The Food and Drug Administration (FDA) has announced that, in response to a trend in which caffeine is being added to a growing number of products, the agency will investigate the safety of caffeine in food products, particularly its effects on children and adolescents.

Michael R. Taylor, deputy commissioner for foods and veterinary medicine at FDA, answered questions about his concerns and possible FDA actions.

Q: The announcement comes just as Wrigley's (a subsidiary of Mars) is promoting a new pack of gum with eight pieces, each containing as much caffeine as half a cup of coffee. Is the timing coincidental?

A: The gum is just one more unfortunate example of the trend to add caffeine to food. Our concern is about caffeine appearing in a range of new products, including ones that may be attractive and readily available to children and adolescents, without careful consideration of their cumulative impact.

One pack of this gum is like having four cups of coffee in your pocket. Caffeine is even being added to jelly beans, marshmallows, sunflower seeds and other snacks for its stimulant effect.

Meanwhile, "energy drinks" with caffeine are being aggressively marketed, including to young people. An instant oatmeal on the market boasts that one serving has as much caffeine as a cup of coffee, and then there are similar products, such as a so-called "wired" waffle and "wired" syrup with added caffeine.

The proliferation of these products in the marketplace is very disturbing to us.

Q. What is your first step in this process?

A. We have to address the fundamental question of the potential consequences of all these cafffeinated products in the food supply to
children and to some adults who may be at risk from excess caffeine consumption. We need to better understand caffeine consumption and use patterns and determine what is a safe level for total consumption of caffeine. Importantly, we need to address the types of products that are appropriate for the addition of caffeine, especially considering the potential for consumption by young children and adolescents.

We’ve already met with some companies to hear their rationale for adding caffeine to varied products and to express our concern. We’ve also reached out to the American Beverage Association, which represents the non-alcoholic beverage industry, and the Grocery Manufacturers Association, which represents food, beverage and consumer-products companies.

Q. What is currently considered a safe amount of daily caffeine?

A. For healthy adults FDA has cited 400 milligrams a day—that’s about four or five cups of coffee—as an amount not generally associated with dangerous, negative effects. FDA has not set a level for children, but the American Academy of Pediatrics discourages the consumption of caffeine and other stimulants by children and adolescents. We need to continue to look at what are acceptable levels.

We’re particularly concerned about children and adolescents and the responsibility FDA and the food industry have to protect public health and respect social norms that suggest we shouldn’t be marketing stimulants, such as caffeine, to our children.

Q. What currently are FDA requirements concerning caffeine being added to foods?

A. Manufacturers can add it to products if they decide it meets the relevant safety standards, and if they include it on the ingredient list. While various uses may meet federal food safety standards, the only time FDA explicitly approved adding caffeine was for colas in the 1950s. Existing rules never anticipated the current proliferation of caffeinated products.

Q. Is it possible that FDA would set age restrictions for purchase?

A. We have to be practical; enforcing age restrictions would be challenging. For me, the more fundamental questions are whether it is appropriate to use foods that may be inherently attractive and accessible to children as the vehicles to deliver the stimulant caffeine, and whether we should place limits on the amount of caffeine in certain products.

Q. Have you taken any actions on other caffeinated products?

A. In 2010, we brought about the withdrawal from the market of caffeinated alcoholic beverages, primarily malt beverages, in part because of studies indicating that combined ingestion of caffeine and alcohol may lead to hazardous and life-threatening situations. Caffeine can mask some of the sensory cues that people might normally rely on to determine their level of intoxication.
Teen Mentors Inspire Healthier Choices in Younger Children

An obesity intervention taught by teen mentors in Appalachian elementary schools resulted in weight loss, lower blood pressure and healthy lifestyle changes among the younger students learning the curriculum, according to a new study (1).

In contrast, children taught the same lessons by adults in a traditional classroom saw no changes in their health outcomes.

The results of the eight-week clinical trial conducted by Ohio State University researchers suggest that school systems could consider using teen mentors to instruct younger children in select health-related programs.

In the study, all instructors taught lessons from a program called “Just for Kids!” that was developed by the University of California, San Francisco. For one hour after school each week, teen mentors met one-on-one with students in a large gym setting while another group of students was taught in a classroom by school system employees, such as librarians or administrative staff.

Q. Don’t new regulations take a lot of resources and time?

A. They do. But we believe that some in the food industry are on a dubious, potentially dangerous path. If necessary, and if the science indicates that it is warranted, we are prepared to go through the regulatory process to establish clear boundaries and conditions on caffeine use. We are also prepared to consider enforcement action against individual products as appropriate.

However, we hope this can be a turning point for all to prevent the irresponsible addition of caffeine to food and beverages. Together, we should be immediately looking at what voluntary restraint can be used by industry as FDA gets the right regulatory boundaries and conditions in place.

I’m hopeful that industry will step up.

Source: Source: FDA Consumer Updates; May 3, 2013; http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm350570.htm

Caffeine (Continued from page 2)

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Source: Source: FDA Consumer Updates; May 3, 2013; http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm350570.htm
When the program ended, only the teen-mentored group showed a greater increase in physical activity and marginal decreases in body mass index and diastolic blood pressure. Kids led by teens also showed slight increases in nutrition knowledge and plans to change their behavior. Children taught by adults showed no improved health outcomes.

Though the study was conducted in Appalachian Ohio, where research suggests people prefer an informal way of receiving information, teen mentors have the potential to help influence health behaviors of younger children in any school district, researchers say.

“Not only would this help schools deliver a curriculum, but this study supports the idea that this mentoring approach is a better way to impact younger kids, and it creates an infrastructure to improve health without it having to come from a classroom,” said Laureen Smith, associate professor of nursing at Ohio State and lead author of the study. “I focused on diet and nutrition, but there’s no reason this can’t be used to address other health issues that a school identifies.

“In order for this to be successful, there has to be good training and good support to the teens. But the right teens with the right help and support can make a big difference.”

The research is published online in the Journal of School Nursing.

In all, 160 schoolchildren in the third and fourth grades participated in the intervention, along with 32 teen mentors and five adult teachers. The study took place at three public schools in the same county, and teen mentors attended high schools affiliated with the participating elementary schools.

Each one-hour session with the curriculum included 45 minutes of structured activities and 15 minutes of noncompetitive physical activity. Weekly topics included keeping the body healthy, the importance of exercise, food groups, portion control, emotional eating, food cravings and building more activity into daily life.

Though “Just for Kids!” targets obesity, the researchers told the children the program promoted being healthier and making healthy choices. Among the third- and fourth-graders, 29.7 percent were obese based on a body mass index (BMI) ranking above the 95th percentile for their age group. Another 18.9 percent were overweight, 51.4 percent were normal weight and 0.7 percent were underweight. The kids ranged in age from 8 to 11 years.

Smith collected baseline information on a number of measures and repeated assessments after the eight-week study. In addition to BMI and blood pressure readings, health measures included dietary behaviors, physical activity, attitudes about healthy eating and exercising, and intention to or having confidence in their ability to eat better and move more.

Mentors continued on page 5
Mentors (Continued from page 4)

After the intervention, only the teen-mentored group showed a greater increase in physical activity and marginal decreases in BMI and diastolic blood pressure, the pressure in arteries as the heart fills with blood. Children mentored by teens also had a larger positive change in intention to eat healthfully than the adult teacher group and a marginal increase in nutritional knowledge.

“The right teens with the right help and support can make a big difference.”

Retention had an impact on student outcomes, Smith noted. The overall retention rate was 92 percent, and attending more sessions was associated with a greater increase in nutritional knowledge in both groups, and with an uptick in physical activity in kids mentored by teens.

“The findings reaffirmed what I suspected, that the teens impacted physical activity for the kids rather than their nutrition. That makes sense because most kids don’t have a whole lot of control over what they eat. They rely on parents to provide food at home and otherwise rely on what the school provides,” Smith said.

While individual teachers and mentors did not affect the kids’ outcomes, the school they attended did make a difference: Children’s gains in intention and perceived support to eat better were highest in the school that had the most disadvantages based on such economic indicators as parental unemployment and student eligibility for free and reduced lunches.

The nature of the intervention – using members of the community to deliver information rather than having “outsiders” identify a problem and try to fix it – could make it attractive to “any school that’s under-resourced, or any school, really,” Smith said. And the results are not a knock on adult teachers.

“Younger kids look at older kids in their peer group as role models. Teens provide younger children perceived psychological safety and a social network,” she said. “And this is helpful to adults. Using teen mentors removes some pressure on the staff and teachers of a school to reach students and have an impact on their health.”

Smith, also director of the Appalachian Translational Research Network with Ohio State's Center for Clinical and Translational Science, is continuing the work to further analyze how teen mentors yield these results and to gauge the effects of mentoring on the teens themselves.

Reference:

**Mandating Fruits & Vegetables in School Meals Makes a Difference**

State laws that require minimum levels of fruits and vegetables in school meals may give a small boost to the amount of these foods in adolescents’ diets, according to a study published in the *American Journal of Preventive Medicine* (1). This effect was strongest in students who had no access to fruits and vegetables at home.

With the recent requirements from the USDA’s National School Lunch Program to provide healthier options in school meals, the researchers wanted to find out if such laws made a difference in student fruit and vegetable consumption.

When the data were collected, the only states that required high schools to provide a minimum number of servings of fruits and vegetables were California and Mississippi, said Daniel Taber, Ph.D., MPH, research scientist with the Institute for Health Research and Policy at the University of Illinois at Chicago and lead author on the study.

Students in California and Mississippi who had limited access to fruits and vegetables at home, who typically ate unhealthy snacks and who got a school lunch four to five days a week reported consuming an average of 0.45 cups more fruit and 0.61 cups more vegetables than those who lived in states with no fruit or vegetable requirements in school lunches. Adolescents with access to fruits and vegetables at home ate the most of these foods.

School nutrition standards have been targeted as a way to reduce obesity and gaps in access to healthy food options, and to get teens into the habit of eating fruits and vegetables. Mississippi and other southern states have been aggressive about improving school foods as a means of combating obesity, Taber said. "They are seeing evidence already. Reports in the past few months show that childhood obesity is declining in Mississippi."

“The study is excellent but the data does not reflect the new school meal regulations from the U.S. Department of Agriculture than went into effect in July 2012,” said Deborah Beauvais, RD, district supervisor of school nutrition for the Gates Chili and East Rochester School Districts in New York and a spokesperson for Academy of Nutrition and Dietetics.

Newer rules affect all schools participating in the National School Lunch Program and require that a half-cup of fruit or vegetable and up to two cups be in every lunch menu each day, noted Beauvais. Introducing young people to eating fruits and vegetables regularly in schools helps them want to eat them elsewhere, Beauvais observed. “School cafeterias are becoming recognizable as educational centers.”

Reference:

Symbols, Such as Traffic Lights, on Menus Effective in Educating Diners

A little-noticed provision of the Affordable Care Act requires all chain restaurants and retail food establishments with 20 or more locations to list calorie counts on their menus. But according to research co-written by a University of Illinois agricultural economist, numeric calorie labels might not be the most effective way to influence patrons to select “healthier” (often interpreted as lower-calorie) items (1).

Brenna Ellison, a professor of agricultural and consumer economics, says placing a symbolic label in addition to the numeric calorie information on a menu is a better way to reach more diners, from the least to the most health-conscious.

“Our research found that if only numeric calorie labels are implemented, the effect on calories ordered will be smaller in magnitude, but less health-conscious patrons are still likely to respond to the information by ordering lower-calorie items, which is good,” she said. “However, if you go one step further and add a symbol – in our case, a traffic light symbol – to the existing calorie information, that extra step benefits even the most health-conscious individuals.”

For the health-conscious, it may provide an extra piece of information that they did not already know.

“The traffic light may function as a normative suggestion as to what is ‘better’ or ‘worse’ for diners to eat,” Ellison said. “Thus, by reducing the number of calories ordered for diners across all levels of health-consciousness, the combination calorie-traffic light label seems to be more effective than the numeric calorie label alone.”

The research, co-written by Jayson L. Lusk and David Davis, both of Oklahoma State University, was conducted in a full-service restaurant where patrons were randomly assigned one of three different types of menus – some with no information about calories; some with the number of calories listed; and some with a symbol (in this case, a traffic light symbol with red, yellow and green lights indicating specific calorie ranges) in addition to the numeric calorie label.

The results show that the number-only calorie labels had the greatest impact on those who were the least health-conscious.

“That’s good news, because this is exactly who the government is trying to reach with this information,” Ellison said. “However, labels of any form – so long as they are relatively easy to understand – are likely to have the largest impact on less health-conscious diners because the information is new to these individuals.”

For the highly health-conscious, adding the traffic light symbol to the existing calorie information

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Symbols (Continued from page 7)

further reduced the number of calories ordered.

“Calorie counts did provide the most health-conscious with additional information, but it was the symbol that really enhanced the information provided to these consumers,” she said. “This is most likely because the symbol offered new information to these diners.”

So if the government is looking for a policy that would help the largest possible demographic, adding a symbol to the calorie information might be a more effective way to influence food choices, Ellison says.

“A downside to the Affordable Care Act legislation as currently proposed is that it just provides a number;” she said. “If we’ve learned anything about consumers, it’s that people often operate under time constraints and are very convenience-oriented. Not every restaurant diner has time to read – or even wants to read – the number of calories listed for each menu item. Those decisions are often made quickly. For this reason, a symbol might be especially helpful in communicating with the broadest groups of consumers.”

In 1980, 30 percent of meals were consumed outside of the home. Now it’s about 40 percent, according to the paper. The proportion of food dollars spent outside the home has hovered between 46 and 49 percent since 2000, according to the Economic Research Service.

“Though expenditures outside the home have leveled off in recent years, it’s still a substantial proportion of food dollars spent and calories consumed outside of the home,” Ellison said. “If the labels work and the effect of the label persists to subsequent restaurant visits, even small reductions in the number of calories consumed could add up in the long run in terms of a few pounds in a year.”

But if the labels only result in a one-time calorie reduction, the effect is relatively small. On average, the combination of calorie-traffic light label only reduced total calories ordered by about 69 calories, Ellison says.

“An individual could reduce twice as many calories simply by not drinking a soda,” she said.

Ellison notes that the research does have an additional takeaway for consumers: Calorie labels were more likely to influence the selection of the main entrée as opposed to supplemental items such as drinks and desserts.

“While both calorie labels reduced entrée calories ordered, both also actually increased extra calories ordered from additional sides, desserts, drinks, etc., compared to the menu with no nutrition information,” she said. “So there does seem to be what we call a ‘licensing effect,’ which could also

Calorie information was more likely to influence entrée selection, as opposed to drinks and desserts. In both groups, calories ordered increased for sides, desserts, and drinks compared to menus with no nutrition information.
potentially be a concern. In other words, people might reward themselves for ordering a low-calorie entrée by adding on a dessert, ultimately negating the entrée calorie reduction. Research has shown people don’t want to be future-oriented. When you’re hungry, you’re hungry now. You’re not thinking of yourself in 20 years.”

Another stumbling block for consumers could be foods that have associated “health halos,” Ellison warns.

“Salads are a common example of a food that experiences the ‘health halo’ effect,” she said. “Consumers expect salads to be healthy because they have many vegetables. They think that no matter what else is added to the salad, it should still be healthy. While this logic is often used, unfortunately, it’s not sound. In actuality, by adding any type of meat or dressing to a full-portion salad, the salad quickly approaches the threshold for red-light foods.”

Ellison says the symbol doesn’t necessarily have to be a traffic light.

“It could very well be something else,” she said. “The traffic light is being used in the U.K. and Australia in a slightly different form, but since it’s being used elsewhere, we wanted to try it here. You could use a star rating system or some other variation, but negative information” – in this case, a red traffic light – “seems to affect people more than positive.”

The study also asked respondents which type of label they preferred.

“It turns out that the traffic light was the least preferred even though it was the most effective,” she said. “The numeric label, however, was the most well liked, which struck us as odd. It seems as though people want the information, but they don’t necessarily want to be told how to apply it. In other words, they want to know how many calories are in foods, but they don’t think it’s our job to tell them whether those foods are good or bad.”

The research was published in the International Journal of Behavioral Nutrition and Physical Activity.

Reference:

Duration of Breastfeeding During Infancy Does Not Reduce a Child’s Risk of Being Overweight, Obese at 11.5 Years

In research that included nearly 14,000 healthy infants in Belarus, an intervention that succeeded in improving the duration and exclusivity of breastfeeding during infancy did not result in a lower risk of overweight or obesity among the children at age 11.5 years, according to a study appearing in the *Journal of the American Medical Association* (1).

Observational studies suggest that greater duration and exclusivity of having been breastfed reduces child obesity risk. “However, breastfeeding and growth are socially patterned in many settings,” and observed associations between these variables are at least partly explained by confounding factors, according to background information in the article.

Richard M. Martin, Ph.D., of the University of Bristol, England, and colleagues investigated the effects of an intervention to promote increased duration and exclusivity of breastfeeding on child adiposity (body fat) and circulating insulin-like growth factor 1 (IGF-1), which regulates growth. The randomized controlled trial was conducted in 31 Belarusian maternity hospitals and their affiliated clinics. Participants were randomized into 1 of 2 groups: breastfeeding promotion intervention or usual practices. Participants were 17,046 breastfeeding mother-infant pairs enrolled in 1996 and 1997, of whom 13,879 (81.4 percent) were followed up between January 2008 and December 2010 at a median (midpoint) age of 11.5 years. The breastfeeding promotion intervention was modeled on the WHO/UNICEF Baby-Friendly Hospital Initiative (World Health Organization/United Nations Children’s Fund). The main outcome measures were body mass index (BMI), fat and fat-free mass indices (FMI and FFMI), percent body fat, waist circumference, triceps and subscapular skinfold thicknesses, overweight and obesity, and whole-blood IGF-1.

As previously reported, the researchers found that infants in the intervention group had substantially increased breastfeeding duration and exclusivity vs. the control group: at 3 months, exclusively (43.3 percent vs. 6.4 percent) and predominantly (51.9 vs. 28.3 percent) breastfed; at 6 months, both exclusive (7.9 percent vs. 0.6 percent) and predominant breastfeeding (10.6 percent vs. 1.6) were lower, but more common in the intervention group; and at 12 months, 19.7 percent (intervention) vs. 11.4 percent (control), were still breastfeeding to any degree.

At followup, when children were a median 11.5 years age, there were no significant differences between the experimental vs. control groups for the main outcomes, with the cluster-adjusted mean [average] differences of 0.19 (95 percent CI, -0.09 to 0.46) for BMI; 0.12 for FMI; 0.04 for FFMI; 0.47 percent for percent body fat; 0.30 cm for waist circumference; -0.07 mm for triceps and -0.02 mm for subscapular skinfold thicknesses; and -0.02 standard deviations for IGF-1.

The cluster-adjusted odds ratio for overweight/obesity (BMI ≥85th vs. <85th percentile) was 1.18 (95 percent CI, 1.01 to 1.39) and for

Breastfeeding continued on page 11
Breastfeeding (Continued from page 10)

obesity (BMI ≥ 95th vs. <85th percentile) was 1.17 (95 percent CI, 0.97 to 1.41).

“Among healthy term infants in Belarus, an intervention to improve the duration and exclusivity of infant breastfeeding did not prevent overweight or obesity, nor did it affect IGF-1 levels among these children when they were aged 11.5 years. Nevertheless, breastfeeding has many health advantages for the offspring, including beneficial effects demonstrated by our PROBIT trial on gastrointestinal infections and atopic eczema in infancy and improved cognitive development at age 6.5 years. Although breastfeeding is unlikely to stem the current obesity epidemic, its other advantages are amply sufficient to justify continued public health efforts to promote, protect, and support it,” the researchers conclude.

Reference:


Higher Blood Omega-3s Associated with Lower Risk of Premature Death Among Older Adults

Older adults who have higher blood levels of omega-3 fatty acids—found almost exclusively in fatty fish and seafood—may be able to lower their overall mortality risk by as much as 27 percent and their mortality risk from heart disease by about 35 percent, according to a new study from Harvard School of Public Health (HSPH) and the University of Washington (1).

Researchers found that older adults who had the highest blood levels of the fatty acids found in fish lived, on average, 2.2 years longer than those with lower levels.

“Although eating fish has long been considered part of a healthy diet, few studies have assessed blood omega-3 levels and total deaths in older adults,” said lead author Dariush Mozaffarian, associate professor in the Department of Epidemiology at HSPH. “Our findings support the importance of adequate blood omega-3 levels for cardiovascular health, and suggest that later in life these benefits could actually extend the years of remaining life.”

The study—the first to look at how objectively measured blood biomarkers of fish consumption relate to total mortality and specific causes of mortality in a general population—appeared in Annals of Internal Medicine.

Previous studies have found that fish, which is

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rich in protein and heart-healthy fatty acids, reduces the risk of dying from heart disease. But the effect on other causes of death or on total mortality has been unclear. With this new study, the researchers sought to paint a clearer picture by examining biomarkers in the blood of adults not taking fish oil supplements, in order to provide the best assessments of the potential effects of dietary consumption of fish on multiple causes of death.

The researchers examined 16 years of data from about 2,700 U.S. adults aged 65 or older who participated in the Cardiovascular Health Study (CHS), a long-term study supported by the National Heart, Lung, and Blood Institute. Participants came from four U.S. communities in North Carolina, California, Maryland, and Pennsylvania; and all were generally healthy at baseline. At baseline and regularly during follow-up, participants had blood drawn, underwent physical examinations and diagnostic testing, and were questioned about their health status, medical history, and lifestyle.

The researchers analyzed the total proportion of blood omega-3 fatty acids, including three specific ones, in participants’ blood samples at baseline. After adjusting for demographic, cardiovascular, lifestyle, and dietary factors, they found that the three fatty acids—both individually and combined—were associated with a significantly lower risk of mortality. One type in particular—docosahexaenoic acid, or DHA—was most strongly related to lower risk of coronary heart disease (CHD) death (40 percent lower risk), especially CHD death due to arrhythmias (electrical disturbances of the heart rhythm) (45 percent lower risk). Of the other blood fatty acids measured—eicosapentaenoic acid (EPA) and docosapentaenoic acid (DPA)—DPA was most strongly associated with lower risk of stroke death, and EPA most strongly linked with lower risk of nonfatal heart attack. None of these fatty acids were strongly related to other, noncardiovascular causes of death.

Overall, study participants with the highest levels of all three types of fatty acids had a 27 percent lower risk of total mortality due to all causes.

When the researchers looked at how dietary intake of omega-3 fatty acids related to blood levels, the steepest rise in blood levels occurred when going from very low intake to about 400 mg per day; blood levels rose much more gradually thereafter. “The findings suggest that the biggest bang-for-your-buck is for going from no intake to modest intake, or about two servings of fatty fish per week,” said Mozaffarian.

Reference:


A compound abundant in red meat and added as a supplement to popular energy drinks has been found to promote atherosclerosis – or the hardening or clogging of the arteries – according to Cleveland Clinic research published in the journal Nature Medicine (1).

The study shows that bacteria living in the human digestive tract metabolize the compound carnitine, turning it into trimethylamine-N-oxide (TMAO), a metabolite the researchers previously linked in a 2011 study to the promotion of atherosclerosis in humans. Further, the research finds that a diet high in carnitine promotes the growth of the bacteria that metabolize carnitine, compounding the problem by producing even more of the artery-clogging TMAO.

The research team was led by Stanley Hazen, MD, Ph D, Vice Chair of Translational Research for the Lerner Research Institute and section head of Preventive Cardiology & Rehabilitation in the Miller Family Heart and Vascular Institute at Cleveland Clinic, and Robert Koeth, a medical student at the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University.

The study tested the carnitine and TMAO levels of omnivores, vegans and vegetarians, and examined the clinical data of 2,595 patients undergoing elective cardiac evaluations. They also examined the cardiac effects of a carnitine-enhanced diet in normal mice compared to mice with suppressed levels of gut microbes, and discovered that TMAO alters cholesterol metabolism at multiple levels, explaining how it enhances atherosclerosis.

The researchers found that increased carnitine levels in patients predicted increased risks for cardiovascular disease and major cardiac events like heart attack, stroke and death, but only in subjects with concurrently high TMAO levels. Additionally, they found specific gut microbe types in subjects associated with both plasma TMAO levels and dietary patterns, and that baseline TMAO levels were significantly lower among vegans and vegetarians than omnivores. Remarkably, vegans and vegetarians, even after consuming a large amount of carnitine, did not produce significant levels of the microbe product TMAO, whereas omnivores consuming the same amount of carnitine did.

“The bacteria living in our digestive tracts are dictated by our long-term dietary patterns,” Hazen said. “A diet high in carnitine actually shifts our gut microbe composition to those that like carnitine, making meat eaters even more susceptible to forming TMAO and its artery-clogging effects. Meanwhile, vegans and vegetarians have a significantly reduced capacity to synthesize TMAO from carnitine, which may explain the cardiovascular health benefits of these diets.’’

Prior research has shown that a diet with frequent red meat consumption is associated with increased cardiovascular disease risk, but that the cholesterol and saturated fat content in red meat does not appear to be enough to explain the increased cardiovascular risks. This discrepancy has been attributed to genetic differences, a high salt diet that is often associated with red meat consumption, and even possibly the cooking process, among other explanations. But Hazen says this new research suggests a new connection between red meat and cardiovascular disease.

“This process is different in everyone, depending on the gut microbe metabolism of the

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Vegetarian (Continued from page 13)

individual,” he says. “Carnitine metabolism suggests a new way to help explain why a diet rich in red meat promotes atherosclerosis.”

While carnitine is naturally occurring in red meats, including beef, venison, lamb, mutton, duck, and pork, it’s also a dietary supplement available in pill form and a common ingredient in energy drinks. With this new research in mind, Hazen cautions that more research needs to be done to examine the safety of chronic carnitine supplementation.

“Carnitine is not an essential nutrient; our body naturally produces all we need,” he says. “We need to examine the safety of chronically consuming carnitine supplements as we’ve shown that, under some conditions, it can foster the growth of bacteria that produce TMAO and potentially clog arteries.”

This study is the latest in a line of research by Hazen and his colleagues exploring how gut microbes can contribute to atherosclerosis, uncovering new and unexpected pathways involved in heart disease. In a 2011 *Nature* study, they first discovered that people are not predisposed to cardiovascular disease solely because of their genetic make-up, but also based on how the micro-organisms in their digestive tracts metabolize lecithin, a compound with a structure similar to carnitine (2).

Reference:


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**Financial Benefits of Plant-based, Mediterranean Diet**

Researchers from The Miriam Hospital and the Rhode Island Community Food Bank report individuals who participated in a six-week cooking program and followed simple, plant-based recipes decreased their total food spending, purchased healthier food items and improved their food security (1).

The study, published in the March issue of the *Journal of Hunger and Environmental Nutrition*, is believed to be the first to show a decrease in food insecurity — or a lack of access to nutritional foods for at least some days or meals for members of a household — as the result of an intervention.

Mary Flynn, PhD, RD, LDN, the study’s lead author and a research dietitian at The Miriam Hospital, designed the study with Andrew Schiff, PhD, the chief executive officer of Rhode Island Community Food Bank and the study’s co-author. The study is based on Flynn’s research of a plant-based diet she developed that emphasizes cooking with olive oil and follows a Mediterranean diet pattern.

“I had a number of people — mainly women from my breast cancer weight loss study — say how inexpensive a Mediterranean-style diet was, so I approached the

*Mediterranean continued on page 15*
food bank about designing a study using food pantry items for the recipes,” says Flynn.

She points out that meat, poultry and seafood are the most expensive items in a food budget, especially the recommended lower-fat versions. Typical households of lower socioeconomic status spend grocery money first on these items, allocating far less to vegetables and fruits. However, by changing the focus to the elimination of foods not needed to improve health – such as meat, snacks, desserts and carbonated beverages – a healthy diet can be quite economical, Flynn says.

A total of 83 clients were recruited from emergency food pantries and low-income housing sites for the 34 week study. Sixty-three completed the diet protocol and the six-month follow-up requirement. As part of the study, participants attended six weeks of cooking classes, where instructors prepared quick and easy plant-based recipes that incorporated ingredients like olive oil, whole grain pasta, brown rice and fruits and vegetables. The participants were then followed for six months after the cooking program ended.

Participants were not required to assist in the preparation, but staff discussed the benefits of some of these ingredients and encouraged participants to look for these items in their own food pantry.

However, no additional nutrition or food information was provided.

All cooking class participants were provided with a bag of groceries that contained most of the ingredients to make three of the provided recipes for their family members during the six weeks of the cooking classes. Grocery receipts were collected throughout the study and researchers observed significant decreases in purchases of meat, carbonated beverages, desserts and snacks, even though staff never instructed participants not to purchase these items. At the same time, there was an increase in the total number of different vegetables and fruits consumed per month.

“Not only did study participants cut their food spending by more than half, saving nearly $40 per week, we also found that the reliance on a food pantry decreased as well, from 68 percent at the start of the study to 54 percent, demonstrating a clear decline in food insecurity,” Flynn says.

Following a plant-based diet also yielded some unexpected health benefits, Flynn adds. Approximately half of all participants lost weight, which was not a study objective, and there was an overall decrease in body mass index, or BMI.

“Our results also suggest that including a few plant-based meals per week is an attainable goal that will not only improve their health and diet, but also lower their food costs,” Flynn says.

Reference:

The University of California prohibits discrimination or harassment of any person on the basis of race, color, national origin, religion, sex, gender identity, pregnancy (including childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition (cancer-related or genetic characteristics), ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (as defined by the Uniformed Services Employment and Reemployment Rights Act of 1994: service in the uniformed services includes membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services) in any of its programs or activities.

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