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closeUP

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INSIDE

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Nutrition Close-Up is a quarterly publication of the American Egg Board, written and produced by the Egg Nutrition Center. *Nutrition Close-Up* presents up-to-date reviews, summaries and commentaries on the latest research on the role of diet in health promotion and disease prevention, including the contributions of eggs to a nutritious and healthful diet. Nutrition and health care professionals can receive a **free** subscription for the newsletter by contacting the Egg Nutrition Center.

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Low-Carbohydrate vs. Conventional Low-Fat Diets for Weight Loss

Traditionally, healthcare professionals have recommended high-carbohydrate, low-fat, calorie-restricted diets for weight reduction and modification of CVD risk factors. This regimen has become a universal and time-honored dogma; but since the resurgence of the high-protein, low-carbohydrate diet and its huge popularity, a wide and growing rift has developed between carbohydrate-promoting traditionalists and the high-protein avant-garde. While carbohydrate-restricted diets appear to induce weight loss, researchers and clinicians are concerned that such diets, which are typically higher in total fat and saturated fat, might raise serum cholesterol levels and increase the risk for CVD.

With controversy brewing on both sides, there seems to be no shortage of opinions about the way one should diet; and since long-term prospective research is lacking, there are no definitive answers to settle the controversy. Scientists are just beginning to present findings from the first studies on low-carbohydrate diets—and this preliminary research has generated some intriguing results.

Foster and colleagues recently conducted a weight-loss study comparing the effectiveness of a low-carbohydrate, high-protein, high-fat diet (consistent with the guidelines found in *Dr. Atkins' New Diet Revolution*) with that of a low-calorie, low-fat, high-carbohydrate, "conventional" diet in 63 obese men and women. Participants were randomly assigned to follow the carbohydrate-restricted (n=33) or the conventional diet (n=30) and were provided with minimal professional diet instruction (i.e. met with a registered dietitian at 3, 6, and 12 months) to more closely simulate the circumstances of a typical dieting population. Researchers followed participants for one year tracking weight changes, TAG levels, and serum total, HDL, and LDL cholesterol levels.

Although the low-carbohydrate diet regimen produced greater weight loss at the end of 6 months than did the conventional high-carbohydrate, low-fat regimen (about 4% more), this difference did not persist. By the end of one year, the differences in weight loss had disappeared, possibly due to the high rate of attrition among both groups. Only 37 participants completed the full 12-month study (20 on the low-carbohydrate regimen and 17 on the conventional diet). Increases in HDL and decreases in TAG were consistently greater for the low-carbohydrate group over the course of the study. No differences were observed between groups with respect to serum total and LDL cholesterol levels at the conclusion of the study.

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Low-Carbohydrate vs. Low-Fat...

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In another recent weight loss trial conducted by Samaha et al., 132 severely obese (BMI=35) subjects were randomly assigned to one of two diet groups, one carbohydrate-restricted (n=64), the other calorie- and fat-restricted (n=68). The majority of participants had diabetes (39%) or metabolic syndrome without diabetes (43%). Potential participants using weight-loss medications or participating in diet programs were excluded from the study. Researchers followed participants for 6 months, monitoring weight changes, TAG concentrations, serum cholesterol levels, and insulin sensitivity. Only 79 participants completed the six-month study (43 in the carbohydrate-restricted group and 36 in the calorie- and fat-restricted group).

During the first month, participants met weekly for diet instruction. Diet instruction was given monthly for the remaining 5 months of the trial. Those on the low-carbohydrate regimen were instructed to have no more than 30 grams of carbohydrate per day and were not advised to restrict fat intake. Those randomized to the conventional diet were instructed to reduce daily calorie consumption by 500 kcals per day and to limit fat to no more than 30% of total calories (consistent with the guidelines from the National Heart, Lung, and Blood Institute).

As expected, those in the low-carbohydrate group reported consuming significantly more calories from fat (P=0.004) and protein (P<0.001) than participants following the low-fat diet. By the end of the study, those on the carbohydrate-restricted diet had lost more weight (-5.8 ± 8.6 kg vs. -1.9 ± 4.2 kg) than those on the calorie- and fat-restricted diet, even though the reported calorie deficit was not significantly different between groups. They also experienced greater declines in TAG levels (-20 ± 43% vs. -4 ± 31%). Additionally, insulin sensitivity improved to a greater extent among non-diabetic subjects in the carbohydrate-restricted group (6 ± 9% vs. -3 ± 8%) than those assigned to the higher carbohydrate regimen.

Over the course of the study, no significant changes were observed in either group with regard to total, HDL, or LDL cholesterol levels. Assignment to the carbohydrate-restricted diet and amount of weight lost were determined to be independent predictors of improvement in TAG levels and insulin sensitivity after controlling for potentially confounding factors such as age, race or ethnic group, sex, base-line BMI, base-line caloric intake, and the presence or absence of hypertension, diabetes, active smoking, and sleep apnea. The authors speculated that the greater weight loss among participants in the carbohydrate-restricted group was likely a result of overall reduced caloric intake, which they speculated could have been due to increased satiety on the higher fat/protein regimen.

What's the bottom line? Both of these studies demonstrated that carbohydrate-restricted diets can be effective as short-term weight reduction strategies in obese individuals. In both studies, the weight-loss occurred without detrimental effects on serum cholesterol levels; and TAG levels improved more for those on the carbohydrate-restricted regimen than for those in the low-fat group.

Limitations to these studies include small sample sizes and high drop-out rates. Nevertheless, this research contributes valuable information about low-carbohydrate diets and suggests new directions for future research. Although the findings of these studies make the low-carbohydrate regimen look appealing, many questions remain unanswered. Longitudinal studies will be necessary to ensure the long-term safety and efficacy of diets low in carbohydrates. Such research is undoubtedly warranted in light of the positive findings presented here and their potential impact on the overweight and obese patient population.

Foster GD, Wyatt HR, Hill JO, et al. A randomized trial of a low-carbohydrate diet for obesity. *N Engl J Med* 2003;348:2082-90.

Samaha FF, Iqbal N, Seshadri P, et al. A low-carbohydrate as compared with a low-fat diet in severe obesity. *N Engl J Med* 2003;348:2074-81.

Key messages

- Compared to participants following conventional diets, the participants on the low-carbohydrate diets lost an equal or greater amount of weight.
- The carbohydrate-restricted diets did not negatively influence serum cholesterol levels, nor did the conventional diets improve participants' cholesterol levels.
- Low-carbohydrate diets reduced TAG levels significantly in comparison to the conventional diets.
- Prospective studies are needed to determine the long-term efficacy of carbohydrate-restricted diets.

Synergistic Antioxidants:
Combining Vitamins C & E Appears to Slow Atherogenesis

Several studies have linked lipid peroxidation with the progression of atherosclerosis. Dietary antioxidants, which scavenge free-radicals and prevent oxidation at the cellular level, have been associated with reduced atherosclerosis and are commonly used in atherosclerosis prevention studies. Vitamin E supplementation has long been implicated in the prevention of coronary heart disease (CHD), however, the scarcity of data supporting vitamin E's effectiveness has caused researchers to take a closer look. Acting by itself, vitamin E might be as harmful as it is helpful. In one recent study, smokers receiving vitamin E supplements experienced increased lipid peroxidation. This observation supports the thought that once the body has utilized vitamin E as an antioxidant, it becomes an active free radical. To be rendered harmless, vitamin E must be reduced by another antioxidant such as vitamin C. Therefore, the study of concurrent supplementation with vitamins E and C has important implications in the realm of public health and primary care.

The Antioxidant Supplementation for Atherosclerosis Prevention (ASAP) study was designed to determine the effects of long-term combined supplementation with vitamins E and C on atherosclerotic plaque progression (represented by intima-media thickness, or IMT) in the common carotid artery (CCA). The 520 participants were smoking and non-smoking men (n=256) and post-menopausal women (n=264) between the ages of 45 and 69 who were hypercholesterolemic (defined as a total serum cholesterol level of at least 193 mg/dL). After an 8-week lead-in phase consisting of dietary counseling and administration of a placebo, participants were randomly assigned to one of two daily supplement groups:

1) one supplement containing both **d-alpha-tocopherol** and slow-release **ascorbic acid**
2) **placebo** (control group)

CCA-IMT was assessed by ultrasonography at 6, 12, 18, 24, 30, 36, and 72 months. Plasma levels of alpha-tocopherol and ascorbate were also measured and recorded for each participant along with F2-isoprostane concentration as a marker of lipid peroxidation.

By study completion, 440 participants were available for a final ultrasonography. For control participants, the average annual increase of the CCA-IMT was 0.0156 mm/year, while the average CCA-IMT increased 25% less in supplemented participants (0.0136 mm/year; P=0.007 for comparison). There was a 30% treatment effect among all participants who were compliant with the supplementation regimen. However, when categorized by gender, there was a 39% treatment effect (P=0.010) among compliant men and a 17% treatment effect among compliant women (not significant). Men and women also responded differently with respect to changes in plasma alpha-tocopherol concentration. In men, but not in women, higher plasma alpha-tocopherol concentrations were associated with smaller mean annual CCA-IMT increases. No differences were observed in CCA-IMT changes in smoking vs. non-smoking participants.

Differences between groups from baseline to study completion were also calculated and compared. For the control group, the average annual increase in CCA-IMT was 0.0137 mm/year, 0.0035 mm greater than the supplemented group, which ended the study with a mean annual increase of 0.0102 (25% treatment effect; P=0.034 for difference). The mean average annual increase for men taking placebo was 0.0162 mm and 0.0103 mm for men taking supplements (37% treatment effect). No significant difference was seen between placebo and supplement groups on this measure for female participants.

Participants with existing CCA plaques experienced a larger treatment effect than those with no pre-existing plaques. Treatment effect was also larger among those participants whose baseline vitamin C levels fell below the median. (Baseline levels of both alpha-tocopherol and ascorbate were significantly lower in men than in women.)

The gender differences observed in this study are striking and unquestionably warrant further research. The authors speculate that the disparity noted between men and women might have been due to the very small effect of vitamin E supplementation on lipid peroxidation in women compared to men. Vitamin E reduced lipid peroxidation in men, while it seemed to have little or no effect on lipid peroxidation in women, as represented by F2-isoprostane concentrations. It is also important to remember that the men had significantly lower baseline concentrations of both vitamins, so the treatment effect may have been greater due to the comparatively large improvement in vitamin status.

The results of this study have important implications for healthcare providers and their patients. While further research is necessary to substantiate these findings, it appears that concurrent supplementation with vitamin E and slow-release vitamin C might slow the atherosclerotic process in healthy, hypercholesterolemic men, with a potential small effect in women. The authors assert that the treatment effects observed are comparable to those that would be expected from the leading cholesterol-lowering pharmaceuticals.

Salonen RM, Nyyssonen K, Kaikkonen J, et al. Six-year effect of combined vitamin C and E supplementation on atherosclerotic progression. *Circulation* 2003;107:947-953.

Benefits of Fish Intake Extend to the Elderly

Fish consumption has long been associated with decreased risk for CHD. Since omega-3 fatty acids (eicosapentaenoic [EPA, 20:5 n-3] and docohexaenoic [DHA, 22:6 n-3] acids) have received most of the credit for the cardio-protective benefits of fish, dietary recommendations to reduce heart disease risk have emphasized fatty varieties that offer more omega-3 fatty acids per ounce than their leaner cousins. Preparation methods, which can significantly alter the fat content of fish, are rarely addressed in dietary recommendations. Very little research has been undertaken to discover whether different types of fish and fish meals are equally effective in reducing heart disease risk. Similarly, little research has been undertaken to examine the influence of fish intake on CVD risk in elderly populations.

As part of the Cardiovascular Health Study (a prospective, population-based study designed to assess factors influencing the occurrence of cardiovascular events in men and women aged 65 and older), frequency and type of fish intake were examined to determine the relationship between these dietary factors and the occurrence of CVD events. After excluding potential participants with known CVD at baseline and those with incomplete diet records, a total of 3910 men and women were enrolled in the study. At study initiation, participants completed a version of the National Cancer Institute food frequency questionnaire which assessed usual intakes of "fried fish or fish sandwich (fish burger)," "tuna fish/tuna salad/tuna casserole," and "other fish (broiled or baked)" among other food and nutrient categories. Fish consumption was classified into 5 categories (< once/mo, 1-3 times/mo, once/wk, twice/wk, at least 3 times/wk). Cardiovascular events were recorded (mean follow-up time 9.3 years) and classified into one of the following categories: total IHD (ischemic heart disease) death, arrhythmic IHD death, or nonfatal MI (myocardial infarction).

Plasma phospholipid EPA and DHA were assessed in 56 participants to correlate fish intake with body stores of omega-3 fatty acids. EPA+DHA levels correlated with tuna ($r=0.35$; $P<0.01$) and other fish intake ($r=0.59$, $P<0.001$), but not with intake of fried fish/fish sandwich ($r=0.04$, $P=0.78$), indicating that this category of fish is not a good source of omega-3 fatty acids.

Because intakes of "tuna" and "other fish (broiled or baked)" were correlated, and because risk of CVD events separately vs. combined were similar, "tuna" and "other fish" intakes were combined for this assessment. After adjusting for age, gender, education, diabetes, and smoking, intake of tuna/other fish was inversely correlated with total and arrhythmic IHD death. There was no correlation between tuna/other fish intake and nonfatal MI, indicating that the anti-arrhythmic properties of DHA+EPA are likely the most important protective factors in fish.

Reported fish intake of at least 3 times per week vs. less than once per month was associated with a 49% decrease in risk of total IHD death and a 58% decrease in risk of arrhythmic IHD death. Intake of tuna/other fish at least once per week compared with less than once per week was also found to be protective, with a 27% decrease in risk of total IHD death and a 34% decrease in risk of death due to arrhythmic IHD. Results were similar even after correction for expected confounders such as BMI, systolic blood pressure, serum lipids, C-reactive protein, and other dietary factors. Fish meals were also evaluated for EPA+DHA content. For each additional gram of EPA+DHA consumed per day, researchers observed a reduction in the risk of death from IHD and arrhythmic IHD. Again, no association was seen between EPA+DHA content of meals and nonfatal MI.

No protective effects were observed with fried fish/fish sandwich intake. There was no association between fried fish/fish sandwich intake and incidence of total IHD or arrhythmic IHD death, nor nonfatal MI. In fact, the authors reported trends toward greater risk with fried fish/fish sandwich consumption.

The findings of this study strongly support the results of many previous studies and the hypothesis that intake of tuna and of baked or broiled fish helps prevent cardiac arrhythmia, which often precipitates fatal IHD. This study provides no evidence that consumption of lean fish prepared by frying confers cardiovascular benefits. The authors speculate that this could be due to lower omega-3 PUFA content in these fish varieties or to the increased n-6 content in these meals. (n-6 PUFAs appear to counteract the action of n-3 PUFAs.) This study also suggests that the DHA+EPA content of fish is a strong contributing factor to its cardio-protective properties, as fried fish and fish used in sandwiches was not found to be protective.

Another significant aspect of this study is that the protective effects of tuna and baked or broiled fish were effective in reducing IHD death and arrhythmic IHD death in elderly persons at least 65 years of age. Earlier studies focused on younger populations. The authors report that previous research has demonstrated cell membrane composition changes within 1-2 weeks of increased omega-3 PUFA consumption. This may be one explanation for the apparent effectiveness of baked/broiled fish consumption among this elderly population. These findings have important implications for the potential of omega-3 fatty acids from fish to decrease IHD mortality in older patients and in patients with existing IHD.

Mozaffarian D, Lemaitre RN, Kuller LH, et al. Cardiac benefits of fish consumption may depend on the type of fish meal consumed. *Circulation* 2003;107:1372-1377.

Egg Consumption During Adolescence Associated with Reduced Risk of Breast Cancer

Emerging research suggests that a woman's diet during adolescence might influence her risk for developing breast cancer later in life. For example, examination of breast cancer incidence among Asians reveals that although rates do increase for women who emigrate to the US, they do not parallel those of US women until the second or third generation. First generation immigrants seem to retain the low risk found in their country of origin, suggesting that dietary patterns during youth may influence breast cancer risk to a greater extent than those patterns established in adulthood.

A new study suggests that consumption of eggs during adolescence may play a protective role against breast cancer. As part of the Nurses' Health Study, dietary information was collected from 843 women who were diagnosed with breast cancer between 1976 and 1986. "Current diet" information was obtained in 1980. In 1986, these women were asked to complete a 24-item food frequency questionnaire describing their adolescent diets between the ages of 12 and 18. The questionnaire was designed to assess frequency of intake of the foods considered to be major sources of dietary fat, antioxidant vitamins, and carotenoids. Answers ranged from "never" to "six or more per day." (Responses to this questionnaire did not correlate significantly with the "current diet" responses obtained in 1980.)

Among the women included in the Nurses' Health Study, those diagnosed with breast cancer reported lower vitamin A intake and greater alcohol consumption (in 1980). They were also taller than controls, more likely than controls to have been older at first childbirth, to have had fewer children, to have been diagnosed with benign breast disease (BBD), and to have a family history of breast cancer.

After controlling for family history, presence of BBD, age at menarche, body mass index at age 18, adult height, reproductive history, and vitamin A intake in 1980, higher egg consumption was associated with decreased risk (RR=0.82 per increase of one serving per day, 95% CI), while consumption of butter was associated with increased risk of breast cancer (RR=1.06). Also approaching statistical significance were vegetable fat and dietary fiber, which appeared to be associated with decreased risk of breast cancer, with RR 0.85 (P=0.05) and 0.78 (P=0.09) respectively.

Although the mechanisms by which eggs might protect against breast cancer are unknown, it is recognized that eggs are a source of essential amino acids and of many vitamins, minerals, antioxidants, and other nutrients including folate. All or some of these components could play synergistic roles in decreasing breast cancer risk. It could be speculated that butter intake increases breast cancer risk by increasing total fat and saturated fat in the diet. However, none of these dietary factors were associated with increased risk. The authors speculate that fiber may play a role in reducing breast cancer risk by decreasing estrogen levels and that some of the fatty acids contained in vegetable fat might be protective.

This study has certain limitations that must be taken into consideration. The most obvious is that participants were asked to recall detailed diet information from their youth, 22-47 years previous to their filling out the food frequency questionnaire. Although the responses to this questionnaire were not significantly correlated with "current diet" for these women, it would have been impossible to confirm the validity of their responses. In addition, the 24-item food frequency questionnaire was inadequate to assess total dietary intake. Although the limitations inherent in this study would make it unreasonable for practitioners to make population-wide recommendations based on these results alone, the data offer intriguing information and suggest new research questions that warrant further investigation.

Frazier AL, Ryan CT, Rockett H, et al. Adolescent diet and risk of breast cancer. *Breast Cancer Res* 2003;5:R59-R64.

Ethnic Variations in MTHFR Polymorphisms

In its Spring 2002 issue, *Nutrition Close-Up* reported research examining the incidence of methylenetetrahydrofolate reductase (MTHFR) 677 C to T gene polymorphisms and their relationship to blood homocysteine levels and heart disease risk. MTHFR is an enzyme involved in the regulation of homocysteine and folate metabolism and pathways requiring methylation reactions. Since its action is necessary to keep homocysteine levels in check, impairment of this enzyme can lead to increased levels of homocysteine and a potentially increased risk for CHD. The Homocysteine Studies Collaboration reported that the TT genotype was associated with higher blood homocysteine, lower folate levels, and an increased risk of CHD when compared with the CC genotype under conditions of low folate status.

A recent study published in the *Journal of the American Dietetic Association* sheds light on an important emerging aspect of this new research—ethnic variation. A number of studies have demonstrated variations between ethnic groups with regard to MTHFR polymorphisms. Knowledge of these differences can aid healthcare providers in tailoring health messages to their patients' individual needs. For example, the TT genotype has

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been associated with decreased MTHFR activity and increased homocysteine levels (when folate status is low). It is also thought that this genotype might increase the risk for CVD, Down's syndrome, neural tube defects, and some cancers. Awareness of the incidence of gene polymorphisms in various ethnic populations might prompt practitioners to assess folate status and the need for supplementation in at-risk patients.

To determine the frequency of the MTHFR C to T polymorphism between ethnic groups, 433 unrelated women from the Los Angeles metropolitan area, ages 17-82, were tested to determine MTHFR genotype. The women were also tested for serum folate, red cell folate, and plasma homocysteine levels to determine whether the polymorphisms were related to these measures. Hispanic (of Mexican descent; n=193), white (n=139), Asian (n=53; 22 Chinese, 10 Taiwanese, 7 Vietnamese, 6 Filipino, 3 Indian, 2 Japanese, 2 Korean, 1 Cambodian), and African American (n=48) women were included in this study. Women whose parents were of different ethnic/racial backgrounds were excluded, as well as those who had used folic acid supplements within three months of study initiation.

Women of Mexican descent had the highest frequency of the TT genotype (18.1%), while none of the women of African descent were found to have this polymorphism. Asian women also had a low frequency of the TT genotype (3.8%). The highest frequency of the CC genotype was found among African American women (81.3%).

For women of Mexican descent, a significant relationship was found between TT and CC genotypes and red cell folate concentration. Lower red cell folate was found in those with the TT genotype (945±229 nmol/L) when compared with the CC genotype (1,079±252 nmol/L). No associations were found between any of the MTHFR genotypes and serum folate, red cell folate, or total homocysteine concentrations for any other group. Though the women in this study were not taking folic acid supplements, it appears that fortification of the food supply may have been adequate to meet their needs.

These results support the hypothesis suggested by Klerk and colleagues, who found that the TT polymorphism was associated with an increased risk of CHD, particularly when folate status was low, and that identified polymorphisms did not appear to be related to CHD risk in North America, where common foods had been fortified with folic acid for many years. This new information will have critical implications as emerging research further elucidates the role of MTHFR polymorphisms in CHD and other diseases.

Esfahani ST, Cogger EA, Caudill MA. Heterogeneity in the prevalence of methylenetetrahydrofolate reductase gene polymorphisms in women of different ethnic groups. *J Am Diet Assoc*. 2003;103:200-207.

Klerk M, Verhoef P, Clarke R, et al. MTHFR 677 C to T polymorphism and risk of coronary heart disease. *JAMA* 2002;288:2023-2031.

Fiber Intake and CVD Risk in the Elderly

Because dietary interventions for the prevention of CVD are thought to be most effective when implemented in younger populations likely to be in the earlier stages of atherogenesis, relatively few studies have examined the effects of dietary habits in an elderly population. Fiber consumption has been associated with decreased risk of ischemic heart disease and stroke among middle-aged cohorts, but this has not been assessed in older adults. As part of the Cardiovascular Health Study (CHS), researchers examined the association between fiber intake from fruit, vegetable, and cereal sources on CVD incidence in older adults.

After excluding CHS participants with pre-existing CHD, heart failure, stroke, transient ischemic attack, carotid endarterectomy, and those with incomplete diet records on fiber consumption, 3588 participants were included in the study cohort. General and cardiovascular health and health history were assessed at baseline. Dietary intake of fiber was estimated for each participant using a validated food frequency questionnaire that included foods providing at least 5% of the recommended daily intake of total fiber. For analysis, these foods were classified by fiber source into three categories—fruit, vegetable, or cereal fiber. Participants were asked to rank each food by frequency of consumption, ranging from "less than 5 times per year" to "5 times or more per year."

After an average of 8.6 years follow-up, 811 CVD events had been reported, including 159 ischemic heart disease (IHD) deaths, 308 nonfatal myocardial infarctions (MI), and 344 strokes. The average intakes of cereal, fruit, vegetable, and total fiber were 4.2, 5.2, 6.9, and 16.2 g/day, respectively. Average intakes among those in the highest quintiles of consumption were 7.9, 9.1, and 11.7 g/day for cereal, fruit, and vegetable fiber. Those in the lowest quintiles consumed an average of 0.8, 1.7, and 2.9 g/day of cereal, fruit, and vegetable fiber, respectively.

Neither fruit fiber, vegetable fiber, nor total fiber were associated with risk for CVD events. However, greater consumption of cereal fiber (corresponding to approximately 2 slices of whole grain bread per day) was associated with a reduced incidence of CVD. Those in the highest quintile of cereal fiber intake were 21% less likely to experience CVD than

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those in the lowest (hazard ratio [HR] 0.79, 95% CI 0.62-0.99). Further analysis revealed that cereal fiber obtained from dark breads such as whole-wheat, rye, and pumpernickel, were more effective in reducing CVD risk (HR, 0.76) than fiber obtained from high fiber, bran, or granola cereals (HR, 0.99), other cold cereals (HR, 0.98), or cooked cereals (HR, 1.01).

Cereal fiber intake appeared to be associated with lower risk for specific CVD events. When compared with the 20th percentile of cereal fiber intake, participants in the 80th percentile were less likely to experience stroke (HR, 0.78) and ischemic stroke (HR, 0.76). It is interesting to note that death from IHD events was associated with higher fruit fiber consumption (HR, 1.32). This effect was greatest among participants with impaired glucose tolerance or known diabetes.

Although the findings of this study may not have major clinical implications for the elderly population, the authors emphasize that a very small amount of cereal fiber (approximately 2 slices of whole grain bread per day) appeared to be responsible for the reduction in CVD risk. Because the food frequency questionnaire completed at baseline is likely to have reflected dietary habits developed over decades, it is difficult to conclude that increasing cereal fiber consumption in this elderly population will significantly decrease risk for CVD. However, these findings are important as they relate to the development of lifetime dietary habits. They do not rule out the possibility that the elderly might be successful in decreasing CVD risk with increased cereal fiber intake regardless of when the dietary intervention occurs.

Mozaffarian D, Kumanyika S, Lemaitre R, et al. Cereal, fruit, and vegetable fiber intake and the risk of cardiovascular disease in elderly individuals. *JAMA* 2003;289:1659-1666.

Editorial: I Forgot Why I'm Here

Pity the new Assistant Professor. Sure, all seems well; at least they got a tenure track position and a chance to use all that knowledge and training they got over the last ten-twelve years. But all is far from well in the ivory tower.

Let's just look at three new, young, aspiring academicians. Assistant Professor X is an excellent teacher with a unique gift for being both intellectually demanding and capable of getting students to respond positively. Assistant Professor Y is a true genius always asking why and why not, and then enthusiastically pursuing the answers with critical thinking and intellectual vigor. Assistant Professor Z is a true zealot when it comes to networking, zeroing in on every hot new trend, and quickly judging which backs to pat and which derrieres to osculate.

All three of our young aspirants started at the same under-funded, over-built, research state university, and after five years of combining teaching, grant writing, committee service, grant writing, manuscript preparations, grant writing, community service, grant writing, student advising, grant writing, and playing nice with the Promotion & Tenure Committee members, none of them had a life, but all three were due to begin the dreaded "up or out" academic hoop dance. Would all three make the grade? Would any of them attain that Holy Grail? What pressure! What paranoia! What game playing! What departmental gossip!

If you've been there, you already know the results. Assistant Professor X started applying to smaller universities which, he hoped, appreciated an educator. (An educator at an educational institution! Such a unique concept.) Poor X, not enough grants, not enough publications, not enough overhead costs to the department head and the dean. Too much for the students, not enough for the powers that be.

Assistant Professor Y learned that asking why and finding out why and telling the profession the answer just wasn't enough. Sure the publications were there and the graduate students were well trained and the scientific community thought very highly of Y but, as the Promotion & Tenure Committee kept chanting, Assistant Professor Y just wasn't able to "show me the money." Poor Y, some of the questions actually questioned the conventional wisdom and the conceptual framework of some well-established, well-connected professional careers. Why Y would want to rock the boat no one ever understood. The quality of research is not judged by its value or its contributions, it's judged by its fundability and non-threatening acceptance of established viewpoints.

But surely you know that one of our hard working and dedicated young professionals was granted the brass ring of all academic aspirants - tenure. Tenure, life long security without the constraints of expectations. Assistant Professor Z played the game as well as any devious, divisive, kiss up - kick down corporate hotshot. Graduate students taught Z's courses so Z could write grants and attend important networking conferences. The lab was filled with post-docs (no time to train graduate students) and the post-docs arrived early, left late and worked weekends, or they were history. If the topic was hot, Z was on it. If the topic was controversial, Z ran as far away as possible. If you were important,

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Z was a charmer. If you weren't, Z never knew you existed. Advise students? They'll figure it out. Community service? Z had more global aspirations. Assistant Professor Z brought in research dollars, gave more lectures off campus than on, and published a truly impressive number of "salami science" manuscripts (papers as thin as possible to assure the greatest number of inconsequential publications). A true role model for the next generation of educators. Someone who brings recognition to the university. A scholar of focus, dedication, established support, recognized nationally and well connected to the important people. Just what the students need in their quest for knowledge.

And so goes the university. Another new set of young, idealistic assistant professors will soon show up and start the process all over again. They'll start out thinking that the university has a need for educators and teachers and those who can train the next generation of scientists. Then they'll learn about technology transfer and buying out of teaching and the annual budget cut dance of program death. But even then they may not realize the true nature of the real problem. At some point in time many of the institutions of higher education forgot why they were there in the first place. Education gave way to expansion and new knowledge succumbed to patent ability. Pity the lost undergraduate. Pity the new Assistant Professor.

Donald J. McNamara, Ph.D.
Executive Editor, Nutrition Close-Up

COMMON ABBREVIATIONS

BMI: body mass index (kg/m^2)
CHD: coronary heart disease
CHO: carbohydrate
CVD: cardiovascular disease
HDL: high density lipoprotein
LDL: low density lipoprotein
Lp(a): lipoprotein (a)
MUFA: monounsaturated fatty acids
PUFA: polyunsaturated fatty acids
PVD: peripheral vascular disease
RR: relative risk
SFA: saturated fatty acids
TAG: triacylglycerol
VLDL: very low density lipoprotein

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