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Diabetes, specifically type II diabetes, has been on the rise, and researchers have focused their efforts on finding ways to control and prevent this disease. Diet and lifestyle can have a profound effect on a person’s risk of developing type II diabetes, thus it is crucial to determine how to modify diet for disease prevention.

Blueberries have been a popular topic in the field of nutrition due to the antioxidant properties found in their bioactive phenolic compounds, such as anthocyanins. Previous studies using mice models found supplementation with whole blueberries increased glucose uptake in vitro, and reduced inflammatory genes after ingestion. Since most people don’t consume enough fruits and vegetables in their diet, supplementing with the bioactive compounds found in blueberries may be a convenient and feasible dietary intervention to increase insulin sensitivity.

April J. Stull et al. conducted a double-blinded, randomized, and placebo-controlled clinical study to evaluate the effects of dietary supplementation of freeze-dried whole blueberry powder on insulin action (1). A total of 32 men and women (≥ 20 y old), who were classified as obese (BMI between 32 and 45 kg/m²), and insulin resistant participated in the study. Participants were excluded if they were diabetic, taking medications known to affect glucose metabolism, had untreated thyroid or chronic liver, renal, or cardiovascular disease, had a history of drugs and/or alcohol abuse, or psychiatric disease prohibiting adherence to study protocol, had a history of allergic reactions to blueberries, were consuming berries, grapes, and wine > 3 times/wk, or had fluctuations in body weight more than 5 percent in the preceding 2 months.

After participants were characterized as being insulin resistant, they were randomized into two groups, and instructed to consume 1 smoothie at breakfast meals and another smoothie at dinner meals (at least 6 hours apart) for a total of 6 weeks. The smoothie either contained 45 g of blueberry powder (equivalent to the amount of bioactives in about 2 cups of fresh whole blueberries), or an identical smoothie without the addition of blueberry bioactives. Participants were instructed to maintain their current body weight and physical activity level, and worked with a nutritionist to eliminate about 500 kcal/d from their daily intake to compensate for the calories contained in the smoothie.

At the end of the 6 weeks, 67 percent of the participants randomized to the blueberry bioactive smoothie group had at least a 10 percent or greater favorable change in insulin sensitivity compared to only 41 percent of the placebo participants. The percent change in insulin sensitivity was greater in the blueberry bioactive group (22.2 ± 5.8 percent) than in the placebo group (4.9 ± 4.5 percent). These findings suggest that dietary supplementation with whole blueberries can positively impact whole-body insulin action. Therefore, consumption of blueberry-supplemented smoothies is an attractive and convenient dietary intervention to increase insulin sensitivity for individuals who are at high risk for type II diabetes.

Reference:

Deborah Fetter, Department of Nutrition, University of California, Davis.
Flaxseed and Walnuts with Lifestyle Counseling Improve Metabolic Syndrome Risk Factors

Many people are skeptical about incorporating nuts and seeds into their diet because of high calorie content. However, these foods come with some health benefits, and the new Dietary Guidelines for Americans encourage the inclusion of these foods in the diet (1). Research is currently underway to investigate just what these health effects are, and if these effects are noteworthy enough to recommend nuts and seeds in lifestyle counseling to alleviate metabolic syndrome symptoms.

Metabolic syndrome is classified as a group of risk factors, including central obesity, dyslipidemia, elevated blood pressure, and hyperglycemia, which increase risk for heart disease and type II diabetes. Metabolic syndrome has become a major threat in China, so lifestyle and diet modification strategies need to be established to help control this epidemic.

Hongyu Wu et al. conducted a 3-arm, randomized, controlled study among 283 participants (158 men and 125 women) diagnosed with metabolic syndrome to investigate the effects of including flaxseeds and walnuts in peoples’ diets (2). In addition to supplementation, subjects attended healthy lifestyle counseling (LC) on the management of metabolic syndrome for men and women living in China. Individuals were included if they met at least 3 of the following criteria: 1) waist circumference ≥ 90 cm for men or ≥ 80 cm for women; 2) triglycerides ≥ 1.7 mmol/L; 3) HDL cholesterol < 1.03 mmol/L for men or < 1.30 mmol/L for women; 4) blood pressure ≥ 130/85 mmHg; 5) fasting glucose ≥ 5.6 mmol/L; and 6) LDL cholesterol ≥ 3.4 mmol/L. All three groups received lifestyle counseling based on the American Heart Association guidelines. In addition to counseling, the flaxseed (LCF) and walnut (LCW) groups were given bread containing 30g/day of flaxseeds or walnuts, respectively, to replace staple foods in the diet, such as rice or bread. Flaxseeds and walnuts were chosen because these are high in omega-3 polyunsaturated fats and fiber. The lifestyle counseling urged participants to consume a low-fat diet, limit intake of red or processed meat, decrease salt intake, increase consumption fruit and vegetables, quit smoking, and limit alcohol. At the end of the 12-week intervention, total energy intakes decreased from baseline (P < 0.02 for within-group differences). Participants in all 3 groups consumed more protein and fat, while carbohydrate intake decreased. The LCF and LCW groups consumed more polyunsaturated fats and fiber compared to the LC group. The percentage of people classified as having metabolic syndrome decreased in all 3 groups from baseline (P < 0.005 with a decrease of 16.9 percent in the LC group, 20.2 percent in the LCF group, and 16.0 percent in the LCW group). Central obesity decreased more in the LCF and LCW groups compared to the LC group. Serum glucose was also lower in the LCF group. Although flaxseed and walnuts contain a significant amount of calories, all three groups lost weight.

These results show a low-intensity LC program can help alleviate the prevalence of metabolic syndrome among the Chinese population. Further, supplementing with flaxseed and/or walnuts can help reverse some characteristics of metabolic syndrome even more, especially central obesity.

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Flaxseed (Continued from page 3)

This is especially important in the Asian population because this is a population that is more likely to have metabolic syndrome compared to Caucasians, even under normal weight conditions (3,4). There is speculation that the presence of the polyunsaturated fats in flaxseed and walnuts may help regulate body fat deposition and reduce the accumulation of fat around the abdomen. Although supplementing with flaxseed and walnuts did not improve blood lipid ratios, these foods helped reduce central obesity, an important risk factor for metabolic syndrome and other diseases. Nutrition education is an important tool for preventative medicine, and should be taken full advantage of with programs that include lifestyle counseling.

References:

Deborah Fetter, Department of Nutrition, University of California, Davis.

High Vitamin-D Bread Could Help Solve Widespread Insufficiency Problem

With most people unable to get enough vitamin D from sunlight or foods, scientists are suggesting that a new vitamin D-fortified food, bread made with high-vitamin D yeast, could fill that gap. Their study, confirming that the approach works in laboratory tests, appears in Journal of Agricultural and Food Chemistry (1).

Connie Weaver and colleagues cite studies suggesting that up to 7 in 10 people in the United States may not get enough vitamin D, which enables the body to absorb calcium. Far from just contributing to healthy bones, however, vitamin D seems to have body-wide beneficial effects. Vitamin D insufficiency has been linked to an increased risk of heart disease, cancer, allergy in children, and other conditions. With few good natural sources of vitamin D, milk producers long have added it to milk. Weaver explains, however, that dairy products do not provide enough. The body makes its own vitamin D when the skin is exposed to sunlight. But people are not exposed to sun in winter and are avoiding the sun and using sun blocks in summer. Scientists thus have been looking for new ways to add vitamin D to the diet.

Weaver’s group did experiments with laboratory rats, a stand-in for humans in such research, that ease doubts over whether bread baked with high vitamin D yeast could be a solution.

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Vitamin D (Continued from page 4)

The doubts originated because yeast produces one form of the vitamin, termed vitamin D$_2$, which has been thought to be not as biologically active as the form produced by sun, vitamin D$_3$. They showed bread made with vitamin D$_2$-rich yeast, fed to the laboratory rats, had effects that seemed just as beneficial as vitamin D$_3$. “Our results suggest that bread made with high vitamin D yeast could be a valuable new source of vitamin D in the diet,” they concluded.

Reference:

Source: ACS News Service; Feb.23, 2011; http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=223&content_id=CNBP_026777&use_sec=true&sec_url_var=region1&__uuid=0201efbf-8ff2-4a04-bd31-36d9c11bc09c.

Vegans’ Elevated Heart Risk Requires Omega-3s and B12

People who follow a vegan lifestyle — strict vegetarians who try to eat no meat or animal products of any kind — may increase their risk of developing blood clots and atherosclerosis or “hardening of the arteries,” which are conditions that can lead to heart attacks and stroke. That’s the conclusion of a review of dozens of articles published on the biochemistry of vegetarianism during the past 30 years. The article appeared in the Journal of Agricultural and Food Chemistry (1).

Duo Li notes in the review that meat eaters are known for having a significantly higher combination of cardiovascular risk factors than vegetarians. Lower-risk vegans, however, may not be immune. Their diets tend to be low in several key nutrients — including iron, zinc, vitamin B$_{12}$, and omega-3 fatty acids. While a balanced vegetarian diet can provide enough protein, this isn’t always the case when it comes to fat and fatty acids. As a result, vegans tend to have elevated blood levels of homocysteine and decreased levels of HDL, the “good” form of cholesterol. Both are risk factors for heart disease.

The study concludes that there is a strong scientific basis for vegetarians and vegans to increase their dietary omega-3 fatty acids and vitamin B$_{12}$ to help contend with those risks. Good sources of omega-3s include salmon and other oily fish, walnuts and certain other nuts. Good sources of vitamin B$_{12}$ include seafood, eggs, and fortified milk. Dietary supplements also can supply these nutrients.

Reference:

Source: ACS News Service; Feb. 2, 2011; http://portal.acs.org/portal/acs/corg/content?_nfpb=true&_pageLabel=PP_ARTICLEMAIN&node_id=223&content_id=CNBP_026605&use_sec=true&sec_url_var=region1&__uuid=68b68ee3-e2ff-4b4e-a08d-dc4c11f047d
Study Reinforces Link Between Obesity, High-Fat Meals and Heart Disease

“People with existing low-grade inflammation may be more susceptible to endothelial dysfunction related to triglyceride “spikes” that occur after eating high-fat meals.”

The effect of a high-fat meal on blood vessel walls can vary among individuals depending on factors such as their waist size and triglyceride levels, suggests new research at UC Davis (1).

The new research reinforces the link between belly fat, inflammation and thickening of the arterial linings that can lead to heart disease and strokes.

Triglycerides are types of fat molecules, commonly associated with “bad cholesterol,” known to increase risk of inflammation of the endothelium, the layer of cells that lines arteries.

“The new study shows that eating a common fast food meal can affect inflammatory responses in the blood vessels,” said Anthony Passerini, assistant professor of biomedical engineering at UC Davis, who led the project.

“Our techniques allowed us to measure the inflammatory potential of an individual’s lipids outside of the body and to correlate that with easily measured characteristics that could be used to help better understand a person’s risk for vascular disease,” Passerini said.

Passerini collaborated with Scott Simon, professor of biomedical engineering at UC Davis, to develop cell culture models to mimic the properties of blood vessels. They wanted to learn how triglyceride levels can cause endothelial inflammation, and find a way to assess an individual’s inflammatory potential.

They recruited 61 volunteers with high and normal fasting triglyceride levels and a range of waist sizes, then measured levels of triglyceride particles in their blood after they ate a typical fast food breakfast from a major fast food franchise: two breakfast sandwiches, hash browns and orange juice.

Passerini’s team found that after eating the high-fat meal, the size of a type of a particle called triglyceride-rich lipoprotein (TGRL) varied directly with the individual’s waist size and preexisting blood triglyceride level. These particles can bind to the endothelium, triggering inflammation and an immune response that brings white blood cells to repair the damage. Over time, this leads to atherosclerosis.

The researchers tested whether TGRL particles from the volunteers' blood could cause cultured endothelial cells in the laboratory to express markers for inflammation.

There was a mixed response: individuals with both a waist size over 32 inches (not terribly large by most standards) and high triglyceride levels had large lipoprotein particles that bound easily to the endothelial cells and caused inflammation in response to an immune chemical “trigger.”

The TGRLs only caused inflammation when exposed to this immune molecule, which suggests that people with existing low-grade inflammation may be more susceptible to endothelial dysfunction related to triglyceride “spikes” that occur after eating high-fat meals, Passerini said. In people who are predisposed, repeated episodes of inflammation could lead to atherosclerosis. Passerini’s lab is continuing to investigate how abdominal obesity, high triglyceride levels and inflammation can lead to atherosclerosis.

Reference:


Most Diabetics in the US and Six Other Countries Ineffectively Treated for Diabetes and Related Cardiovascular Risk Factors

Millions of people worldwide may be at risk of early death from diabetes and related cardiovascular illnesses because of poor diagnosis and ineffective treatment, a new study by the Institute for Health Metrics and Evaluation (IHME) at the University of Washington shows (1). The study examines diabetes diagnosis, treatment, and management in Colombia, England, Iran, Mexico, Scotland, Thailand, and the United States.

In the United States alone, nearly 90 percent of adult diabetics – more than 16 million adults aged 35 and older – have blood sugar, blood pressure, and cholesterol that are not treated effectively, meaning they do not meet widely accepted targets for healthy levels of blood sugar, blood pressure, and cholesterol. In Mexico, 99 percent of adult diabetics are not meeting those targets.

“Too many people are not being properly diagnosed with diabetes and related cardiovascular risk factors. Those who are diagnosed aren’t being effectively treated,” said Dr. Stephen Lim, one of the study’s co-authors and an Associate Professor of Global Health at IHME. “This is a huge missed opportunity to lower the burden of disease in both rich and poor countries.”

The researchers found that up to 62 percent of diabetic men in Thailand are undiagnosed or untreated for diabetes. This translates to more than 663,000 people in that country. Within countries, the diagnosis rates were higher for women than men, with the largest difference seen in Colombia, where 15 percent more women than men with diabetes are diagnosed. Of those diabetics who are diagnosed, most are not being treated for other cardiovascular risks that could be just as dangerous to their health as uncontrolled blood sugar. The percentage of diabetics in the seven countries studied who are reaching International Diabetes Federation treatment goals for blood glucose, blood pressure, and serum cholesterol is very low, ranging from 1 percent to 12 percent. In Scotland, researchers had difficulty finding women with diabetes who had met the targets for managing these risks.

In an attempt to determine the cause of the low rates of diagnosis and effective treatment, researchers examined a range of factors and found that there were no inequalities in diagnosis and treatment of diabetes related to socioeconomic status.

“We were very surprised to see that wealth did not have a big impact on diagnosis and treatment,” said Dr. Emmanuela Gakidou, the paper’s lead author and an Associate Professor of Global Health at IHME. “And in the three countries where we had health insurance data, we thought it was noteworthy that health insurance actually played a much bigger role than wealth, especially in the US.”

In the US, people who had insurance were twice as likely to be diagnosed and effectively treated for diabetes as those who did not have insurance.

The researchers said the findings underscore the need for countries to tackle the growing problem of noncommunicable diseases (NCDs), in part by gathering better data.

“We don’t have enough data from actual physical exams to accurately document the trend in most countries,” said Dr. Rafael Lozano, a co-author on the paper and a Professor of Global Health at IHME.

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Those with poorer glucose control are more likely to develop eye-related complications.

Diabetes (Continued from page 7)

“We looked at surveys from nearly 200 countries and only could find data on blood glucose, cholesterol, or blood pressure in seven. We hope that in the build-up to the UN Summit on NCDs this September, countries will make a commitment to more surveys that take blood samples from a representative percentage of the population.”

Reference:


Study Identifies Blood Glucose Levels That Predict 10-Year Risk of Retinopathy

Individuals who have higher blood glucose levels and poorer control of those levels over time appear more likely to develop eye-related complications 10 years later, according to a report in the February issue of Archives of Ophthalmology (1).

The high blood glucose levels accompanying diabetes are known to be associated with microvascular complications, including the eye condition retinopathy, according to background information in the article. "However, some controversy concerns the actual value of this glycemic threshold for identifying retinopathy," the authors write. "It is now well established that the non-diabetic population also has retinopathy, albeit at a lower frequency than patients with diabetes and in a milder form, indicating that there may be factors other than fasting plasma glucose levels that increase the risk of retinopathy."

Pascale Massin, M.D., Ph.D., of Hôpital Lariboisière, Paris, and colleagues in the Data From an Epidemiological Study on the Insulin Resistance Syndrome (DESIR) Study Group examined the retinas of 700 men and women (average age 52) who were enrolled in the study. Over the preceding nine years, their fasting plasma glucose levels and hemoglobin A1C (HbA1c, a measure of blood glucose control over time) had been tracked. In that time, 235 had diabetes (defined as being treated for the disease or having a glucose level of 126 milligrams per deciliter or higher at least once), 227 had an impaired fasting plasma glucose level (110 to 125 milligrams per deciliter) and 238 always had glucose levels within normal limits (less than 110 milligrams per deciliter).

Of the participants, 44 were classified as having retinopathy, including 19 with diabetes, 19 with impaired fasting glucose levels and six with normal glucose levels.

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Retinopathy (Continued from page 8)

Compared with those without retinopathy, those with the condition had higher average levels of fasting plasma glucose 10 years prior (130 vs. 106 milligrams per deciliter) and higher HbA1c (6.4 percent vs. 5.7 percent).

"Levels of HbA1c and fasting plasma glucose at baseline were related to the presence of retinopathy 10 years later, and the levels at which the positive predictive values increased provide a rationale for the choice of thresholds for the definition of hyperglycemia associated with 10-year retinopathy," the authors write. "We propose that thresholds of 108 milligrams per deciliter for fasting plasma glucose concentration and 6.0 percent for HbA1c level could be used to define those who are at risk of retinopathy; this is in agreement with our observation of a risk of retinopathy within the impaired fasting glucose range (fasting plasma glucose level, 110 milligrams per deciliter or higher)."

"Factors other than glucose measures play only a minor role in retinopathy," they conclude.

Reference:


Metabolic Syndrome Linked to Memory Loss in Older People

Older people with larger waistlines, high blood pressure and other risk factors that make up metabolic syndrome may be at a higher risk for memory loss, according to a study published in Neurology (1).

Metabolic syndrome was defined as having three or more of the following risk factors: high blood pressure, excess belly fat, higher than normal triglycerides (a type of fat found in the blood), high blood sugar and low high-density lipoprotein (HDL) cholesterol, or “good” cholesterol. Metabolic syndrome has also been tied to increased risk of heart attack.

For the study, 7,087 people age 65 and older from three French cities were tested for metabolic syndrome. A total of 16 percent of the participants had metabolic syndrome. Participants were given a series of memory and cognitive function tests two and four years later. The tests included a memory test, a test of visual working memory and a test of word fluency.

Researchers found that people who had metabolic syndrome were 20 percent more likely to have cognitive decline on the memory test than those who did not have metabolic syndrome. Those with metabolic syndrome also were 13 percent more likely to have cognitive decline on the visual working memory test compared to those who did not have the syndrome. Specifically, higher triglycerides and low HDL cholesterol were linked to poorer memory scores; diabetes, but not higher fasting blood sugar, was linked to poorer visual working memory and word fluency scores.

(Continued on page 10)
**Metabolic Syndrome (Continued from page 8)**

“Our study sheds new light on how metabolic syndrome and the individual factors of the disease may affect cognitive health,” said study author Christelle Raffaitin, MD, of the French National Institute of Health Research in Bordeaux, France. “Our results suggest that management of metabolic syndrome may help slow down age-related memory loss, or delay the onset of dementia.”

Reference:


**Calorie Labeling Has No Effect on Teenagers’ or Parents’ Food Purchases**

A new study led by an NYU School of Medicine investigator and published in the *International Journal of Obesity*, challenges the idea that calorie labeling has an effect on the purchasing behavior of teenagers or what parents purchase for their children (1). Teens appear to notice the calorie information at the same rate as adults, however they respond at a lower rate. The conclusions are similar to a previous study about adult eating behavior by Dr. Brian Elbel, assistant professor, Department of Medicine, and colleagues, which showed that although labels did increase awareness of calories, they did not alter food choices.

Obesity in the United States is an enormous public health problem and children and teenagers are increasingly becoming overweight or obese. Calorie labeling is the first significant policy effort to address obesity that has been implemented. Calorie menu labeling is now mandated to begin soon across the nation by the new health reform law called the “Patient Protection and Affordable Care Act of 2010” (ACA). Among the claims supporting this policy is that menu labeling will help people make better informed and healthier food choices.

In 2008, New York became the first city in the nation to enforce mandatory calorie labeling in fast-food restaurants throughout the five boroughs. It is the first attempt of its kind to influence the obesity epidemic by altering the environment in which individuals are actually making their food choices. The goal is to encourage consumers to think twice before purchasing high calorie foods from restaurants, and to increase awareness of the calorie contents of the food they were purchasing.

In the new study, Dr. Elbel and his colleagues gathered receipts and surveys from 427 parents and teenagers at fast-food restaurants both before and after mandatory labeling began in July 2008. They focused on lower income communities in New York City and used Newark, New Jersey (which did not have mandatory labeling) as a comparison city. Data were collected before labeling began, and one month after labels were present in restaurants.

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Calorie Labeling (Continued from page 10)

As parents and teens were leaving fast-food restaurants, their receipts were collected and the foods they purchased were confirmed, along with a brief survey.

Before labeling began, none of the teens in the study said they noticed calorie information in the restaurant. After labeling began 57 percent in New York and 18 percent in Newark said they noticed the calorie information. A total of 9 percent said that the information influenced their choices, and all of these teens said they used the information to purchase fewer calories. This number is considerably smaller than the percentage of adults who said the information influenced their choice (28 percent).

“While the same percentage of adolescents and adults noticed calorie information, fewer adolescents report actually using the information in their food choice,” Dr. Elbel said.

However, the study did not find a change in the number of calories purchased at fast-food restaurants after labeling went into effect. Teens purchased about 725 calories and parents purchased about 600 calories for their children.

The way food tastes was considered the most important reason that teens bought it, while price was a consideration for slightly over 50 percent. Just over a quarter of the group said that they often or always limited the amount of food they ate in an effort to control their weight. The study also reported that most teenagers underestimated the amount of calories they had purchased, some by up to 466 calories.

Parental influence in food choice and childhood obesity is not well understood. Almost 60 percent of parents said they decided what food their child ate. However, even with greater involvement from parents there was no evidence of less consumption of fast-food calories.

In much the same way that adults responded in the few studies that have been conducted regarding this issue to date, the eating habits of children and teens in this study, a group of racial and ethnic minorities from low income areas, were barely influenced by the presence of calorie labeling. Easy access and the convenience of restaurant locations were the greatest drivers for teens and then taste influenced where they chose to eat.

“It is important to further examine the influence of labeling, as it rolls out across the country as a result of the new federal law,” said Dr. Elbel. “At the same time, it is important to understand that labeling is not likely to be enough to influence obesity in a large scale way. Other public policy approaches, as well as the efforts of food companies as other actors, will be needed.”

Reference:


Source: NYU Langone Medical Center News Archive; Feb. 15, 2011; http://communications.med.nyu.edu/news/2011/calorie-labeling-has-no-effect-teenagers%E2%80%99-or-parents%E2%80%99-food-purchases
In binge eaters, the sight or smell of food triggered a spike in dopamine, which may play a role in compulsive overeating.

A brain imaging study at the U.S. Department of Energy’s (DOE) Brookhaven National Laboratory reveals a subtle difference between ordinary obese subjects and those who compulsively overeat, or binge: In binge eaters but not ordinary obese subjects, the mere sight or smell of favorite foods triggers a spike in dopamine — a brain chemical linked to reward and motivation. The findings — published in the journal *Obesity* — suggest that this dopamine spike may play a role in triggering compulsive overeating (1).

“These results identify dopamine neurotransmission, which primes the brain to seek reward, as being of relevance to the neurobiology of binge eating disorder,” said study lead author Gene-Jack Wang, a physician at Brookhaven Lab and the Mount Sinai School of Medicine. Previous studies conducted by Wang’s team have identified a similar dopamine spike in drug-addicted individuals when they were shown images of people taking drugs, as well as other neurochemical similarities between drug addiction and obesity, including a role for dopamine in triggering desire for drugs and/or food.

“In earlier studies of normal-weight healthy people who had been food-deprived for 16 hours, we found that dopamine releases were significantly correlated with self-reports of hunger and desire for food. These results provided evidence of a conditioned-cue response to food,” Wang said.

In the current study, the researchers suspected that binge-eating obese subjects would show stronger conditioned responses to food stimuli when compared with non-binging obese subjects.

“Understanding the neurobiological mechanisms underlying food stimulation might point us toward new ways to help individuals regulate their abnormal eating behaviors,” Wang said.

The scientists studied 10 obese people with a clinical diagnosis of binge eating disorder, based on evaluations at St. Luke’s-Roosevelt Hospital, and 8 obese subjects who were not binge eaters.

The scientists used positron emission tomography (PET) to scan the subjects' brains after injecting a radiotracer designed to bind to dopamine receptors in the brain. Because the tracer competes with the brain’s natural dopamine to bind to these receptors, the signal picked up by the PET scanner provides an inverse measure of the brain’s dopamine levels: a strong signal from the bound tracer indicates low levels of natural brain dopamine; a low signal from the tracer indicates high levels of dopamine in the brain.

Each subject was scanned four times on two different days to test the effects of food stimulation vs. neutral stimulation with and without pre-administration of a drug known to amplify dopamine signals. The drug, methylphenidate, blocks the reuptake of dopamine from brain synapses, allowing it to linger longer. In scans without methylphenidate, subjects were given a placebo drug.

In the food stimulation condition, research subjects’ favorite foods were heated (if appropriate) and waved in front of their mouths and noses so they could smell and even taste tiny amounts swabbed onto their tongues. For the neutral stimulation scans, researchers displayed non-food-related pictures and inanimate objects such as toys and clothing items in close proximity so research subjects could smell them while lying in the scanner. In all cases, research subjects had been fasting for 16 hours prior to scans.
Binge Eaters (Continued from page 12)

Food stimulation with methylphenidate significantly increased dopamine levels in the caudate and putamen regions of the brain in binge eaters but not in the non-binge eaters. Subjects with the most severe binge eating disorder, as assessed by psychological evaluations, had the highest dopamine levels in the caudate.

Dopamine levels did not rise significantly in other brain regions or under any other condition (neutral stimulation with or without methylphenidate, or food stimulation without methylphenidate) in either group, and were not correlated with body mass index of the research subjects. Assessments of the levels of receptors for dopamine also did not differ between the two groups.

“So the key difference we found between binge eaters and non-binge eating obese subjects was a fairly subtle elevation of dopamine levels in the caudate in the binge eaters in response to food stimulation,” Wang said.

“This dopamine response is in a different part of the brain from what we’ve observed in studies of drug addiction, which found dopamine spikes in the brain’s reward center in response to drug-associated cues. The caudate, in contrast, is believed to be involved in reinforcement of action potentially leading to reward, but not in processing of the reward per se. That means this response effectively primes the brain to seek the reward, which is also observed in drug-addicted subjects,” Wang said.

Inasmuch as binge eating is not exclusively found in obese individuals, the scientists believe further studies are warranted to assess the neurobiological factors that may differentiate obese and non-obese binge eaters.

Reference:


Planning and Visualization Lead to Better Food Habits

If you want to improve the way you eat, the best way to do so is to both make an action plan and visualize yourself carrying it out, according to McGill researchers (1).

“Telling people to just change the way they eat doesn’t work; we’ve known that for a while,” says Bärbel Knäuper of McGill’s Department of Psychology. “But research has shown that if people make a concrete plan about what they are going to do, they are better at acting on their intentions. What we’ve done that’s new is to add visualization techniques to the action plan.”

In a study recently published in Psychology and Health, Knäuper and her students asked 177 students at McGill’s New Residence Hall to set themselves the goal of consuming more fruit for a period of seven days. All the students in the study ended up consuming more fruit over the course of the week than they had before hand.

(Continued on page 14)
Planning (Continued from page 13)

But those who made a concrete plan, wrote it down and also visualized how they were going to carry out the action (i.e. when, where and how they would buy, prepare and eat fruit) increased their fruit consumption twice as much as those who simply set out to eat more fruit without visualizing and planning how they were going to do it.

These kinds of visualization techniques are borrowed from sports psychology. “Athletes do lots of work mentally rehearsing their performances before competing and it’s often very successful. So we thought having people mentally rehearse how they were going to buy and eat their fruit should make it more likely that they would actually do it. And this is exactly what happened,” says Bärbel Knäuper. This research points to a simple yet effective means of changing eating habits.

Reference:


http://www.mcgill.ca/newsroom/news/item/?item_id=172096

Resource:

National Collaborative on Childhood Obesity Research Launches Surveillance Resource

The National Collaborative on Childhood Obesity Research (NCCOR) announced today the launch of a new, free online resource to help researchers and practitioners more easily investigate childhood obesity in America.

NCCOR's Catalogue of Surveillance Systems describes in detail existing surveillance systems that collect data related to childhood obesity. It provides one-stop access to more than 75 surveys and other data sets, allowing users to search and select surveys that provide a wealth of data at the national, state, and local levels on a range of variables, including school policies and health outcomes, as well as eating and exercise behaviors. Health officials at the city and state level also can find data related to their programs.

Using the Catalogue, researchers can:

- identify surveillance systems to meet their research and program needs
- compare attributes across systems
- find information about the systems
- link directly to the systems to download data or other information.

"NCCOR's Catalogue of Surveillance Systems is a valuable tool for any researcher focused on childhood obesity," said NIH Director, Dr. Francis Collins. "Searching for information on data in these systems now takes a matter of minutes rather than hours, or even days. It is also now possible to see which data systems can be linked in order to study these health behaviors at the individual and environmental levels."

USDA Under Secretary for Food, Nutrition and Consumer Services Kevin Concannon today joined local business leaders, retailers and community members at Sedano’s Supermarket to unveil the Spanish-language Supplemental Nutrition Assistance Retail (SNAP) Retailer Locator. The new online search tool is designed to help recipients find SNAP-authorized stores near their home or workplace. With one of the largest concentrations of Spanish speakers in the United States, Concannon emphasized the nutrition and economic stimulus benefits the new tool would have on Miami.

"The Supplemental Nutrition Assistance Program leads the way in helping low-income families put food on the table 365 days a year," said Under Secretary Concannon. "The new tool will make it easier for SNAP participants to gain access to food and it is another critical step in providing participants with information to make more informed shopping choices."

USDA is working to improve access to and increase participation in SNAP with a focus on underserved populations. While the participation rate among all eligible individuals was 67 percent in 2008, only 35 percent of eligible elderly and 56 percent of eligible Hispanics participate.

SNAP benefits – formerly known as the Food Stamp Program – are now provided to recipients through a card similar to a debit card, help low income families put healthy food on the table and provide an economic stimulus that strengthens communities. Research shows that every $5 in new SNAP benefits generates as much as $9.00 in local economic activity. While SNAP benefits are administered by states, they are 100 percent federally funded and move quickly into local economies, with 97 percent of SNAP benefits redeemed within a month. USDA is working with retailers to expand participation in the program through grocery stores, food marts, farmers’ markets and other retail locations.

"The President made a commitment to reviving the economy and investing in America and its people. Our efforts to get more eligible people to participate in SNAP are a part of meeting that commitment," Concannon said. "Every time a family uses SNAP benefits to put healthy food on the table, it benefits the store and the employees where the purchase was made; the truck driver who delivered the food; the warehouses that stored it; the plant that processed it; and the farmer who originally produced the food."

Source: USDA News Room; Feb. 18, 2011.
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