federal law. Some might have reason to question the word "Responsible" in the title "Physicians Committee for Responsible Medicine." The Atkins diet and the other related low-carb diets should be judged as best one can on scientific grounds rather than on speculation and innuendo and what is presented by the media.

See Part I for references*

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