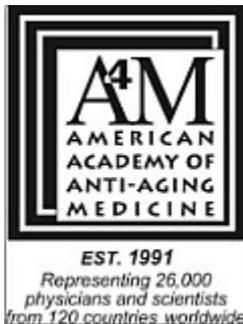


# BioFunctionalMed eBook: Weight and Obesity



Compiled by

**Jennifer L Yap, DO FABPMR**  
**Alvin K Antony, MD FABPMR**

**The American Academy of Anti-Aging  
Medicine (A4M)**

[www.worldhealth.net](http://www.worldhealth.net)

## Obesity Linked to 13 Types of Cancer

*Losing weight might lower the risk, researchers say*

"At the center of good Anti-Aging Medicine, Preventative, Integrative, and whatever we chose to call our practice is good old fashioned common sense. Common sense should tell us all and not just doctors, that being overweight is not an optimum prescription for being healthy. It doesn't surprise me at all that 40% of Cancer cases are linked to obese patients," said Dr. Ronald Klatz, President of the A4M, Oct. 4, 2017.

(HealthDay News) -- There's a link between obesity and 40 percent of all the cancers diagnosed in the United States, health officials reported Tuesday.

That doesn't mean too much weight is causing all these cancer cases, just that there's some kind of still-to-be explained association, according to the U.S. Centers for Disease Control and Prevention.

Still, the study findings suggest that being obese or overweight was associated with cancer cases involving more than 630,000 Americans in 2014, and this includes 13 types of cancer.

"That obesity and overweight are affecting cancers may be surprising to many Americans. The awareness of some cancers being associated with obesity and overweight is not yet widespread," Dr. Anne Schuchat, CDC deputy director, said during a midday media briefing.

The 13 cancers include: brain cancer; multiple myeloma; cancer of the esophagus; postmenopausal breast cancer; cancers of the thyroid, gallbladder, stomach, liver, pancreas, kidney, ovaries, uterus and colon, the researchers said.

Speaking at the news conference, Dr. Lisa Richardson, director of CDC's Division of Cancer Prevention and Control, said early evidence indicates that losing weight can lower the risk for some cancers.

According to the new report from the CDC and the U.S. National Cancer Institute, these 13 obesity-related cancers made up about 40 percent of all cancers diagnosed in the United States in 2014.

Although the rate of new cancer cases has decreased since the 1990s, increases in overweight and obesity-related cancers are likely slowing this progress, the researchers said.

Of the 630,000 Americans diagnosed with a cancer associated with overweight or obesity in 2014, about two out of three occurred in adults aged 50 to 74, the researchers found.

Excluding colon cancer, the rate of obesity-related cancer increased by 7 percent between 2005 and 2014. During the same time, rates of non-obesity-related cancers dropped, the findings showed.

In 2013-2014, about two out of three American adults were overweight or obese, according to the report.

For the study, researchers analyzed 2014 cancer data from the United States Cancer Statistics report and data from 2005 to 2014.

Key findings include:

- Of all cancers, 55 percent in women and 24 percent in men were associated with overweight and obesity.
- Blacks and whites had higher rates of weight-related cancer than other racial or ethnic groups.
- Black men and American Indian/Alaska Native men had higher rates of cancer than white men.
- Cancers linked to obesity increased 7 percent between 2005 and 2014, but colon cancer decreased 23 percent. Screening for colon cancer is most likely the reason for that cancer's continued decline, Schuchat said.
- Cancers not linked to obesity dropped 13 percent.
- Except for colon cancer, cancers tied to overweight and obesity increased among those younger than 75.

The new report was published online Oct. 3 in the CDC's *Morbidity and Mortality Weekly Report*.

Dr. Farhad Islami is strategic director of cancer surveillance research for the American Cancer Society.

He said it's "important to note that only a fraction of the cancers included in the calculation in this report are actually caused by excess body weight."

According to Islami, "many are attributable to other known risk factors, like smoking, while for many others, the cause is unknown. Obesity is more strongly associated with some cancers than others."

The World Cancer Research Fund estimates that "20 percent of all cancers in the United States are caused by a combination of excess body weight, physical inactivity, excess alcohol, and poor nutrition. The American Cancer Society is currently doing its own extensive calculation of the numbers and proportions of cancer cases attributable to excess body weight, the results of which will be published soon," he said.

---

*By Steven Reinberg HealthDay Reporter More information Learn more about cancer and obesity at the U.S. National Cancer Institute. SOURCES: Farhad Islami, M.D., Ph.D., strategic director, cancer surveillance research, American Cancer Society; Oct. 3, 2017, media briefing with Anne Schuchat, M.D., deputy director, and Lisa Richardson, M.D., M.P.H., director, division of cancer prevention and control, both U.S. Centers for Disease Control and Prevention; Oct. 3, 2017, CDC's Morbidity and Mortality Weekly Report, online Last Updated: Oct. 3, 2017 Copyright © 2017 HealthDay. All rights reserved. Dr. Ronald Klatz, DO, MD President of the A4M has 28,000 Physician Members, has trained over 150,000 Physicians, health professionals and scientists in the new specialty of Anti-aging medicine. Estimates of their patients numbering in the 100's of millions World Wide that are living better stronger, healthier and longer lives. [www.WorldHealth.net](http://www.WorldHealth.net)*

## Food Preservatives May Disrupt Hormones and Promote Obesity

*Researchers have created an innovative stem cell testing system to gauge the health effects of everyday chemicals on human beings.*

Scientists have found evidence that preservatives in food and other popular products disrupt human hormones and promote obesity. The findings originally stemmed from animal experiments. A recent study highlighted by *Nature Communications* confirms the findings in human beings.

### The Widespread Use of Chemicals

Over 80,000 chemicals are registered for use in the United States in commonly used items like household cleaners, foods, lawn-care products and personal care products. Though few chemicals are believed to pose a major risk to human health, the National Toxicology Program's website states the organization is unsure of the effects of the chemicals on human health. Many of the chemicals aren't thoroughly tested due to barriers like cost, health risks of exposure and ethical matters.

### Study Details

Investigators from Cedars-Sinai created a unique protocol and platform to test the effects of chemicals on human beings. Tributyltin (TBT) is a compound commonly found in paint that seeps into water and accumulates in seafood.

Butylhydroxytoluene (BHT) is an antioxidant regularly added to cereals and other foods. Its purpose is to safeguard nutrients and prevent fats from spoiling.

Perfluorooctanoic acid (PFOA) is a polymer used in certain types of carpeting, cookware, and other commonly used products.

The investigators used tissues that produce hormones grown from actual human stem cells. Their aim was to demonstrate how regular exposure to such chemicals can interfere with signals transmitted from the digestive system to the brain to let individuals know when their stomach is full while eating. If this signaling system malfunctions, people tend to overeat and gain weight.

The investigators took blood samples from adults. They applied reprogramming genes to convert the cells to induced [pluripotent stem cells](#). The team used these stem cells to grow human epithelium tissue that lines the gut. The brain's neuronal tissues were also used. They are located in the hypothalamus region of the brain that regulates metabolism and appetite. The investigators subjected the tissues to TBT, PFOA, and BHT separately and in combination. They observed what happened within the cells.

### The Findings

The investigators determined each chemical damages hormones that interact with the gut and the brain. When the three chemicals were tested together, the cumulative stress was quite powerful. BHT generated some of the most robust detrimental effects out of the three chemicals.

The investigators determined chemicals disturbed networks that prepare signaling hormones to keep their structure intact and be moved out of cells. This made them ineffective. The investigators also found the chemicals damaged mitochondria. These

are cell structures that convert oxygen and food to energy to catalyze the body's metabolism. The chemical damage occurred in “young” cells at early stages of development so the findings show a defective hormone system might impact pregnant women and their offspring. Scientists have determined effects of endocrine disruptors can be transmitted to future generations in animals yet this has not been proved to be the case in humans.

#### Why the Study Matters

The study's new testing system might provide a safe, low-cost and much-needed method that can be used to assess the health ramifications of other chemicals. Other scientists have proven the compounds in question can disturb hormone systems in lab animals. Yet the study outlined above is the first to make use of human pluripotent stem tissues and cells to show how such compounds can disturb hormones that help signal between the brain and gut and prevent obesity. It is a landmark study as it dramatically boosts the understanding of how endocrine disruptors might damage the human body's hormonal systems. The finding also helps explain the rise of the obesity epidemic in the United States.

"This is a landmark study that substantially improves our understanding of how endocrine disruptors may damage human hormonal systems and contribute to the obesity epidemic in the U.S.," said Clive Svendsen, PhD, director of the institute and the Kerry and Simone Vickar Family Foundation Distinguished Chair in Regenerative Medicine. More than one-third of U.S. adults are considered to be obese, according to federal statistics.

---

*Sareen was the principal investigator for the study, and research scientist Uthra Rajamani, PhD, was the first author. Research reported in this publication was supported by the National Center for Advancing Translational Science of the National Institutes of Health under award number UL1TR000124. DOI: 10.1038/10.1038/s41467-017-00254-8 [https://www.eurekalert.org/pub\\_releases/2017-08/cmc-ssh080917.php](https://www.eurekalert.org/pub_releases/2017-08/cmc-ssh080917.php)*

## Green Tea Boosts Memory, Combats Obesity

*EGCG, a compound in green tea, could alleviate high-fat and high-fructose -induced insulin resistance and cognitive impairment.*

Green tea's top catechin and most biologically active component, EGCG, could alleviate cognitive impairment and insulin resistance caused by the consumption of high-fructose and high-fat. This is the determination of researchers from Northwest A&F University's College of Food Science and Engineering. They reached this conclusion after conducting a study centered on mice. The details of the study were recently published in *The FASEB Journal*.

### Insights From Previous Studies

Prior research indicated EGCG had the potential to treat an array of human diseases. However, EGCG's ability to influence insulin resistance and cognitive impairment resulting from the typical Western diet were unclear. The study outlined above has eliminated some of the uncertainty regarding the effects of EGCG.

### The Magic of Green Tea

Green tea is consumed more than any other liquid besides water. The tea leaves used for green tea are grown in more than 30 countries. The centuries-old habit of drinking green tea just might be a better alternative to modern medicine in the fight against insulin resistance, obesity and the impairment of memory.

### About the Study

The research team separated young mice into three groups according to diet. The first was a control group that consumed a standard diet. The second group was provided with an HFFD diet. The third group was provided with an HFFD diet along with two grams of EGCG for each liter of drinking water. The research team monitored the mice across 16 weeks.

### The Results

It was determined the mice provided with HFFD had a higher body weight than the mice in the control group. The HFFD group also had a higher body weight than the mice in the HFFD+EGCG group.

A Morris water maze test was administered. The HFFD mice took longer to reach the platform compared to those in the control group. The HFFD+EGCG mice had a dramatically lower escape distance and escape latency than those in the HFFD group.

The hidden platform was then removed for a probe trial. The mice in the HFFD group took less time within the target quadrant compared to those in the control group. They also crossed fewer platform crossings than the mice in the control group. The HFFD+EGCG group showed a meaningful increase in the average amount of time spent in the target quadrant. They also had a greater number of platform crossings. This means EGCG might improve memory impairment caused by HFFD.

*Yashi Mi, Guoyuan Qi, Rong Fan, Qinglian Qiao, Yali Sun, Yuqi Gao, Xuebo Liu. EGCG ameliorates high-fat- and high-fructose-induced cognitive defects by regulating the IRS/AKT and ERK/CREB/BDNF. The FASEB Journal, 2017; fj.201700400RR DOI: 10.1096/fj.201700400RR[https://www.eurekalert.org/pub\\_releases/2017-07/foas-gti072817.php](https://www.eurekalert.org/pub_releases/2017-07/foas-gti072817.php)*

## Avoiding Risky Health Behaviors Can Increase Lifespan by 7 Years

*Those who do not smoke, are not obese, and consume alcohol moderately can live 7 years longer than average - spending most of these extra years in good health.*

A new study shows those who avoid risky health behaviors tend to live a long life. Perhaps more importantly, those extra years are characterized by good health. Examples of such “risky health behaviors” include smoking, consuming an excess of alcohol and eating to the point of reaching obesity. The study's results show avoiding such behaviors leads to an increased lifespan of seven years. The study's details were recently published in *Health Affairs*. Mikko Myrskylä, the Director of Germany's Max Planck Institute for Demographic Research, and Neil Mehta, a University of Michigan professor, spearheaded the study.

### Study Details

The study examined data for over 14,000 individuals living in the United States. It determined those who never smoked and did not become obese lived between four and five years longer than the rest of the population. These additional years were not plagued by disabilities. It was also determined those who consumed alcohol in moderation enjoyed an extended lifespan of seven disability-free years. In fact, these individuals enjoyed a life expectancy beyond that of those living in Japan, a nation that is commonly considered to be the best example of how healthy living leads to an extended life.

### Why the Findings are Important

Most people think advancements in medical technology are a primary determinant of lifespan and health. However, this study shows a healthy lifestyle can extend lifespan and improve health. The bottom line is those who avoid smoking and obesity while limiting alcohol consumption will enjoy considerable health and lifespan benefits.

### Why This Study is Unique

This study is a trailblazer of sorts as it is the first to study the aggregate impact of numerous health behaviors on total life expectancy as well as one's odds for being afflicted by disabilities. Prior studies examined single health behaviors. Myrskylä and Mehta studied an array of behaviors to determine lifespan and level of health for those who avoided the most common behavioral risk factors.

### Points of Note

The pair of researchers found smoking, obesity and consuming an excess of alcohol were tied to reduced life expectancy as well as an earlier occurrence of numerous disabilities. It was determined that smoking was tied to an early death yet not with an increase in the number of years in which people were plagued with disabilities. Obesity is tied to an extensive period of time in which people are plagued with disabilities. Excessive consumption of alcohol is tied to a reduced lifespan and a reduction in the number of years spent in good health.

The most surprising finding was the massive difference in the average lifespan between the groups that were most at risk and least at risk. Men who avoided

obesity, did not smoke and only drank at moderation lived 11 years longer than those who smoked, drank in excess and were overweight. For women, the difference between these groups was 12 years. People will be happy to know the number of years in which one lives with physical limitations does not increase as he gains more years with a healthy way of life. Rather, a healthy way of life is linked to a solid increase in physically fit years. This means the years one gains through a healthy lifestyle are years characterized by good health.

#### Takeaways

This study's results show just how important it is for people to key in on prevention. Avoid the risky health behaviors noted above and the odds of a long and healthy life dramatically increase. Furthermore, policy interventions to target health behaviors might help significant portions of the population to enjoy the health benefits noted in the study.

---

*Neil Mehta, Mikko Myrskyl&#2013265924;. The Population Health Benefits Of A Healthy Lifestyle: Life Expectancy Increased And Onset Of Disability Delayed. Health Affairs, 2017; 10.1377/hlthaff.2016.1569 DOI: 10.1377/hlthaff.2016.1569http://www.demogr.mpg.de/en/news\_press/news/press/a\_healthy\_lifestyle\_increases\_life\_expectancy\_by\_up\_to\_seven\_years\_5336.htm*

## Timing Counts for More than Calories in Weight Loss

*New research shows that the time of day food is eaten is more critical to weight loss than the number of calories consumed.*

In a recent study from the University of Texas Southwestern Medical Center in Dallas, researchers have found evidence that connects meal times with the ability to lose weight. Findings also support the idea that the body's natural sleep cycles are disrupted when food is consumed at irregular times. The study was published by Cell Press journal in July 2017. The Howard Hughes Medical Institute and the National Institute on Aging sponsored the research.

### Exploring Weight Loss Variables

Previous research has confirmed that eating a calorie-restricted diet increases longevity. The team from the UT Southwestern Medical Center wanted to further explore the relationship between body rhythms, like the circadian cycle, and the time of day calories are consumed.

These types of studies can be difficult to structure. To get the most accurate results from a feeding study, the animal subject would have to be hand-fed and observed constantly. Researchers from the current study sought to simulate long-term results in a way that could be measured during normal working hours. An automated feeding system was developed that allowed researchers to control the food intake of different test groups. Sensors helped track the movements and reactions of lab animals. Researchers were able to note information, like consumption time, that can significantly affect the outcome of data analysis.

### Animal Observation Study

Five groups of lab animals were used for the study. Each group was assigned a unique eating regime that varied by calorie content and feeding time. Data analysis showed the group of mice that received reduced-calorie night time feedings was the only group to display weight loss.

Two other groups of animals received feedings during daylight hours. Rats are nocturnal, therefore eating during the day is a disruption of their natural cycle. These groups were observed to remain as active at night as they were during the day, which may indicate chronic sleep deprivation. Researchers believe the lack of sleep is a symptom of disrupted circadian rhythms.

Circadian rhythms, otherwise known as the "internal clock", is a set of biological activities that regulate cycles of sleep and waking. Previous studies have suggested that this internal sense of time also influences other body processes, like digestion and metabolism. The current study adds weight to those theories.

"Translated into human behavior, these studies suggest that dieting will only be effective if calories are consumed during the daytime when we are awake and active. They further suggest that eating at the wrong time at night will not lead to weight loss even when dieting," said Dr. Joseph S. Takahashi, Chairman of Neuroscience at UT Southwestern.

### Implications for Further Research

While the study proves a link between weight loss and consumption timing, researchers believe the study's greatest contribution may be the automated feeding system. Existing studies that explore calorie-reduced diets use daytime feeding schedules. The results of the current study show that this method may be skewing results and leading to false conclusions. The automated feeding system will allow future researchers to conduct longer and more biologically accurate experiments.

"Despite the importance of these factors, manipulating when and how much food is available for extended periods has been difficult in past research. This automated system, which can be scaled up for large and very long longevity studies, provides the means to address open questions about what mechanisms extend lifespan in mammals, and whether it is actually the calorie reduction or the time at which food is consumed that extends lifespan," Dr. Takahashi said.

---

*Victoria A. Acosta-Rodríguez, Marleen H.M. de Groot, Filipa Rijo-Ferreira, Carla B. Green, Joseph S. Takahashi. Mice under Caloric Restriction Self-Impose a Temporal Restriction of Food Intake as Revealed by an Automated Feeder System. Cell Metabolism, 2017; 26 (1): 267 DOI: 10.1016/j.cmet.2017.06.007*<http://www.utsouthwestern.edu/newsroom/news-releases/year-2017/jul/lifespan-research-takahashi.html>

## Artificial Sweeteners Cause Weight Gain, Heart Disease and More

*Artificial sweeteners may be linked to weight gain, increased obesity risk, diabetes, high blood pressure and heart disease.*

A new study shows artificial sweeteners might be tied to weight gain along with a heightened risk of diabetes, obesity, heart disease and high blood pressure. The results of the study were recently published in the *Canadian Medical Association Journal*.

### A Word on Artificial Sweeteners

Examples of artificial sweeteners include stevia, aspartame, and sucralose. These sweeteners are incredibly popular. Their consumption continues to rise as time progresses. The unfortunate truth is that recent findings suggest the consumption of these sweeteners has a negative impact on appetite, metabolism and gut bacteria. However, the evidence is somewhat contradictory.

### About the Study

Academicians from the George and Fay Yee Centre for Healthcare Innovation at the University of Manitoba performed a comprehensive review of 37 studies in order to gain a better understanding of whether the consumption of artificial sweeteners is tied to negative effects on the heart and weight across posterity. The studies followed more than 400,000 individuals across an average of a decade. Yet only seven of these studies were considered to be randomized controlled trials. Trials of this sort are considered to be optimal in the context of clinical research. The seven that qualified involved over 1,000 people across half a year on average.

The trials showed that artificial sweeteners did not have a consistent effect on weight loss. The lengthier observational studies displayed a connection between the consumption of artificial sweeteners and the fairly high risks of weight gain, heart disease, diabetes, high blood pressure, obesity and a number of other health issues. Though millions of people regularly consume artificial sweeteners, few patients were included in the clinical trials of such products. The researcher determined the data from such clinical trials failed to support artificial sweeteners' intended benefits for weight management.

### Conclusion

People should consume artificial sweeteners with caution until the long-term health effects are comprehensively understood. The study's lead author, Meghan Azad, an Assistant Professor at the University of Manitoba's Rady Faculty of Health Sciences is leading her Children's Hospital Research Institute of Manitoba team in the undertaking of a new study. They will attempt to determine how the consumption of sweeteners by pregnant individuals might affect weight gain, gut bacteria in infants and weight gain. Additional research is necessary to gauge the long-term benefits and risks of such products. There is a reasonable chance sweeteners play a role in the obesity epidemic as well as related diseases.

You may also want to read: [\*Erythritol Identified as Marker for Weight Gain\*](#)

---

Meghan B. Azad, Ahmed M. Abou-Setta, Bhupendrasinh F. Chauhan, Rasheda Rabbani, Justin Lys, Leslie Copstein, Amrinder Mann, Maya M. Jeyaraman, Ashleigh E. Reid, Michelle Fiander, Dylan S. MacKay, Jon McGavock, Brandy Wicklow, Ryan Zarychanski. *Nonnutritive sweeteners and cardiometabolic health: a systematic review and meta-analysis of randomized controlled trials and prospective cohort studies.* *Canadian Medical Association Journal*, 2017; 189 (28): E929 DOI: 10.1503/cmaj.161390[https://eurekalert.org/pub\\_releases/2017-07/cmaj-asl071117.php](https://eurekalert.org/pub_releases/2017-07/cmaj-asl071117.php)

## Dust Triggers Fat Cell Growth

*Endocrine-disrupting chemicals in house dust can spur fat cells to accumulate more triglycerides or fat.*

There is no question that an unhealthy diet combined with minimal physical activity is largely responsible for the global obesity epidemic. However, researchers have now pinpointed specific environmental pollutants that also might play a major part in the obesity problem. A research team recently reported that minor amounts of household dust rife with such pollutants can cause fat cells to build up triglycerides (fat). They observed such buildup in a lab dish yet it is believed that the results are applicable to human beings who reside in living spaces with even a moderate amount of dust. The authors of the study recognize that funding from the Duke Cancer Institute, Fred and Alice Stanback and the National Institute of Environmental Health Sciences was provided.

### A Look at Endocrine-Disrupting Chemicals (EDCs)

EDC is an acronym that stands for [endocrine-disrupting chemicals](#). These are naturally occurring or synthetic compounds that have the potential to interfere or copy the human body's hormones. EDCs like flame retardants, bisphenol-A and phthalates are known for potential effects on the human body's immune, neurological and reproductive functions. Animal studies indicate exposure to certain EDCs early in life can spur weight gain in later years. This is why such EDCs are now being referred to as obesogens.

Some product manufacturers have decreased the amount of EDCs in their offerings. However, many EDCs are still widely present across all sorts of consumer goods. These EDCs end up reaching indoor dust where they are subsequently inhaled, ingested and even absorbed directly through the skin. According to the United States Environmental Protection Agency, children consume upwards of 50 milligrams of household dust every single day. Researcher Heather Stapleton is concerned about the effects of EDCs. It is possible EDCs affect fat cells and increase the chances for obesity. EDC exposure even spurs a number of other problems the scientific community has not yet identified.

### About the Research

Stapleton's research team gathered indoor dust samples across nearly a dozen homes throughout North Carolina. They tested extracts from these samples with a mouse pre-adipocyte cell model commonly used to test compounds for effects on the buildup of triglycerides (fat). Extracts from seven of the eleven dust samples spurred the pre-adipocytes to become mature fat cells and collect triglycerides. Extracts from the samples caused the cells to divide, forming a bigger precursor fat cell pool.

Merely one of the dust samples had no effect. Among the 44 most common household dust contaminants tested in the model, the pesticide pyraclostrobin, the plasticizer DBP, and the flame retardant TBPD generated the most robust fat-producing effects. This finding makes researchers think the mixture of such chemicals in household dust spurs the buildup of triglycerides along with fat cells.

Accumulations of dust as low as three micrograms in quantity produced measurable effects. This level is far below the amount of dust the typical child is exposed to on a daily basis. The research team suggests that the dust found in households is likely

to be a source of chemical exposure that has the potential to disturb metabolic health. Such disruptions are especially common in children.

---

*Christopher D. Kassotis, Kate Hoffman, Heather M. Stapleton. Characterization of Adipogenic Activity of House Dust Extracts and Semi-Volatile Indoor Contaminants in 3T3-L1 Cells. Environmental Science & Technology, 2017; DOI: 10.1021/acs.est.7b01788[https://eurekalert.org/pub\\_releases/2017-07/acs-hds070717.php](https://eurekalert.org/pub_releases/2017-07/acs-hds070717.php)*

## Simply Smelling Food Can Cause Weight Gain

*New research suggests that the odor of food eaten may play an important role in how the body handles the calories.*

Smell is a large part of the appeal of food. If one's sense of smell were removed, he would likely lose weight. This statement was recently proven true by researchers at the University of California, Berkeley who performed experiments on mice lacking the ability to smell. Such mice lost weight. However, the odd part of this study is that mice who could not smell properly consumed the same amount of fatty food as those who had a normal sense of smell.

### About the Results

Mice with a regular sense of smell increased to two times their typical weight after consuming the same amount of fatty food as mice lacking in smell. Furthermore, mice with a heightened sense of smell fattened up much more than mice with an average ability to smell. The findings show that the odor of foods one consumes plays a powerful role in how the body handles the calories. This means if one can't smell his food, there is a good chance his body will burn it instead of store it.

There is clearly a strong connection between the smell system and portions of the brain that control metabolism. Specifically, the hypothalamus is essential. Yet the exact neural circuits responsible for this phenomenon are still unknown. The manipulation of olfactory inputs really does change the way in which the brain perceives energy balance as well as how the brain controls energy balance.

People who lose their sense of smell due to a disease like Parkinson's, injury or age sometimes become anorexic. Yet the cause is not clearly defined as the loss of pleasure from consuming food commonly leads to depression that can spur the loss of appetite in itself. The study implies interventions might be helpful for those who lose their sense of smell and overweight individuals. It is clear that weight gain is not completely dictated by the number of calories consumed. Sensory systems are also important to the role the metabolism plays. The manner in which the calories are received is also important.

### Hunger, Calories, and Smell

Mice and humans are more sensitive to odors when hungry than following consuming food. It is possible the lack of smell fools the body into believing it has already consumed food. The body stores calories when searching out food just in case no food can be procured. Once food is acquired, the body burns those stored calories.

### Blocking the Sense of Smell

The researchers used a couple different techniques to block adult mice's sense of smell. They genetically engineered mice in order to express the diphtheria receptor within the olfactory neurons that reach all the way from the odor receptors in the nose to the brain's olfactory center. A diphtheria toxin was applied to the nose. Neurons died and the mice were subsequently deprived of their ability to smell until stem cells were applied for regeneration. The scientists also created a benign virus to

send the receptor to olfactory cells through inhalation. The diphtheria toxin eliminated the sense of smell for nearly a full month.

#### What's Next?

If the study performed on mice is validated in humans, it might be possible to create a drug that does not conflict with smell yet still blocks metabolic pathways.

Eliminating the ability to smell in those who desire to lose weight is possible yet few would take this route. Those who are morbidly obese and considering an extreme measure like bariatric surgery might consider such a step. Perhaps eliminating one's sense of smell for half a year and allowing the olfactory neurons to grow back would rewire the patient's metabolic circuitry.

---

*Celine E. Riera, Eva Tsaousidou, Jonathan Halloran, Patricia Follett, Oliver Hahn, Mafalda M.a. Pereira, Linda Engström Ruud, Jens Alber, Kevin Tharp, Courtney M. Anderson, Hella Brönneke, Brigitte Hampel, Carlos Daniel De Magalhaes Filho, Andreas Stahl, Jens C. Brüning, Andrew Dillin. The Sense of Smell Impacts Metabolic Health and Obesity. Cell Metabolism, 2017 DOI: 10.1016/j.cmet.2017.06.015<http://news.berkeley.edu/2017/07/05/smelling-your-food-makes-you-fat/>*

## Preventing Obesity through Gut Bacteria

*Researchers discover potential to combat obesity and insulin resistance by manipulating the microbiome.*

Researchers at the Cleveland Clinic have identified a biological connection between gut bacteria metabolism and obesity. The research was spearheaded by the Cleveland Clinic Lerner Research Institute's J. Mark Brown Ph.D. The research group determined that blocking an intestinal microbial pathway has the potential to ward off obesity as well as insulin resistance. It can even prompt fat tissue to be more metabolically active. The results of the study were publicized in the journal *Cell Reports*. Dr. Rebecca Schugar is the primary author on the study's publication.

### About the Research

The research team analyzed the metabolic pathway that generates trimethylamine oxide, referred to as TMAO. This is a chemical created by gut bacteria when the body digests vitally important nutrients like carnitine, lecithin, and choline. These nutrients are found in animal products like processed meats, red meat, liver, and eggs. Dr. Brown worked with Dr. Stanley Hazen on the study. They found that particularly high levels of TMAO are tied to an increased risk for cardiovascular events like strokes and heart attacks.

It has long been known that obesity is linked to cardiovascular disease. The research team kept this fact in mind when hypothesizing that TMAO might play a part in the metabolic pathways that spur obesity. The researchers keyed in on the host enzyme known as flavin-containing monooxygenase 3, known as FMO3. It converts TMAO to an active form. The researchers determined mice that had either a missing or a deactivated FMO3 gene enjoyed protection against obesity, even when provided with a diet high in calories and fat. The research team also found mice that are FMO3-negative displayed an elevated expression of genes linked to brown or beige fat cells that are much more metabolically active compared to white fat cells.

### Why the Study is Important

The study determined that elevated TMAO levels are tied to an increase in Type 2 diabetes. The findings are important as they show that there might be a new way to alter the microbiome through therapeutics that will help in the fight against obesity and diabetes. There had not been any sort of meaningful evidence as to how gut bacteria impacts obesity until now.

The research team's work has extensive implications in terms of drug discovery that targets gut microbes. However, additional studies will be necessary to obtain a full understanding of the TMAO pathway and the connections between TMAO, TMA, FMO3, and health.

---

*Rebecca C. Schugar, Diana M. Shih, Manya Warriar, Robert N. Helsley, Amy Burrows, Daniel Ferguson, Amanda L. Brown, Anthony D. Gromovsky, Markus Heine, Arunachal Chatterjee, Lin Li, Xinmin S. Li, Zeneng Wang, Belinda Willard, YongHong Meng, Hanjun Kim, Nam Che, Calvin Pan, Richard G. Lee, Rosanne M. Croke, Mark J. Graham, Richard E. Morton, Carl D. Langefeld, Swapam K. Das, Lawrence L. Rudel, Nizar Zein, Arthur J. McCullough, Srinivasan Dasarathy, W.H. Wilson Tang, Bernadette O. Erokwu, Chris A. Flask, Markku Laakso, Mete Civelek, Sathyamangla V. Naga Prasad, Joerg Heeren, Aldons J. Lusic, Stanley L. Hazen, J. Mark Brown. The TMAO-Producing Enzyme Flavin-Containing Monooxygenase 3 Regulates Obesity and the Beiging of White Adipose Tissue. *Cell Reports*, 2017; 19 (12): 2451 DOI: 10.1016/j.celrep.2017.05.077 <https://medicalxpress.com/news/2017-06-gut-bacteria-pathways-fat-tissue.html>*

---

## Broccoli Battles Diabetes

*New research shows that sulforaphane, an antioxidant found in broccoli, may slow or even reverse type 2 diabetes.*

A compound found in broccoli may slow or even reverse the progression of type 2 diabetes in overweight people. The study was published in the June 2017 issue of the *Science Translational Medicine* journal. The study was led by assistant professor Anders Rosengren and doctoral student Annika Axelsson, both from the University of Gothenburg in Sweden.

### Multi-Method Study

Researchers used laboratory experiments using animals, computational methods, and clinical trials with human subjects to complete their study.

During the laboratory portion of the study, the researchers analyzed liver tissue from diabetic mice. The mice were raised on a Western-style diet with a 42% fat and .15% cholesterol content. From the analysis, the team was able to identify 1,720 different genes that affected hyperglycemia. Hyperglycemia is a condition characterized by high blood sugar levels. Further analysis allowed the researchers to narrow their focus on a set of 50 genes that linked together to raise blood sugar levels to form the type II diabetes disease signature.

The second phase of the study involved using a mathematical modeling program to rank known compounds for their ability to reverse the disease signature by reducing the genes' ability to express themselves. [Sulforaphane](#), a chemical compound found in cruciferous vegetables like Brussel sprouts and broccoli, ranked highest. The substance was able to successfully reduce glucose production in lab-grown cell groups. Tests were then completed using laboratory rodents. Despite being fed a high-fat, high-fructose diet, the rats who were given doses of Sulforaphane showed a marked improvement in glucose tolerance.

After the successful animal trials, researchers tested 97 human patients with type 2 diabetes. Participants took a daily dose of Sulforaphane, in the form of a powdered, concentrated broccoli sprout extract, for 12 weeks. Patients with normal weight were not affected by the compound. Obese participants saw a 10% decrease in fasting blood sugar by the end of the trial. That means patients were able to significantly reduce the risk of developing diabetes-related health complications without causing gastrointestinal problems or other side effects.

### Possible Replacement for Metformin

Lifestyle changes, such as eating healthy, exercising regularly, and maintaining a healthy weight, are the primary treatments for diabetes. However, many patients need the help of drug therapies to stabilize their blood sugar and insulin levels. Currently, the best treatment for type 2 diabetes is metformin. However, many overweight diabetes patients are unable to take this medication. Roughly 15% of those with diabetes also have reduced kidney function. Taking metformin could cause their bodies to retain lactic acid. This leads to lactic acidosis, a condition in that causes nausea, abdominal pain, shallow breathing, muscle pain and cramps, and fatigue. For those who are unable to take the standard treatment, Sulforaphane may be a viable alternative.

Researchers are currently developing a clinical study involving participants with prediabetes. They hope to use Sulforaphane to prevent these patients from developing type 2 diabetes.

---

*Annika S. Axelsson et al. Sulforaphane reduces hepatic glucose production and improves glucose control in patients with type 2 diabetes. Science Translational Medicine, 2017 DOI: 10.1126/scitranslmed.aah4477*<http://stm.sciencemag.org/content/9/394/eaah4477.short>

## Science-Backed Health Benefits of Cinnamon

*Cinnamon is not only one of the most delicious spices, it also is one of the healthiest.*



Cinnamon is a spice that has been used to flavor foods for hundreds of years. The spice is used more in desserts or bakery, but it is also an ingredient in various main dish recipes. Some of the spices that have been used for many years also have significant health benefits, and cinnamon is no exception. Cinnamon is the most consumed spice worldwide, so health professionals are very encouraged by recent news about how healthy it can be.

1. [Cancer](#) - is a devastating disease that science has yet to find a sure way to cure. Cinnamon is a significant source of cinnamaldehyde, a compound that could protect against colorectal cancer.
2. [Healing](#) - wounds that become infected can develop into a serious problem if bacteria cannot be controlled. The combination of cinnamon and peppermint essential oils has been found effective against antibiotic resistant bacteria, and also aids in cellular growth.
3. [Improved learning potential](#) - researchers fed cinnamon to mice and found the mice were better able to learn new skills. Adding the spice to the diet of slow learners may be a new and better way to help people with learning disabilities.
4. [Alzheimer's disease](#) - this devastating condition that mostly affects seniors has become more prevalent and still has no cure. Cinnamon has shown promise in preventing or reducing the plaques and amyloid fibers identified as factors causing dementia. Eating the spice may even bring improvement to those people already affected by the disease.
5. [Weight loss](#) - there is some evidence that consuming cinnamon can speed up metabolism which could help some people lose weight. Increasing metabolism burns more calories and increases energy, so a higher level of activity and some weight loss may result. Adding cinnamon instead of sugar to foods for flavor also helps as a weight loss aid as this can reduce the calories in food.
6. [Diabetes](#) - type 2 diabetes has been steadily increasing over the past few decades, probably due to a population that is aging and might also be influenced by an increase in obesity. A Chinese study found that diabetics who received a daily cinnamon supplement for three months experienced reduced blood glucose levels as well as significant reduction in blood triglycerides.
7. [Parkinson's disease](#) - has symptoms that include tremors and difficulty in normal movement and walking. While doctors can prescribe drugs to combat the symptoms, no cure has been found at this point. Research conducted by Rush University Medical Ctr has found that Ceylon Cinnamon fed to mice in a recent study shows the spice may help to reverse the symptoms of the disease for Parkinson's sufferers.
8. [Bacterial and Fungal infections](#) - including salmonella and listeria are typically food-borne and can cause serious illness when not controlled. Cinnamaldehyde is the primary component in cinnamon and can effectively inhibit the bacteria and also helps to reduce tooth decay and bad breath.
9. [Inflammation](#) - is the body's defense against infection due to tissue damage, but it can lead to serious health problems if not controlled. The anti-

inflammatory properties of cinnamon are effective in reducing the harmful effects of inflammation.

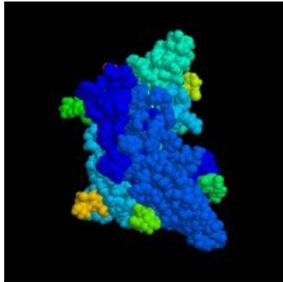
Cinnamon is a sweet and pungent spice that people enjoy in a variety of dishes ranging from desserts to meat-based recipes. Most people do not realize the spice offers many health benefits as well, but it should be noted that Ceylon cinnamon in its purest form is their best choice. The cheaper cassia cinnamon is high in coumarin which can cause [liver damage](#). *Anyone using cinnamon for its health benefits should make sure they purchase the Ceylon variety.*

---

<https://www.ncbi.nlm.nih.gov/pubmed/27342118> <http://www.webmd.com/diet/supplement-guide-cinnamon>  
<http://www.livestrong.com/article/491512-does-cinnamon-increase-metabolism/> <http://www.worldhealth.net/news/some-forms-cinnamon-linked-liver-damage/> <http://www.worldhealth.net/news/cinnamon-could-popular-spice-make-us-better-learn/> <http://www.worldhealth.net/news/cinnamon-compound-curtails-cancer/> <http://www.worldhealth.net/news/spice-wound-healing/> <http://www.worldhealth.net/news/cinnamon-fight-against-foodborne-illnesses/> <http://www.worldhealth.net/news/cinnamon-improves-diabetes-markers/> <http://www.worldhealth.net/news/cinnamon-compound-may-prevent-alzheimers/> <http://www.worldhealth.net/news/cinnamon-may-combat-parkinsons-disease/> <http://www.worldhealth.net/news/cinnamon-helps-improve-antioxidant-status/>

## Antibody Fights Fat, Fires up Metabolism

*Researchers discovered that giving a particular antibody to mice not only increases bone mass, but also counteracts weight gain.*



Two international research teams have determined an antibody decreases fat while simultaneously boosting metabolism. Their studies involved mice yet it is believed the findings will also apply to humans. It is hoped that this breakthrough will help treat osteoporosis, obesity and a number of other conditions.

### About FSH

It is known that a specific antibody targets follicle-stimulating hormones ([FSH](#)). These hormones increase when menopause occurs. Menopause is tied to a number of different health problems in women like the loss of bone density and an increase in weight gain. FSH is generated by the pituitary gland in mammals of both sexes. It spurs the growth of ovarian follicles in females and also regulates several reproductive processes. The antibody in question heightens bone mass, increases metabolism and decreases body fat in mice. It is believed that blocking FSH to counteract menopause symptoms will help treat conditions like cardiovascular disease, obesity, cancer, and osteoporosis.

### About the Study

The two international research teams were supervised by Clifford J. Rosen, Li Sun, and Mone Zaidi. The teams performed their work at the Maine Medical Center Research Institute and the Icahn School of Medicine at Mount Sinai. They used a synthetic mouse antibody to key in on a 13-amino-acid sequence of a single subunit of FSH. The antibody was tested on female mice whose ovaries were removed. The removal of the ovaries caused high levels of FSH. The antibody was also tested on female and male mice that were provided with high-fat foods.

### The Findings

In both instances, treatment using the antibody spurred fat loss and a faster metabolism. The results have intrigued scientists and medical professionals around the world. More extensive studies will be performed in the near future to determine if the findings are relevant to human health.

---

*Peng Liu et al. Blocking FSH induces thermogenic adipose tissue and reduces body fat, Nature (2017). DOI: 10.1038/nature22342*

## Brain Cells Limit Fat-Burning During Dieting

*Recent study may shed light on why weight-loss diets can be an inefficient way to lose weight.*



A team of researchers has discovered a mechanism in the brain that puts a limit on weight loss when mice were fed a low-calorie diet. This may explain why in humans, dieting can have a minimal effect as our brains prevent the body from burning calories (a carryover from our early ancestors when conserving energy was a necessity if food was scarce). According to Dr. Clémence Blouet from the University of Cambridge, weight loss diets are an inefficient way to lose weight because our bodies are like a caloric thermostat that the brain uses to regulate how many calories are to be burned after eating. As we eat less, our bodies seem to burn fewer calories, but just how the brain makes these adjustments to calorie burning has remained a mystery until now. The study was published in the journal *eLife*.

### AGRP Neurons Play Key Role in Regulating Appetite

Researchers experimented with mice since they are biologically similar to humans, and they made a useful model for testing purposes. What researchers were interested in was a group of neurons which lay in the hypothalamus region of the brain. Called AGRP neurons, they are known for playing a significant role in regulating appetite. When these neurons are activated they induce hunger, but when they are inhibited they suppress hunger, so much so that it can lead to anorexia.

The mice were implanted with temperature probes then isolated in special chambers where measurements like energy expenditure (depending on food availability) were taken. Using a genetic trick to manipulate the neurons in mice, the researchers were able to turn AGRP neurons on or off. The experiments showed these neurons are key contributors that controlled the caloric thermostat in the test mice (regulated calories burned). The study suggests the same should be true for humans as we have the same AGRP neurons that act to conserve energy when we limit the amount of food we eat. As soon as we start eating normally again, the neurons are interrupted and energy expenditure goes up to normal levels. This explains why dieting can be so difficult.

### Mechanism Controls how many Calories to Burn

Researchers also found a mechanism that AGRP neurons use to control their own activity. This mechanism detects how much stored energy we have in our bodies and then determines how many calories to burn. According to lead author Dr. Blouet, these neurons help the brain coordinate energy expenditure and appetite by turning on (make us eat if food is available), or off (stop eating if food is scarce). This mechanism may be the result of evolution that helped us survive during famines when food was scarce.

Nowadays, our bodies only encounter this energy saving mode when we deliberately try and lose weight. The study helps explain why dieting on its own over the long

run has little effect. According to co-author of the study Dr. Luke Burke, the research could lead to future new and improved therapies to assist people struggling with overeating and obesity. For now, the best solution for people (moderately overweight) wanting to lose weight is to combine modest calorie reduction along with exercise.

---

*Luke K Burke, Tamana Darwish, Althea R Cavanaugh, Sam Virtue, Emma Roth, Joanna Morro, Shun-Mei Liu, Jing Xia, Jeffrey W Dalley, Keith Burling, Streamson Chua, Toni Vidal-Puig, Gary J Schwartz, Clémence Blouet. mTORC1 in AGRP neurons integrates exteroceptive and interoceptive food-related cues in the modulation of adaptive energy expenditure in mice. eLife, 2017; 6 DOI: 10.7554/eLife.22848*

## Erythritol Identified as Marker for Weight Gain

*A new study has identified the sugar replacement sweetener erythritol as a biomarker for increasing fat mass.*



A study recently conducted by academicians at Cornell University's Division of Nutritional Sciences in tandem with researchers at the University of Luxembourg and Braunschweig University of Technology sheds light on a key biomarker for increased fat mass and weight gain. This biomarker is a sugar alcohol called erythritol. This finding is important as it conflicts with previous research that claimed erythritol is produced and metabolized by the human body.

The study results were published in the *Proceedings of the National Academy of Sciences*.

The study was conducted as a component of Cornell University's EnHANCE project. This is a Division of Nutritional Sciences initiative designed to develop a better understanding of how the shift from living at home during the high school years to living on/near campus alters dietary habits, metabolism, and weight.

### About Erythritol

This sugar alcohol is present in a number of different foods like watermelon and pears. Erythritol has recently been added to low-calorie foods as a replacement for sugar and other sweeteners.

### About the Study

The study was conducted as an accompanying analysis to identify metabolic indicators tied to increased fat mass and weight gain in younger individuals. In particular, the researchers were concerned with the "freshman 15", referring to the rapid weight gain experienced by youngsters transitioning from high school to college. Over 3 million high school graduates enroll in colleges every autumn. It is quite common for the transition to dorm life to spur a considerable weight gain. According to Cornell professor Patricia Cassano, around 75 percent of these college freshmen endure weight gain as they segue from living at home to living on or near campus.

The research team found that young adults who endured weight gain and an increase in abdominal fat across a year's time had fifteen times more blood erythritol at the beginning of the year compared to those who did not gain weight or *lost* weight/fat mass. Data from 172 freshmen was collected for the study. This information was gathered at the start and end of the academic year. Study participants filled out questionnaires, had physical measurements taken and allowed the researchers to use dual energy X-ray absorptiometry to accurately measure muscle and fat mass. Blood was also collected for biomarker measurement purposes. The research team developed nuanced techniques to determine how metabolites are created and metabolized. These techniques are also applicable to unknown metabolites.

### A Look at the Findings

The study revealed an intriguing metabolic path that allows for the movement of dietary glucose containing erythritol. It was determined that erythritol is absorbed from food and also produced by the human body. The researchers replaced carbon atoms within glucose with “13C”, a heavy carbon. This allowed a precise tracking of glucose movement throughout the body's metabolic process. The findings shocked everyone involved with the study. When subjects consumed 13C glucose, the carbon metabolized and appeared within blood erythritol soon thereafter.

The results are proof that the human body is capable of synthesizing sugar alcohol. Erythritol is not processed and released from the human body in its original form. It changes and affects the body's metabolism. This is an important finding as it conflicts with prior assumptions.

Additional research is necessary to understand if the pathway is partially responsible for a heightened risk of weight gain. If it is determined to be responsible, researchers will attempt to pinpoint how this phenomenon occurs. The connection between heightened concentrations of blood erythritol and the onset of weight gain/fat mass is not yet fully understood. It is uncertain if endogenous erythritol or exposure stemming from food leads to weight gain tied to erythritol.

---

*<http://news.cornell.edu/stories/2017/05/researchers-id-biomarker-weight-gain-fat-mass-growth>*

## Slim Down with 'Mindfulness' Approach

*People who received the therapy based on "mindful" decision-making lost more than 13 percent of their initial weight, on average, over one year.*



The mind possesses more power than most people realize. In order for a weight loss therapy program to succeed, it must focus on personal values and a decision-making process. People who aim to lose [weight](#) should make weight loss a top priority. When a person's mind is truly set on accomplishing a goal such as losing weight, the results are positive; at least this is what a new clinical study suggests.

Behavioral therapies have historically helped people to lose approximately 5% to 8% of their starting weight, in most cases. Those who received therapy based on mindfulness lost more than 13 percent of their starting weight, on average. Researchers refer to this concept as ABT or acceptance-based behavioral therapy. Researchers suggest that the biggest challenges people face are avoiding temptation, and keeping off the extra weight.

Drexel University's Professor of Psychology, Evan Forman states that "The standard advice on weight loss only works if people are able to stick with it." The truth is simple, people are driven to eat biologically. Foods are not only tempting, but they provide some type of comfort and reward, and it tastes good. At one point in time, food was scarce, which was apparently an asset. Now that food is so readily available in a variety of settings, it is a huge problem. The temptation to eat heavy foods, high in calories is creating obese conditions, which leads to major health problems. It is difficult for people to turn down good tasting foods, no matter how much they try to resist. It takes strong discipline and a sincere desire to stay away from fattening foods. However, Forman believes that these skills can be learned, and ABT goal is the help people learn these skills.

The new clinical trial puts the theory to the test by comparing theory with standard behavioral therapy, which mainly focuses on increasing exercise and reducing calories. Forman's study group recruited more than 190 obese and overweight individuals, and placed them in assigned groups of either standard or ABT therapy. Each study group participated in 25 group sessions annually, which included meeting with experts in the area of weight loss. Each group received help with problem-solving, weight loss management, food cravings, eating habits and exercise. However, ABT added some components to the study. The study allowed individuals to choose personal values based on goals, rather than aiming to lower the number on the bathroom scale.

This concept allows people to get a feel of what is truly important in their lives, and how weight affects their goals. The decision-making process to succeed or to choose begins in the mind. Whether a person feels bad about opting for a slice of apple pie, and not a sugar free brownie, has to do with cravings. People are likely to say that is simply how their brain works. This is why it is important to help people focus on their behavior. They cannot change their cravings, but they can change the way they view food. It makes the transitional thinking successful. People can practice throwing brownies and other unhealthy foods in the trash, and eating something healthy instead.

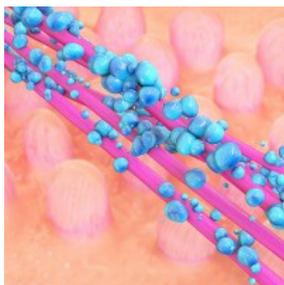
Many factors influence our decision to eat, and the type of foods we do eat. From watching television to being bored out of our minds, there is a myriad of prompts. Losing weight is not only about willpower, according to Dr. Steven Heymsfield, it is about controlling the strong, overwhelming impulses to eat. According to Forman, individuals can get help through mobile apps or booster sessions.

---

*The October issue of the journal Obesity.*

## Electromagnetic Brain Stimulation for Healthy Gut and Weight Loss

*New research finds that a non-invasive electromagnetic brain stimulation technique assists obese people in losing weight, by altering their gut bacteria.*



Scientists have determined that stimulation of the human brain through noninvasive electromagnetic technique helps obese individuals lose weight. This form of stimulation alters the composition of the intestinal bacteria in obese patients. Some refer to this bacteria as “gut microbiota”. The research team used a technique known as deep transcranial magnetic stimulation to obtain the results. The study was financed by the Italian Ministry of Health. The findings were presented in Orlando, Florida at the Endocrine Society's 99th annual get-together, known as “ENDO 2017”.

### The Fight Against Obesity

Scientists, doctors, and patients are clamoring for new therapies that treat obesity in a safe and effective manner. Though plenty of therapeutic and preventive interventions exist, none have successfully stopped obesity from becoming increasingly common. It is believed that one of the primary causes of obesity is impaired composition of gut microbiota. There is an imbalance of the mixture of harmful and helpful microorganisms that are present in the digestive track. It is known that impaired gut microbiota affects the brain's signals for hunger as well as satiety.

### Study Details

This study adds to previous findings that dTMS decreases food cravings and induces weight loss in obese patients. Deep brain stimulation requires the implantation or operation of electrodes. The same is not true of dTMS. Rather, an electromagnetic coil is used along the scalp to transmit magnetic pulses that stimulate the depths of the brain. This form of treatment is approved in the United States to treat debilitating depression. It is currently being studied in other countries to determine if it can treat neuropsychiatric disorders including addiction.

The research team analyzed whether dTMS could boost gut microbiota composition in obese patients. The researchers were also intent on pinpointing the underlying mechanisms that improved gut microbiota composition in such individuals. Three obese men and 11 obese women between the ages of 22 and 65 were recruited for the study. For the purpose of the study, obesity was defined by a body mass index of 30-45 kg/m<sup>2</sup>.

The study subjects were randomly assigned to two distinct groups for five weeks in which 15 treatment sessions occurred three times per week. Treatments were either dTMS to the prefrontal cortex/insula or a meaningless stimulation used as a control. Study participants provided stool samples before and after treatment for microbiota analysis purposes. The researchers also measured the levels of blood glucose (sugar), pituitary gland hormones, insulin, and neurotransmitters such as

norepinephrine. Pituitary hormones are crucial to the study and treatment of obesity as they play an important role in controlling appetite. Research has found that norepinephrine and select neurotransmitters impact microbiota composition.

### The Findings

Study participants who received dTMS lost over 3 percent of their weight. Furthermore, they lost 4 percent of body fat. These losses greatly exceed the losses of those who received the control stimulation. Fecal analysis showed that study participants treated with dTMS had considerably higher quantities of numerous helpful bacterial species containing anti-inflammatory properties. These bacterial species are commonly found in healthy individuals.

Those in the control group did not have any sort of clinically relevant alterations to their microbiota composition. Alterations in the number of bacterial species correlated to better hormonal and metabolic parameters like insulin, glucose, norepinephrine, and numerous pituitary hormones. The changes are an indication that dTMS provides numerous benefits for weight loss as well as changes to microbiota composition. The research makes it clear that dTMS has an inherently innovative ability to promote anti-obesity effects by way of gut-brain axis alteration.

---

*The Endocrine Society. "Magnetic brain stimulation causes weight loss by making gut bacteria healthier."*

## Open Window at Bedtime to Avoid Obesity and Diabetes

*Study finds that combating obesity and type 2 diabetes can be as simple as opening a bedroom window in the evening and cooling the body by a couple degrees.*



An Oxford University researcher has found that combating obesity and type 2 diabetes can be as simple as opening a bedroom window at night. The presence of a cool breeze seems to improve health, by lowering the bedroom's temperature by a couple degrees. These findings were released on the heels of a Dutch scientist's discovery of a link between global warming and the ever-increasing diabetes epidemic.

### Why Opening a Bedroom Window is Beneficial for Health

Research indicates that as little as a single degree centigrade increase in environmental temperature has the potential to cause a whopping 100,000 new cases of diabetes in the United States every year. This occurs as the human body burns less brown fat to maintain a comfortable temperature, causing sensitivity to insulin and consequential weight gain.

The study's results lend credence to the already-existing "keep cool" theory for diabetes and obesity reduction. Professor Grossman from Oxford University spearheaded the research. He indicates there is "encouraging" evidence that reducing body temperature, even if only by a couple degrees, improves the health of those who suffer from diabetes. He states that living in a comparably cold environment is helpful to increasing sensitivity to insulin and the prevention of diabetes.

Grossman also made it clear that adequate sleep is helpful in warding off diabetes and obesity. However, most people are aware of the fact that peaceful sleep in which REM is attained benefits the body and mind. Few are aware that sleeping in a cool bedroom with the window open to allow the night breeze in is also helpful.

### Additional Evidence That Cooler Temperatures Boost Health

Scientists analyzed temperature data and diabetes cases in the United States as well as the Virgin Islands, Guam and Puerto Rico. It was determined that a single degree centigrade bump in temperature heightened the incidence of type 2 diabetes by 0.314 per 1,000 individuals.

A study performed by academicians at the Netherlands' Maastricht University Medical Centre indicates that lowering the thermostat to a range between 15 C and 17 C for a couple hours each day will help reduce weight. The colder temperatures force the body to burn calories in order to stay warm. In fact, achieving a bedroom temperature that is similar to the temperature outside seems to benefit human health. It all boils down to the fact that exposure to cold temperatures heightens metabolic rate. This is the rate at which calories are burned. Cold temperatures catalyze the metabolic rate by 30 percent, allowing for the burning of 400 calories per hour.

## Details About Human Body Fat

The human body has two distinct types of fat: brown and white. White body fat holds calories. Brown body fat is converted to energy and heat. Keeping brown fat cool is conducive to its stimulation and subsequent weight loss. Though there is a strong connection between diabetes and a cold body, the notion that such a link is tied to climate change is highly unlikely.

## The Utility of the Findings

It is certainly interesting to note that a cooler bedroom can reduce the odds of obesity and type 2 diabetes. However, the planet is warming and it would be impossible for the majority of people to migrate to areas with cold climates. Yet it is certainly possible for people to turn down the thermostat at night or crack open a window on fall, spring and winter nights to let the cool breeze in.

---

*BMJ Open Diabetes Research & Care Diabetes incidence and glucose intolerance prevalence increase with higher outdoor temperature, Lianne L Blauw<sup>1,2</sup>, N Ahmad Aziz<sup>3</sup>, Martijn R Tannemaat<sup>3</sup>, C Alexander Blauw<sup>4</sup>, Anton J de Craen<sup>5</sup>, Hanno Pijl<sup>1</sup>, Patrick C N Rensen<sup>1,6</sup>*

## Elderberry Eases Inflammation

*Black elderberry extract may address obesity and metabolic-related inflammation, in a lab animal model.*



Previously, studies report that anthocyanins from dietary sources may reduce inflammation and address obesity-related medical complications. An abundant source of anthocyanins, black elderberry extract was investigated for its potential to affect markers of inflammation. NJ Farrell, from the University of Connecticut (Connecticut, USA), and colleagues employed a lab animal model of obesity, in which mice were fed a low-fat diet, high-fat diet, or a high fat diet supplemented with either 0.25% or 1.25% black elderberry extract, for 16 weeks. At the end of the study period, animals in the 2 elderberry supplemented groups displayed significantly lower liver weights, serum triglycerides, serum monocyte chemoattractant protein 1 – a marker linked to cardiovascular disease and diabetes, and higher homeostatic model assessment (HOMA) – a measure of insulin resistance, as compared to the animals fed the high-fat diet alone. The study authors submit that: “These results suggest that [black elderberry extract] may have improved some metabolic disturbances present in this mouse model of obesity.”

---

*Farrell NJ, Norris GH, Ryan J, Porter CM, Jiang C, Blesso CN. “Black elderberry extract attenuates inflammation and metabolic dysfunction in diet-induced obese mice.” Br J Nutr. 2015 Aug 28:1-9.*

## Six Estrogen Deficiency Triggers

*The symptoms and risks associated with estrogen deficiency, as well as a list of the 6 most common triggers.*



Estrogen is the primary female sex hormone and it plays a major role in both reproduction, and in the development and maintenance of female sex characteristics. Below is a list of the symptoms and risks associated with an estrogen deficiency and the 6 most common triggers.

Estrogen Deficiency Symptoms:

Brain fog, fatigue, anxiety, insomnia, hot flashes, night sweats, weight gain, loss of libido, and menstrual irregularity.

Estrogen Deficiency Increases the Risk For:

Osteoporosis, depression, infertility, cardiovascular disease, and heart disease.

Top 6 Estrogen Deficiency Triggers

### #1: Menopause

Menopause causes the ovaries to release less hormones and it's the leading cause of estrogen deficiency. Fortunately, most of the side-effects associated with menopause can be negated with estrogen replacement therapy.

### #2: Premenopausal Hormone Changes

During pre-menopause the ovaries start to age and for some women a deficiency of estrogen and/or progesterone can develop. For these women, transdermal estradiol is recommended for the first 2 weeks of their cycle, followed by natural progesterone for the second half of their cycle.

### #3: The Birth Control Pill

The pill stops ovulation and completely shuts down estradiol, which can lead to an estrogen deficiency. If a blood test shows low estradiol levels, transdermal estradiol and progesterone can be given in the same schedule recommended for premenopausal women.

### #4: Childbirth

In most cases, post-partum side-effects are caused because estrogen levels are too high in relation to progesterone. However, estrogen levels should be measured prior to progesterone replacement therapy because there are certain cases where an estrogen deficiency is to blame.

### #5: Extreme Exercise or Disordered Eating

Over-exercising, anorexia nervosa, and bulimia can all cause a deficiency of estrogen

and/or progesterone, and when this occurs, a woman's sex drive, fertility and feminine characteristics may disappear. Replacing deficient female hormones can reverse these effects and help to restore a woman's sense of 'being a woman.'

#### # 6: PCOS or Turner Syndrome

A deficiency of estrogen is particularly common in polycystic ovarian syndrome (PCOS) sufferers who have low body fat. Turner syndrome is a genetic disorder and most sufferer's also experience ovarian failure, and require long-term estrogen therapy.

~Written by Nick Delgado, PhD, CHT

---

*Information for this article was provided by Doctor Thierry Hertoghe: <http://www.hertoghe.eu/en/> Dr. Nick Delgado, PhD ([www.delgadoprotocol.com](http://www.delgadoprotocol.com)) is a graduate of the University of Southern California (USC). He studied Physical Therapy at Rancho Los Amigo Hospital, Health Sciences at Loma Linda University, and Nutrition at CSLB. Dr. Delgado directed the Nathan Pritikin Plan, and is certified in NLP, Time Line, and Hypnotherapy. With an emphasis on optimal sports performance. Dr. Delgado broke the World Strength Endurance record, lifting 50,640 lbs in one hour, and led Team USA to a World Championship. He is a medical commentator in theWHN Forum*

## Diabetics Should Think Twice Before Starting the Paleo Diet

*There is no long-term evidence showing the benefits of the Paleo diet for those with type 2 diabetes, and it may actually do more harm than good.*



Associate Professor Sof Andrikopoulos of the University of Melbourne Department of Medicine, stated in the Medical Journal of Australia that those with type 2 [diabetes](#) should not get too hyped up about the Paleo diet that is being promoted in social media on dozens of websites. There have been only two trials worldwide of less than 20 participants, each with type 2 diabetes. One had no control diet, and neither of the trials lasted more than 12 weeks. Therefore, the long-term effects on diabetes sufferers and solid conclusions about the impact of glycemic control on weight were not determined.

Andrikopoulos states that the Paleo diet insists that people avoid refined sugar and processed food, which would be a positive benefit and consistent with worldwide dietary guidelines. However, it also advocates cutting out dairy and whole grains, which are important sources of calcium and fiber.

Some celebrities make matters worse, by also making the diet zero-carb and high-fat, which could cause rapid weight gain and increase the risk of heart disease. If a person is already overweight, or lives a sedentary life, it could be risky to adopt a high-fat diet and could actually be dangerous if he or she has diabetes.

Andrikopoulos believes that diabetes sufferers benefit most from exercise and the Mediterranean diet with its fats from fish, olive oil, legumes and low refined sugar. Additionally, extra virgin olive oil has been shown to [beneficially impact](#) post-meal blood sugar and cholesterol levels, as well as to [reverse metabolic syndrome](#).

A knowledgeable academic, Professor Andrikopoulos is also the President of the Australian Diabetes Society. His recommendation is that patients with type 2 diabetes consider the paleo diet claims with extreme caution and, instead, seek out the advice of their general practitioners, other health care professionals, registered dietitians, and diabetes organizations.

---

*Journal reference: Medical Journal of Australia*

## Whole Grains Increase Metabolism and Weight Loss

*Study reveals that replacing refined grains with whole grains increases calorie loss by reducing calories retained during digestion and speeding up metabolism.*



A study supported by General Mills Bell Institute of Health and Nutrition and the U.S. Department of Agriculture's Agricultural Research Service has confirmed a link between increased dietary fiber and weight loss. The study, published in the *American Journal of Clinical Nutrition*, is part of another study which focuses on the relationship between gut microbiota and a diet rich in whole grains.

### Whole Grains vs Refined Grains

Refined grains are made through a process called milling. The fibrous outer layer of the whole grain is removed in a high-heat process. When complete, only the starch, or endosperm, of the plant remains. The milling process is known to remove a large portion of a food's fiber and nutrition content. Brown rice is a whole grain. White rice is a refined grain.

Previous studies have linked the intake of whole grains fiber with lower blood sugar levels and better insulin absorption. Studies also suggest a high-fiber diet may lower risk of many chronic health conditions.

While there is no recommended daily allowance of fiber intake set by the USDA, the American Dietetic Association recommends 20-35 grams per day.

### The Study

Eighty-one men and women, between the ages of 40 and 65, participated in the eight-week, single-blind comparative study. For the first two weeks, participants were assigned similar diets, while researchers determined individual calorie needs. In the third week, participants were split into two groups. One group received foods with refined grains, while the other received whole grain products. Both received the same types of food and macronutrient content, adjusted for individual caloric needs.

Participants were instructed to eat only foods provided by the research team. If any food was not consumed, it was returned. Normal physical activity was encouraged.

Researchers recorded statistics on participants' weight, metabolic rate, blood glucose, fecal calories, and feelings of hunger and fullness.

### The Results

When analyzed, the data showed the whole grain group lost about 100 extra calories per day. Researchers believe this is due to a combination of increases in fecal loss and resting metabolic rate. The increased fiber changed the way other foods are digested by the body. Increased fecal loss due to the presence of the extra fiber was factored into the analysis.

Team members noted that whole grain sources used in the study are commercially available. These products are made with whole grain flours. Researchers hypothesize that using whole grain kernels would provide greater benefits.

---

*Roberts, S. B., Karl, J. P., Meydani, M., Junaidah B. B., Vanegas, S. M., Goldin, B., Kane, A., Rasmussen, H., Saltzman, E., Vangay, P., Knights, D., Chen, C-Y. O., Das, S.K., Jonnalagadda, S.S., Meydani, S.N.. (2017). Substituting whole grains for refined grains in 6-week randomized trial favorably affects energy balance parameters in healthy men and post-menopausal women. American Journal of Clinical Nutrition. Advance online publication, DOI: 10.3945/ajcn.116.139683.*

## 9 Symptoms of Adrenal Fatigue and 9 Natural Remedies



Adrenal fatigue is not just a disorder that high-end athletes get. Anybody with an overly stressful life and prolonged tiredness that lasts from morning until night, you could be suffering from adrenal fatigue. In this two-part article, you'll learn about nine possible symptoms and nine remedies to help you recover if you're suffering from this problem. It should be stated at the outset that in some rare cases, your fatigue may actually be from an adrenal gland tumor. Watch

this video on adrenal fatigue to get an understanding of adrenal symptoms to find out how adrenal fatigue's symptoms can affect you.

### Nine Common Symptoms

There are many symptoms associated with the disorder. Review a list of the nine most common symptoms below. There are three stages of fatigue. In the first stage, sufferers often feel energetic but in a very edgy sort of way. In the second stage, people wake up early and are unable to fall asleep. In stage three, exhaustion at all hours of the day is common and it puts the individual at risk for autoimmune disease.

#### 1. Fatigue:

Feeling tired and listless is a common symptom associated with the disorder. The fatigue remains even when you get enough sleep, eat right and ingest foods and drinks that would normally make you more alert. █

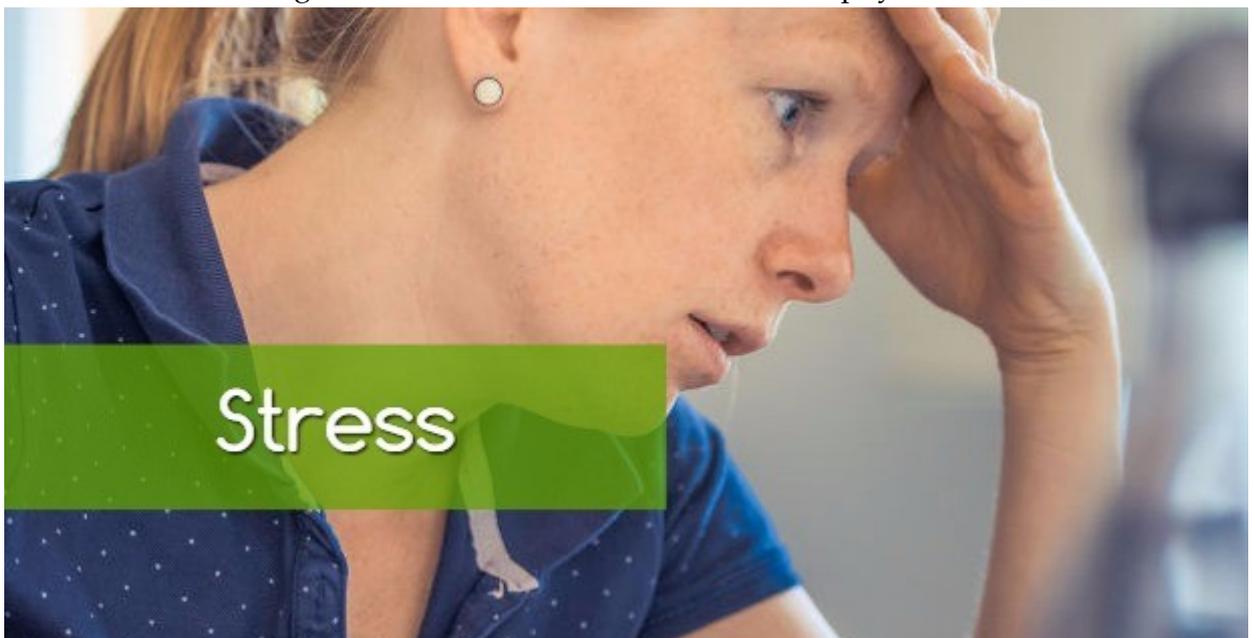
## 2. Fogginess:

Many suffers often remark how they continue to feel foggy and unable to concentrate when they suffer from adrenal fatigue's impact.



## 3. Stress:

A large amount of stress is common with people who suffer from fatigue. They offer a difficult time dealing with stress that is both emotional and physical.



## 4. Salt Cravings:

People who suffer from adrenal fatigue's symptoms often exhibit a craving for salty foods. The adrenal cortex is responsible for producing aldosterone, which regulates

the kidneys. This results in an inability to regulate levels of sodium, potassium and magnesium, which can lead to cravings for salty foods.



#### 5. Allergies:

Sufferers may notice an increase in allergies as low levels of cortisol can lead to a suppression of your immune system.



#### 6. Infections:

People with advanced cases may start to get an increase in infections as the body becomes unable to fight off illnesses and disease. Restoring cortisol to optimal levels

is a core aspect of treatment.



#### 7. Low Libido:

People who suffer from this disorder may experience a lower than usual sex drive. With proper treatment, libido often comes back.



## 8. Circulation Issues:

Many sufferers note circulation issues. This may manifest as numbness in the fingers or general symptoms of poor circulation.



## 9. Weight Gain:

Gaining weight without other lifestyle changes is a common symptom. Sufferers may report weight gain even with a significant calorie reduction or exercise regimen.

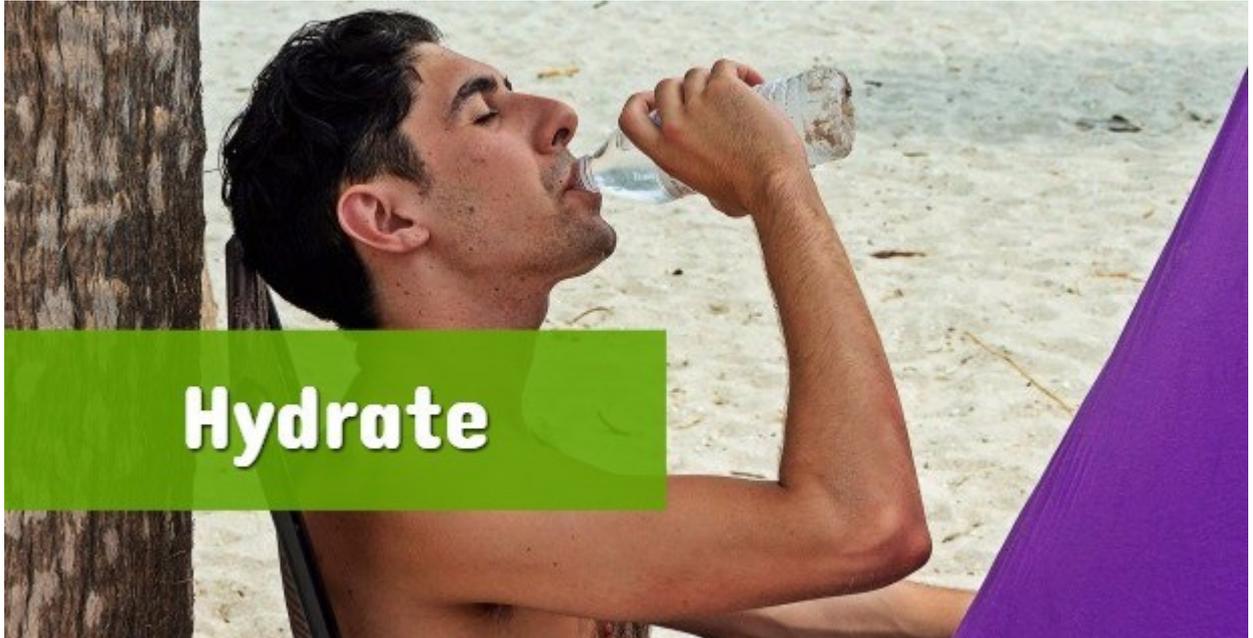


## Nine Remedies to Improve Symptoms

Curing the disorder may not require a trip to your doctor. Some mild cases of the disorder can be treated with some simple lifestyle changes.

## 1. Hydrate:

It may seem like a simple recommendation, but our bodies require water for everything we do. Drink plenty of water to ensure your body has the energy to function.



## 2. Vitamins:

Most vitamins should be obtained from the diet, but taking B vitamins, vitamin C and Omega-3 fatty acids have been shown to reduce the symptoms of fatigue.



### 3. Sleep:

An additional surge of cortisol tends to come after 11 p.m. at night. It may come later if you wake up later in the day, but you should get to sleep no later than 16 hours after you wake up.



### 4. Caffeine and Sugar:

Reduce or eliminate both caffeine and sugar from your diet. Both of these have been shown to increase cortisol levels, which can increase your levels of fatigue.



## 5. Regular Meals:

Don't skip any meals. Even if you think you'll gain weight, skipping meals is the wrong course of action. Once you get into a routine of eating at regular intervals, your body will adjust and you'll likely start shedding the pounds by treating your adrenal insufficiency. Regular eating helps to maintain stable blood sugar levels throughout the day.



## 6. Improve Nutrient Absorption:

Improve nutrient absorption by incorporating bone broth, low fat yogurt, seaweed and fermented drinks into your diet. These are all good at helping you maintain proper nutrition to get the right nutrients for your body.



## 7. Salt:

Himalayan sea salt contains a large amount of trace minerals that your body needs. Consume natural form of salts to ensure that your body is able to regulate the levels of the hormone aldosterone.



## 8. Don't Overtrain:

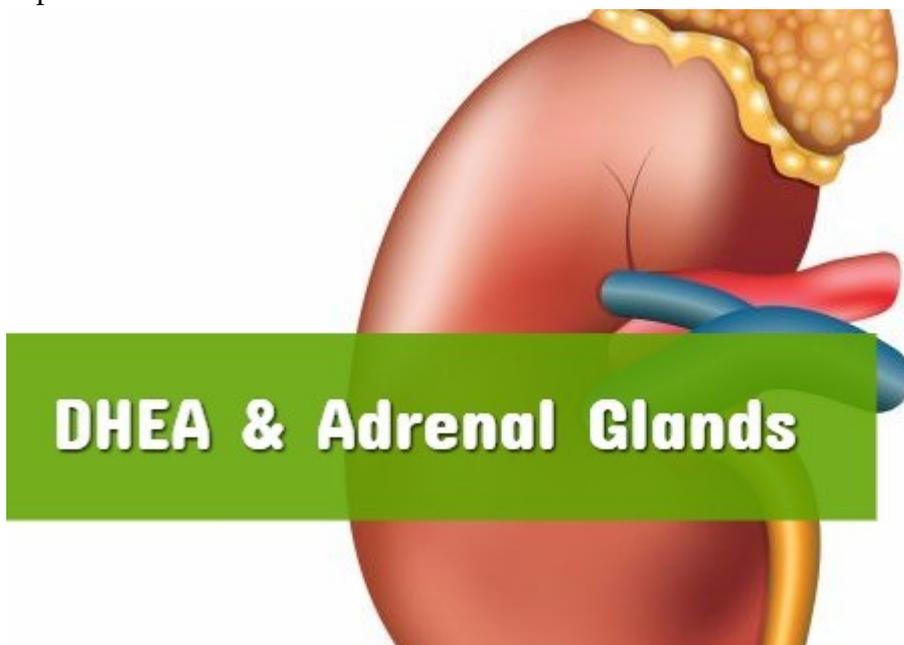
If you're running for extended periods of time or trying to complete too much cardio work, you're likely overstressing the adrenals. Even professional marathon runners

take periods of rest to restore their bodies.



#### 9. DHEA:

Adrenal glands that are misbehaving can often benefit from the inclusion of DHEA. This compound helps you to reduce the levels of cortisol in your body. This is one of the best adrenal remedies available to help get your endocrine system functioning properly again. It's possible to increase DHEA through the supplementation of magnesium. Adrenal Remedies are available to treat your adrenal symptoms, but the most important thing is to treat yourself well, eat well and get plenty of rest. Look for stressors and allergens in your life, and attempt to simplify your life if it's overly complex. You'll enjoy a greater overall level of health and experience greater enjoyment in your life as well. Successful treatment will result in a decrease of depression as well.



*Dr. Wilson's mission is to help create a healthier world, person by person. "I'd be the happiest man in the world if there was no more need for my lectures and supplement formulas because everyone was healthy!" In 1998, Dr. Wilson coined the term 'adrenal fatigue' to identify below optimal adrenal function resulting from stress and distinguish it from Addison's disease.*

## Daily Dose of Coconut Oil Generates Powerful Health Benefits

*Study shows that just one tablespoon of coconut oil daily could promote weight loss and improve cardiovascular health*



Coconut oil has previously been thought of as a “bad fat”, as it contains saturated fatty acids. Recent studies have shown that natural sources of saturated fats are actually not only not “bad”, but are beneficial, particularly for the brain. A new study, conducted at the Postgraduate Program in Cardiology at the School of Medicine, Universidade Federal do Rio de Janeiro, evaluated the health effects of extra virgin coconut oil. The study focused primarily on how coconut oil affects HDL cholesterol and a range of other measurements, such as body weight, size, and circumference.

Participants were all hypertensive, 63.2% male, with ages ranging from 54 to 70 years. 94.5% had blood lipid profiles indicating dyslipidemia and were taking standard cholesterol-lowering drugs. For the first three months, 136 participants were put on a standardized diet. For the third month and onward, the 116 who completed the first phase were placed in two intervention groups. The first group contained 22 participants who remained on the diet. The remaining 92 were put on the diet and given an additional 13 ml of extra virgin coconut oil daily (equivalent to approximately one tablespoon).

The results at the end of the three months showed that the group of participants taking coconut oil saw a decrease in all six of the bodily parameters measured, including weight (reduction of .6 kilograms), body mass (reduction of .2 kg), waist circumference (reduction of 2.1 cm), neck perimeter (reduction of 4cm), systolic blood pressure (reduction of 3.3 points), and diastolic blood pressure (reduction of 3.5 points). Participants also saw a 3.1 to 7.4 mg increase in HDL cholesterol.

The researchers concluded that “nonpharmacological interventions are essential for risk factor control in secondary prevention among patients with coronary disease. Our study showed that a diet rich in extra virgin coconut oil seems to favor the reduction of WC and the increase of HDL-C concentrations, raising with secondary prevention for CAD patients.”

---

*Diuli A. Cardoso<sup>1</sup>, Annie S. B. Moreira<sup>2</sup>, Glaucia M. M. de Oliveira<sup>1</sup>, Ronir Raggio Luiz<sup>3</sup> and Glorimar Rosa. A coconut extra virgin oil-rich diet increases HDL cholesterol and decreases waist circumference and body mass in coronary artery disease patients. Nutr Hosp. 2015;32(5):2144-2152 ISSN 0212-1611 \*CODEN NUHOEQ S.V.R. 318 [http://www.aulamedica.es/gdcr/index.php/nh/article/view/9642/pdf\\_8476](http://www.aulamedica.es/gdcr/index.php/nh/article/view/9642/pdf_8476)*

## Freezing Fat Fad

*Coolsculpting is fast and non-invasive, and improved technology has lead to explosion in demand.*



Liposuction might be giving way to freezing fat. You read that right: *freezing fat*. The beauty of freezing fat is that it is non-invasive. This fat reduction method does not involve needles, cutting of the skin, anaesthetics or other invasive procedures. In fact, one can read a book, surf the web on his smartphone or even play a video game while his fat is being frozen.

### The Details of Freezing Fat

The official term for the freezing of fat is coolsculpting. It is also referred to as cryolipolysis. This procedure was been approved by the US Food and Drug Administration back in 2010.

Here's how it works: The fat sections of the body are placed in a device that decreases the skin to well below the body's natural temperature. Though the temperature does not drop down to the freezing point, it gets cool enough to eliminate fat cells. It is not possible to place every section of body fat in such a device yet it is fairly easy to put love handles in and freeze away the excess fat.

Most readers are likely wondering why freezing fat destroys fat cells. Medical researchers have determined that fat cells are highly susceptible to cold than most other skin cells. In fact, most skin cells are not harmed when exposed to uber-cool temperatures. Just under one-quarter of fat cells that are frozen will disappear in an hour's time. These fat cells are metabolized and released by way of the body's natural excretory processes.

### The Benefits of Fat Freezing

There is growing support for fat freezing. Those in favor of fat freezing are enthusiastic about its painless nature, the fact that it does not require a recovery period and how quickly it can be done. It does not take long at all to freeze away fat. The patient can even watch a movie or read while the procedure occurs. His fat portions are plugged into a machine for about an hour.

Once the fat is frozen, the patient can return to work, school, home or elsewhere. The procedure causes minimal swelling that dissipates rather quickly. Fast forward two to three weeks and there is significantly less fat than before the procedure.

### The Rise of Nonsurgical Fat Reduction

Though liposuction is still one of the most popular surgical procedures, nonsurgical fat reduction solutions like coolsculpting are not far behind. A whopping 425,000 nonsurgical fat reduction procedures were performed in 2015. This number will only continue to grow as time progresses.

As it stands, coolsculpting is one of the more popular procedures across the globe. In a few years, coolsculpting might even overtake liposuction as the most popular. Though men make up merely one-tenth of cosmetic surgery clients, they represent a

disproportionately high percentage of those who seek coolsculpting. Some doctors report that upwards of 40 percent of those who have the fat frozen away are men.

#### Why Non-invasive Procedures are Trending Upward

If one were to survey doctors across the United States or the world, the vast majority would testify that interest in non-invasive fat removal procedures is soaring. All-in-all, 12 million non-surgical procedures were performed in 2015. In contrast, only 9.6 million surgical procedures were performed in the same year.

Aside from fat freezing, laser treatments to revitalize and tighten the skin are also in strong demand. Botox and other muscle paralysis techniques are quite popular. The allure of freezing fat and other non-invasive procedures is that anesthesia is not necessary. These procedures allow for rapid recovery, do not require downtime and pose minimal (if any) risk to the patient's health.

---

<https://medicalxpress.com/news/2017-01-fat-beauty.html>

## Stress + High-Fat Meal = Weight Gain

*Women who consume a high-fat meal the day after a stressful event metabolize food more slowly.*



Women who experience one or more stressful events the day before eating a single high-fat meal may metabolize food more slowly, with the daily effect potentially adding up to as much as 11 pounds in a year. Janice K. Kiecolt-Glaser, from The Ohio State University (Ohio, USA), and colleagues enrolled 50 women, average age 53 years, who received three standardized meals on the previous day and instructed them to fast for 12 hours before reporting for their study visit. On

the day of admission, the participants completed several questionnaires to assess their depressive symptoms and physical activity and were interviewed about stressful events on the prior day. Thirty-one women reported at least one prior day stressor on one visit and 21 reported stressors at both visits. Six women reported no stressors. The research meal consisted of eggs, turkey sausage, biscuits and gravy – roughly equivalent in calories and fat to a loaded two-patty hamburger and French fries at a fast-food restaurant. Participants were required to eat the entire meal within 20 minutes. The control for comparison in this randomized trial was that one meal contained saturated fat and another was high in a different kind of fat: sunflower oil containing monounsaturated fat, which is associated with a variety of health benefits. Before the meal, participants rested for 30 minutes and their energy expenditure – or calories burned by converting food to energy – was tested during that time. After they ate their meal, their metabolic rate was tested for 20 minutes of every hour for the next seven hours. Researchers also took multiple blood samples to follow metabolic activity throughout the post-meal day. Testing revealed that the stressors' effects of increasing insulin had a time element: Insulin spiked soon after the high-fat meal was consumed and then decreased to roughly match insulin levels in nonstressed women after another 90 minutes. A history of depression alone did not affect metabolic rate, but depression combined with previous stressors led to a steeper immediate rise in triglycerides after the meal. The study author conclude that: “The cumulative 6-hour difference between one prior day stressor and no stressors translates into 435 kJ, a difference that could add almost 11 pounds per year. These findings illustrate how stress and depression alter metabolic responses to high-fat meals in ways that promote obesity.”

---

*Janice K. Kiecolt-Glaser, Diane L. Habash, Christopher P. Fagundes, Rebecca Andridge, Juan Peng, William B. Malarkey, Martha A. Belury. “Daily Stressors, Past Depression, and Metabolic Responses to High-Fat Meals: A Novel Path to Obesity.” *Biological Psychiatry*, 14 July 2014.*

## Fat-Burning Brain Hormone Discovery

Researchers have found a brain hormone that appears to specifically and selectively stimulate fat metabolism in the gut.



It appears as though one of the brain's natural hormones spurs the burning of fat within the gut. This conclusion was reached by Scripps Research Institute (TSRI) biologists who relied on animal models for their studies. Their findings were recently published in *Nature Communications* and will serve to advance pharmaceutical development in years to come.

### Details of the Study

The TSRI study was spearheaded by Professor Surpriya Srinivasan and Research Associate Lavinia Palamiuc. Though Srinivasan refers to the study as "basic science", it certainly shed light on an intriguing mystery. Prior studies showed that the neurotransmitter [serotonin](#) has the potential to spur fat loss. However, no one was exactly sure as to how this phenomenon occurred.

Srinivasan's team used roundworms known as "*C. elegans*" that are commonly employed as model organisms for biology purposes. Such worms have comparably simple metabolic systems when pitted against humans, yet their brains generate similar signaling molecules. This makes researchers believe the findings in [C. elegans](#) are meaningful for humans. The scientists eliminated genes within the *C. elegans* to determine if the pathway between brain serotonin and fat burning could be interrupted.

The researchers tested numerous genes to pinpoint one in which fat burning would not occur. This experiment led the crew to a gene that codes for FLP-7, a neuropeptide hormone commonly pronounced as "fip 7". The mammalian version of this neuropeptide hormone was identified 80 years prior as a peptide that spurred muscle contractions when placed on pig intestines. Scientists of yesteryear believed this hormone linked the brain and the gut yet no one connected the neuropeptide to the metabolism of fat in the years since.

### The Study's Second Part

The second step of the study centered on the determination of whether FLP-7 had a direct connection to the brain's serotonin levels. A fluorescent red protein was added to FLP-7 in order to visualize it in living animals. The results showed that FLP-7 was released from the brain's neurons as a response to heightened levels of serotonin. FLP-7 moved through the circulatory system and initiated the burning of fat within the gut. This finding is noteworthy as it's the first time researchers pinpointed a brain hormone that selectively spurs the metabolism of fat without impacting food intake.

### How the Fat-Metabolizing Pathway Functions

Here is how the fat-metabolizing route works: One of the brain's neural circuits generates serotonin as a result of sensory cues like the availability of food. This triggers another neuron set to launch the production of FLP-7 which spurs a receptor within intestinal cells. The intestines then convert fat into energy.

The TSRI team proceeded to study the consequences of altering FLP-7 levels. Though bumping up serotonin levels can affect an animal's food intake, reproductive behavior and movement in a number of ways, researchers determined that boosting FLP-7 levels farther downstream did not produce any clear side effects. The worms used in the study functioned as expected while metabolizing more fat. Srinivasan stated that this critically important finding will likely influence ensuing studies regarding how FLP-7 levels can be regulated without producing the side effects that occur when serotonin levels are altered.

---

*Lavinia Palamiuc, Tallie Noble, Emily Witham, Harkaranveer Ratanpal, Megan Vaughan, Supriya Srinivasan. A tachykinin-like neuroendocrine signalling axis couples central serotonin action and nutrient sensing with peripheral lipid metabolism. Nature Communications, 2017; 8: 14237 DOI: 10.1038/ncomms14237*

## 9 Reasons to Improve Your Gut Health

*Here are nine reasons why it's beneficial to improve the health of your gut.*



Healthy bacteria and microflora are essential to gut health. Keeping your body's PH in balance helps to keep you healthy and disease free. When your PH is imbalanced, you are vulnerable to many diseases and discomforts. Stealth viruses play a huge role in offsetting the sensitive microclimates in your body. A stealth infection is just what it sounds like. Simply a hidden infection, viral, bacterial or otherwise, that invades the body. These stealth pathogens may even change the way your immune system behaves in your body. If a stealth pathogen has the right characteristics in structure and in the proteins they express, the body can mistake them for its own tissue. Some viruses, called encapsulated viruses, move from cell to cell hiding from the immune system cloaked in the body's own tissue.

Stealth viruses are very common. You get past the symptoms, but never actually rid your body of the virus, much like the herpes virus. It is a mystery why an early infection doesn't leave the body entirely and often reappears later in life when the immune system is not as strong. The best way to protect yourself from exposure to stealth pathogens and infectious bacteria? Keep your gut healthy and flourishing with all the good bacteria you can find. Still not convinced?

According to Dr. David Brady, autoimmune disease has become a modern epidemic. There are a number of autoimmune diseases, including Inflamed Bowel Syndrome that affect one in 250 people, whereas one hundred years ago, only one in ten thousand were affected. Dr. Brady explains, our genes are not changing, but our environment and how we interact with it is changing. So what's driving this epidemic? It could begin in your gut.

Here are 9 reasons why you want to improve the health of your gut.

### 1. Autoimmune Disease

Even if there is no diagnosis of an autoimmune disease, improving your gut health can help combat the common triggers of diseases like thyroid disease, hashimotos, multiple sclerosis and rheumatoid arthritis. Looking at your family history can give good indicators of what to look for. With new technology, we can even map the microbiota in the gut, counting the good, bad and opportunistic bugs that are growing which allows you and your doctor to practice preventative medicine to reduce the risk of autoimmune disorders.

|

## 2. Mental Health and Mood

The condition of your gut can actually determine your mental health. Many mood disorders are very closely linked to the microbiota in your gut. When you don't have a healthy gut, you won't have mental health. Seeing the correlation between gut health and mood disorders, doctors have been treating IBS with antidepressants for a number of years. Although that may get symptoms to subside, treating the gut in order to gain mental health would better solve the problem.

## 3. Hormones

Having balanced hormones is extremely important. Hormones play a key role in maintaining health. Many hormones, and several essential vitamins and minerals, can only be absorbed through the gut and the digestive tract. If the PH in your gut is not healthy, these essentials are discarded through the waste process, and are never able to nourish and stabilize your body.

Dr. Brady suggests that the most important thing you can do for your body is to feed it right. It might take some trial and error, but learning how your body responds to different foods will help you make better choices in the foods that you eat. White blood cells react differently to different foods, for different people. Discover which foods your body gets along with. Probiotics are an excellent way to maintain a healthy gut. Drink plenty of water and move around a lot, even if you don't consider it exercise, try not to be sedentary. Still having difficulties improving your health? Dr. Brady talks about how some doctors are using parasites to achieve a healthy gut, relieving systemic inflammation. Find what works for you, and what helps you to feel your best. As you improve the health of your gut, you will begin to see massive changes in your overall health and wellbeing.

## 4. Digestive Health

There is a lot going on in your digestive tract, and it is important that it is functioning well for multiple reasons. The microbiota that live and thrive will determine the PH of your gut and your intestines. If the PH is off, it allows yeast and fungus to grow, causing infection and inflammation. When you have the right PH it makes it very difficult, if not impossible for harmful yeast and fungus to grow. Which leads to the next reason why you should improve the health of your gut.

## 5. Vaginal Health

Bacteria

The right kind of bacteria in your gut, means the right kind of bacteria in your intestines, which means the right kind of bacteria in your vagina. Any woman who

has experienced the discomfort of a yeast or fungal infection will tell you, taking care to avoid a vaginal infection is a top priority. Many women have painfully gone through the vicious cycle of treating a vaginal infection with an antibiotic that kills the bad bacteria, but also the good bacteria, leaving her vulnerable to yet another infection. The best remedy? Keeping your gut healthy.

## 6. Staying Regular

The right bacteria in your gut means you're going to have regular bowel movements. Getting rid of waste quickly means a shorter transit time, which means there is less opportunity for toxins to be reabsorbed. Not to mention, more often and regular bowel movements will leave you feeling much better in general.

## 7. Weight

Weight

Having the right flora in your gut also contributes to a healthy weight. The flora actually decreases the amount of fat that is absorbed by the intestines, which pushes it out in the waste.

## 8. Increased Energy

Exhausted

When your body feels tired and sluggish, it is very likely that your gut is to blame. The flora in your gut is responsible for regulating your immune, nervous and endocrine systems. It's no wonder that you feel tired and even weak when your gut is unhealthy.

## 9. Eliminate Infection

You may be harboring an infection without overt symptoms, which means you probably don't know you have an infection. You may be fatigued, gaining weight, feeling depressed, constipated and have hormonal imbalances. You may have inflammation in your body. All of these symptoms often point to an underlying infection. Maintaining a healthy gut will eliminate the infection, and bring health back to your body.

---

## Apple Cider Vinegar Validations

*Is apple cider vinegar all that it's cracked up to be? Here are some of the science-backed benefits.*



Vinegar is an ingredient used in many dishes, sauces and dressings, and it also has various other uses related to cleaning, deodorizing and sanitizing. While there are various types of vinegar available, apple cider vinegar is the variety commonly found in most kitchens. In addition to its many other uses, apple cider vinegar is also touted as an effective way to treat or prevent various health problems such as cancer, cardiac disease and diabetes. Many nutritionists

recommend using the organic, unfiltered variety of vinegar with the "mother" since the higher level of enzymes, proteins and friendly bacteria are more beneficial.

- **Antibacterial** - vinegar has been used as a disinfecting cleaner, a food preservative and a fungicide. The acetic acid present in vinegar is able to kill bacteria and prevent their growth. Apple cider vinegar has long been used to preserve foods since the acetic acid prevents bacteria such as E. coli from causing spoilage. All types of pickled foods are made with vinegar and remain shelf stable for up to a year.
- **Weight loss aid** - when as little as 2 tablespoons per day is combined with high-carbohydrate meals, vinegar can create a feeling of being full while consuming fewer calories. While the average amount of weight loss is less than 2 pounds per month, a reduction in belly fat and waist circumference is an added benefit.
- **Reduces blood sugar** - since it has been shown to normalize blood sugar levels in people with diabetes and pre-diabetes, they can benefit from adding apple cider vinegar to their diet. Diabetics that are taking medication to lower their blood sugar should consult with their doctor before increasing their intake of vinegar.
- **May reduce cholesterol and risk of heart disease** - while no human studies have been done to support this benefit, research using animals has shown apple cider vinegar can reduce blood pressure, cholesterol and triglycerides. More research needs to be done to determine whether the same benefit exists for humans as it has in animal studies.
- **Cancer prevention** - laboratory studies found that apple cider vinegar may be able to slow the growth of cancer cells or even kill them. Some nutritionists believe that maintaining the proper alkaline/acid balance can prevent cancer, and vinegar can be used to restore this balance.
- **Natural hair rinse** - commercial shampoos and conditioners can cause product buildup over time, but the acid in apple cider vinegar can remove it, leaving the hair shiny and tangle-free. The vinegar should be mixed with an equal part of water and left on the hair a few minutes before rinsing. This process can also be used to treat dandruff since the acid it contains kills *Malassezia*, a fungus thought to cause dandruff.

Apple cider vinegar has been around for hundreds of years and it has many beneficial applications. Unfortunately, science often neglects to conduct research on natural products since there is little funding for them. However, the use of vinegar

has shown it does have some significant health benefits even though they are not generally supported by science.

---

*<https://www.washington.edu/wholeu/2015/07/07/beyond-the-hype-apple-cider-vinegar-as-an-alternative-therapy/> <http://www.cnn.com/2016/12/22/health/apple-cider-vinegar-benefits/><https://authoritynutrition.com/6-proven-health-benefits-of-apple-cider-vinegar/>[http://preventdisease.com/news/13/071113\\_Is-Apple-Cider-Vinegar-That-Powerful-of-a-Health-Tonic-Science-Says-Yes.shtml](http://preventdisease.com/news/13/071113_Is-Apple-Cider-Vinegar-That-Powerful-of-a-Health-Tonic-Science-Says-Yes.shtml)*

## Post-Meal Coffee Changes Metabolic Markers

*When enjoyed after a meal, coffee may increase levels of an appetite-regulating hormone, improve blood sugar levels, and boost endothelial function.*



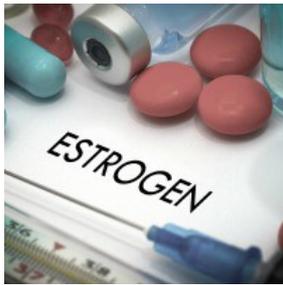
Coffee contains a number of compounds – most notably, polyphenols that numerous previous studies suggest exert beneficial effects for metabolic and cardiovascular disorders. Japanese researchers enrolled 19 healthy men in a study in which each subject was given a test meal with a polyphenol-rich coffee drink (365 mg of chlorogenic acids), or placebo drink; subjects later crossed over to the other intervention. Testing 3 hours after the meal revealed that the coffee polyphenol beverage lowered blood glucose significantly, and increased flow mediated dilation (FMD) – a marker of blood flow and vascular health. As well, the coffee polyphenol beverage increased post-meal levels of an appetite-regulating hormone (GLP1). The study authors write that: "these results suggest that coffee polyphenol consumption improves postprandial hyperglycemia and vascular endothelial function, which is associated with increased GLP-1 secretion and decreased oxidative stress in healthy humans."

---

*Hiroko Jokura, Isamu Watanabe, Mika Umeda, Tadashi Hase, Akira Shimotoyodome. "Coffee polyphenol consumption improves postprandial hyperglycemia associated with impaired vascular endothelial function in healthy male adults." Nutr Res., August 4, 2015.*

## 5 Hidden But Common Causes of Estrogen Dominance Revealed

*Listed are five causes of estrogen dominance that are frequently overlooked.*



Estrogen dominance is a destructive health condition where estrogen levels are too high in relation to other reproductive hormones. Since it's rarely acknowledged in the conventional medical community, you'll likely need to take your health into your own hands to diagnose and overcome it. Below is a list of five causes of estrogen dominance that you need to be aware of, which are often overlooked in estrogen dominance literature.

### Hidden Cause #1: Excess Body Fat

- Fat cells store large amounts of aromatase, an enzyme that catalyzes the conversion of testosterone into estrogen.<sup>1</sup>
- The more fat cells you have, the more estrogen that is created.
- High estrogen cues your body to make more fat cells.
- High estrogen levels causes an increase in the production of Sex Hormone Binding Globulin, which makes testosterone unable to do its job.
- The decrease of free testosterone reduces muscle mass, increases fatigue, and lowers stamina and energy (interfering with exercise efforts).
- These factors combined, increase body fat accumulation, cause estrogen levels to rise even further, and worsen estrogen dominance symptoms – creating a vicious cycle that is hard to break.

### Hidden Cause #2: Alcohol

- There is a well-established link between alcohol consumption and high levels of estradiol and estrone – two estrogen metabolites associated with estrogen dominance and hormonal cancers.<sup>2</sup>
- The association occurs because your liver is responsible for clearing toxins from the bloodstream (including alcohol and estrogen). When you drink alcohol, your liver becomes preoccupied with eliminating the alcohol toxins, which reduces its ability to clear estrogens from your system.

### Hidden Cause #3: Caffeine

- Caffeine consumption stimulates the adrenal glands causing them to release stress hormones to prepare the body to fight.
- Regular consumption can exhaust your adrenal glands, and cause them to stop releasing adequate levels of essential hormones.
- Insulin is one of those hormones, and the impaired insulin causes blood sugar fluctuations, which in-turn, leads to chronic inflammation.

- Inflammation increases oxidative stress and can result in a reduction of testosterone and progesterone; both of which are required in order to keep estrogen level in-check.

#### Hidden Cause #4: Birth Control

- Birth control pills flood your body with synthetic estrogen, that is both foreign and unnatural.

- Your body metabolizes these synthetic estrogens into harmful versions of estrogen which increase estrogen dominance symptoms.

- Birth control pills increase the production of SHBG, which lowers testosterone levels, and makes estrogen dominance even worse.

- Birth control pills also suppress the production of natural progesterone, and progesterone is needed in order to keep estrogen levels in-check.

#### Hidden Cause #5: Animal Products

- Animals produce large amounts of estrogen by their very nature, and they are particularly high in estradiol which is chemically identical to the estradiol found in the human body.

- Animal products are a major contributor to estrogen dominance; and if you consume them, you are exposed to between 10,000 and 1,000,000 times more estrogen molecules than you otherwise would be.

- Conventionally raised animals are even more harmful because they're often injected with synthetic estrogens to fatten them-up and make them grow quicker.

- The fats found naturally in animal products also increases the conversion of the healthful types of estrogen (such as estrone) into the more harmful forms of estrogen that are responsible for estrogen dominance and hormonal cancers.

~Written by Nick Delgado, PhD, CHT

---

1. <https://www.ncbi.nlm.nih.gov/pubmed/11511861> 3. <https://www.ncbi.nlm.nih.gov/pubmed/12796390> 2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3770848/> Dr. Nick Delgado, PhD ([www.delgadoprotocol.com](http://www.delgadoprotocol.com)) is a graduate of the University of Southern California (USC). He studied Physical Therapy at Rancho Los Amigo Hospital, Health Sciences at Loma Linda University, and Nutrition at CSLB. Dr. Delgado directed the Nathan Pritikin Plan, and is certified in NLP, Time Line, and Hypnotherapy. With an emphasis on optimal sports performance. Dr. Delgado broke the World Strength Endurance record, lifting 50,640 lbs in one hour, and led Team USA to a World Championship. He is a medical commentator in the WHN Forum.

## Deadly Heart Attacks Affecting Younger People

*Study finds that those who experience the most severe heart attacks in the last 20 years are younger and more obese.*



Dr. Samir Kapadia, professor of medicine and section head for interventional cardiology at Cleveland Clinic, led a team of researchers to explore the risk factors for heart disease in patients who were treated for STEMI (ST-elevation myocardial infarction). STEMI is the most severe and deadly type of heart attack, occurring when one of the heart's main arteries becomes completely blocked by plaque, halting the flow of blood. The researchers broke the 3,900 STEMI patients, from 1995-2014, into four quartiles of 5 years each. The average age of STEMI patients dropped from 64 to 60 years. Rates of obesity among these patients increased from 31% to 40%, of diabetes from 24% to 31%, high blood pressure from 55% to 77%, and the percentage of patients with chronic obstructive pulmonary disease (COPD) rose from 5% to 12%. Interestingly, the percentage of smokers rose from 28% to 46%, despite an overall decline nationwide over the last 20 years. Lastly, the percentage of patients with three or more major risk factors rose from 65% to 85%. Dr. Kapadia states "On the whole, the medical community has done an outstanding job of improving treatments for heart disease, but this study shows that we have to do better on the prevention side. When people come for routine checkups, it is critical to stress the importance of reducing risk factors through weight reduction, eating a healthy diet and being physically active." The researchers recommend starting early on, rather than waiting until a heart problem diagnosis.

---

*An alarming trend: change in risk profile of patients with ST elevation myocardial infarction over the last two decades, Samir Kapadia et al., due to be presented at the American College of Cardiology's 65th Annual Scientific Session in Chicago.*

## Tomato Juice Targets a Trim Waist

*By modulating a key marker of inflammation, a daily glass of tomato juice may reduce waist size, among healthy women.*



Chronic [inflammation](#) of fat tissue is a common aspect of obesity. Previous studies have suggested that lycopene, found abundantly in tomatoes and tomato products, can beneficially affect the cellular pathway involved in the inflammatory process. Pei-Min Chao, from China Medical University (Taiwan), and colleagues enrolled 30 women, ages 20-30 years, with a body mass index (BMI) at or over 20, to participate in a study in which subjects ate a normal diet and exercised as usual, but were given 280 mL of tomato juice (containing 32.5 mg of lycopene) daily for 2 months. Tomato juice consumption associated with a 22% decrease in monocyte chemoattractant protein (MCP-1) – a key marker of adipose tissue inflammation, as well as a 25% increase in adiponectin – a hormone that regulates insulin sensitivity. Observing that daily tomato juice supplementation shifted the adipokine profile into anti-inflammatory, the study authors write that: “These results show that daily tomato juice supplementation reduces waist circumference, as well as serum cholesterol and inflammatory adipokine levels in young healthy women and that these effects are unrelated to body fat changes.”

---

*Yu-Fen Li, Ya-Yuan Chang, Hui-Chi Hunag, Yi-Chen Wu, Mei-Due Yang, Pei-Min Chao. “Tomato juice supplementation in young women reduces inflammatory adipokine levels independently of body fat reduction.” Nutrition, December 12, 2014.*

## Low-Carb Diets Better in the Short Term for Weight Reduction

*Mayo Clinic researchers reviewed low-carb diet studies, to determine if they are safe and effective for weight loss, cardiovascular and metabolic health.*



The overabundance of weight loss diets on the market can be very confusing, so physicians at the Mayo Clinic studied weight loss diets of the low-carb variety. They concluded that these diets are better than the traditional low-fat diets, but only for short term gain. Diets such as Atkins, South Beach, Ketogenic, and Paleo are low in carbohydrates, but researchers were interested in finding out which are most effective and safe for [weight loss](#), as well as [metabolic](#) and [cardiovascular](#) health. The study was published in *The Journal of the American Osteopathic Association*.

### Carbohydrate Restriction Increases Cravings for Protein

Carbohydrates consumption in western diets typically comprises over 50 percent of the daily calories. By definition, low carb diets should comprise less than 45 percent carbohydrates, but of all the diets reviewed they had anywhere between 4 to 46 percent carbs. This was surprising because all these diets are based on carbohydrate restriction. This disparity made the research difficult to follow.

Of the 41 trials conducted, participants lost 2.5 to 9 pounds more than those following a low-fat diet. The study concluded that low-carb diets were effective in the short term of some weight reduction with no adverse health effects such as on blood pressure. However, this weight loss is small compared to low-fat diets, and experts encourage people who follow low carb diets to avoid processed meat such as deli meats, bacon, hot dogs, and ham as examples. This is because people begin to crave meat when carbs are restricted. They caution that the consumption of processed meat could increase the risk of cardiovascular disease and cancer. Patients considering this type of diet are to keep in mind that there is no long-term data on health effects in regards to low-carb diets.

### Success With Weight Loss Depends on Dieter's Motivation

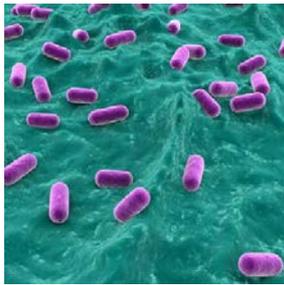
Many of the studies reviewed by the Mayo Clinic reached broad conclusions on the types of weight loss including fat, water, or muscle. Patients were often asked to recall the food they consumed, which proved difficult to verify and was prone to errors. Whether a person is successful or not with weight loss is subject to many factors including genetics, and the individual's ability to choose a diet and stick with it. Dieters must stay motivated by being satisfied with whatever weight loss they achieve. For many dieters, low-carb diets are the answer to fast and significant weight loss.

It is important to take note that studies reveal low-fat diets after six months are about the same as low-carb diets in terms of overall weight loss. But for dieters, studies show that low-carb diets are good for helping to reduce blood sugar and to manage insulin resistance. The researchers noted that there are tradeoffs with either diet plan.

*Are low-carbohydrate diets safe and effective, Helen Fields, M.D. et al., The Journal of the American Osteopathic Association, doi: 10.7556/jaoa.2016.154, published online December 2016.*

## Promote Healthy Weight with Probiotics

*Probiotics from the Lactobacillus rhamnosus family may help women to lose weight and keep it off.*



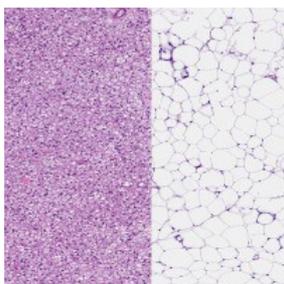
The human gastrointestinal tract requires “good bacteria” to help the body to absorb and utilize nutrients from food properly. Previous studies demonstrate that the intestinal flora of obese individuals differs from that of people of normal weight. Some scientists speculate that this difference may be due to the fact that a diet high in fat and low in fiber promotes certain bacteria at the expense of others. Angelo Tremblay, from Laval University (Canada), and colleagues enrolled 125 overweight men and women to undergo a 12-week weight-loss diet, followed by a 12-week period aimed at maintaining body weight. Throughout the entire study, half the participants swallowed 2 pills daily containing probiotics from the Lactobacillus rhamnosus family, while the other half received a placebo. After the 12-week diet period, researchers observed an average weight loss of 4.4 kg in women in the probiotic group, as compared to 2.6 kg in the placebo group. After the 12-week maintenance period, the weight of the women in the placebo group had remained stable but the probiotic group had continued to lose weight, for a total of 5.2 kg per person. In other words, the women consuming probiotics seemed to have lost twice as much weight over the 24-week period of the study. Researchers also noted a drop in the appetite-regulating hormone leptin in this group, as well as a lower overall concentration of the intestinal bacteria related to obesity. Speculating that probiotics may act by altering the permeability of the intestinal wall and keep certain proinflammatory molecules from entering the bloodstream, which may help to prevent the chain reaction that leads to glucose intolerance, type 2 diabetes, and obesity.

---

*Marina Sanchez, Christian Darimont, Vicky Drapeau, Shahram Emady-Azar, Melissa Lepage, Angelo Tremblay, et al. “Effect of Lactobacillus rhamnosus CGMCC1.3724 supplementation on weight loss and maintenance in obese men and women.” British J Nutr., 2 Dec. 2013.*

## Turning White Fat to Brown - The Key to Obesity Treatment?

*Researchers believe that they have found the secret for turning "bad" white fat into "good" brown fat*



Scientists from the University of Pennsylvania believe that they have found the secret for turning "bad" white fat into "good" brown fat.

Senior author of the study, Dr. Zoltan P. Arany, related that he and his colleagues' experiment resulted in deleting a gene in the white fat cells of mice. The gene, or protein, foliculin (FLCN) is a tumor suppressor. Once the gene was deleted, the protein TFE3 was able to enter the cells' nucleus. TFE3 would then bind to DNA. That activated a protein known as PGC-1 $\beta$  which plays a major role in regulating cell metabolism.

Usually, that process does not occur, because TFE3 cannot enter the cell nucleus because two other genes, FCLN and mTOR, work to keep it out and keep the browning process switched off. When the FLCN was deleted in the mice, the white cells became browner. Those cells began producing more mitochondria, the oxygen reactors providing chemical energy inside the cells. In the brown fat cells, mitochondria convert energy into heat.

When deleting the gene, the white cells came to resemble the preferred brown cells. That process switched on a set of genes that changed the cells' structures and boosted the ability of the mitochondria to consume oxygen and changed the patterns of gene expression.

The human body has different types of fat that fulfill different purposes. If white fat cells, known as white adiposities, are filled with fat molecules, obesity can likely result. Brown fat cells, known as brown adipocytes, are what forms the "baby fat" in infants, who have much more brown fat than adults. Brown fat transfers the energy from food into heat, a process known as thermogenesis. The heat protects the body from cold, and the process of fat burning prevents obesity and related disorders such as diabetes, heart disease, and cancer.

Dr. Arany states that there is still a long way to go and more research is needed, but the scientists are hopeful that this discovery will eventually lead the way to a new drug treatment that will prevent diabetes and reduce obesity by pushing white fat to become brown fat.

---

*The tumor suppressor FLCN mediates an alternate mTOR pathway to regulate browning of adipose tissue, Shogo Wada et al., Genes Development, doi: <http://www.genesdev.org/cgi/doi/10.1101/gad.287953.116>, published 2 December 2016, abstract.*

## Spinach Compound Counters Cravings

*Thylakoids reinforce the body's production of satiety hormones and suppresses food cravings.*



Many people experience cravings for unhealthy foods such as sweets or fast food, and acquiescing to them can lead to unhealthy eating habits and obesity. Charlotte Erlanson-Albertsson, from Lund University (Sweden), and colleagues enrolled 38 overweight women in a three-month long study in which every morning before breakfast the participants consumed a green drink. Half of the women were given 5 grams of spinach extract containing thylakoids (green leaf membranes); the other half (the control group) received a placebo. All subjects ate a balanced diet including three meals a day. Whereas the control group lost an average of 3.5 kg, the group that consumed the thylakoids-containing beverage lost 5 kg. The thylakoid group also found that it was easier to stick to three meals a day – and they did not experience cravings. The study authors observe that: “addition of green-plant membranes as a dietary supplement once daily induces weight loss, improves obesity-related risk-factors, and reduces the urge for palatable food.”

---

*Montelius C, Erlandsson D, Vitija E, Stenblom EL, Egecioglu E, Erlanson-Albertsson C. “Body weight loss, reduced urge for palatable food and increased release of GLP-1 through daily supplementation with green-plant membranes for three months in overweight women.” *Appetite*. 2014 Oct;81:295-304.*

## Study Reveals Why High Protein Diets Assist in Weight Loss

*High protein diets curb appetites through a boost of phenylalanine.*



High protein diets such as the Atkins Diet have been proven to help in weight loss for some time. Now researchers have discovered the mechanism between protein and weight control which may lead to new strategies for the prevention and treatment of [obesity](#). In previous studies, high protein levels found in animal foods like milk, eggs, chicken, and fish can aid in weight reduction by suppressing appetite. By uncovering processes by which protein curbs appetite, researchers are a step closer to developing new weight control strategies.

### Amino Acid Phenylalanine Responsible for Weightloss

In a new study from the Imperial College London, researchers have discovered an amino acid called [phenylalanine](#) which is responsible for the digestion of protein. Phenylalanine boosts certain hormone levels that send signals to the brain telling us that we are full. This may be why high protein diets are successful in suppressing hunger, but sticking to a high protein diet like all diets can be difficult.

In the study, researchers experimented on mice and rats. The rodents were divided into two groups. One group was given doses of phenylalanine. They compared the results against the group of rodents not given the amino acid. These were the results of the group given phenylalanine:

- increased levels of hormone GLP-1
- reduced levels of hormone Ghrelin
- reduced appetite and weight loss

The hormone GLP-1 is known to suppress hunger, and the hormone Ghrelin is known to increase hunger. Phenylalanine helped to reduced the food intake of the rodents and contributed to measured weight loss. The rats were more physically active which may have contributed to their weight reduction. Over a 7-day period, the team gave regular doses of phenylalanine to obese mice. All the mice reduced their weight.

### Receptor CaSR also Suppresses Appetite

Researchers are hard at work trying to understand how phenylalanine changes the levels of the hormones GLP-1 and Ghrelin. Another experiment was performed that mixed phenylalanine and gut cells. Researchers found that phenylalanine targets a receptor called CaSR which increased levels of GLP-1 and decreased levels of Ghrelin. The team is the first to demonstrate that activating the receptor CaSR does help to reduce appetite in animals.

In the United States, 2 in 3 adults are considered to be obese and obesity has become a major health concern. Obesity puts people at greater risk of health issues like heart disease, cancer, and diabetes. This study may give a boost in new strategies to deal with the obesity epidemic. The search is now on to find new drugs

and compounds in food that stimulate CaSR in the endeavor to treat and prevent obesity. Further studies though are required to explain exactly how phenylalanine curbs hunger, and whether or not the same results can be replicated in human trials.

---

<http://www.medicalnewstoday.com/articles/313949.php>

## Gene Variants Protect Some Primates Against Obesity

*A team of researchers may have discovered why a lucky few primates are resistant to obesity.*



Scientists have discovered gene variants in a group of primates that make them resistant to [obesity](#). The study published in the journal *Scientific Reports* found that when the female primates were fed a high fat diet over a seven-year period, one-third did not become obese. The 36 percent fat diet fed to the group of primates was similar to that of many American diets.

The original goal of the team was to study what impact the high fat diets of primate moms had on their offspring. However, they instead found that there was a genetic link that protected some of the primates against obesity. It has been observed too in humans that a portion of the population appears to be resistant to obesity and researchers were interested to find out if humans have similar gene variations.

### Two Genes (APOB & PLA2G4A) Linked To Metabolism

The researchers used unique experimental techniques to identify the genes responsible for metabolism. The goal was to catalog known gene variants, as well as new ones that regulate obesity in not just humans but rhesus macaque monkeys, orangutans, and chimpanzees. They used the animal DNA and searched for gene variants that were present in lean animals that were fed the high-fat diet, but were not present in the obese animals.

The team identified two special genes linked to metabolism found in female primates who were displaying obesity resistance. These genes were called:

- APOB (with two variants)
- PLA2G4A (with one variant)

When both of these genes were found together only in the lean primates, then the link was made. These genes rendered primates extremely resistant to weight gain on high-fat diets.

### Maternal Obesity can Change Offspring DNA

The primate study in combination with previous human studies made the researchers speculate that the gene APOB has a higher impact on obesity. The gene PLA2G4A has a different role in metabolism and helps regulate the levels of plasma triglycerides as well as lowering levels of serum triglycerides in the blood.

It is suspected that diet can have an effect on the genetics and health for both moms and their offspring. This is based on the primate study and recent human studies. More startling is that mothers who gain weight may set these genes for the next generation. The biological processes that regulate how the genes APOB and PLA2G4A and their variants have an impact on obesity risk on the next generation of offspring have yet to be determined.

Scientists may have found the genes responsible for the resistance to obesity in humans. For parents who experience obesity, this study is an eye opener. There is a link between high-fat diets and possible genetic changes that may affect future generations. This study will give an impetus for more research to find possible solutions for obesity risks in humans.

---

*Genomic Variants Associated with Resistance to High Fat Diet Induced Obesity in a Primate Model*. Alan Harris, Callison E. Alcott, Elinor L. Sullivan, Diana Takahashi, Carrie E. McCurdy, Sarah Comstock, Karalee Baquero, Peter Blundell, Antonio E. Frias, Maike Kahr, Melissa Suter, Stephanie Wesolowski, Jacob E. Friedman, Kevin L. Grove & Kjersti M. Aagaard

## Exercise Counteracts a Week of Overeating

*Study finds that exercise protects fat tissue from changes in inflammation levels and fat metabolism caused by a week of overeating.*



With the upcoming holidays, families will be preparing large scrumptious meals, of pumpkin and sweet potato pies, mashed potatoes, rich bread dressing, baked turkey and other delicious sides. While this sounds like a great menu, and the food is undoubtedly tasteful, many people are concerned with putting on excess weight, as a result of all of this overindulgence.

Overeating is a serious problem in America and is often associated with increased health problems like [heart disease](#), [obesity](#), and type 2 [diabetes](#). These diseases fall under the realm of [metabolic syndrome](#) which involves cardiometabolic risk factors such as; high blood pressure, high cholesterol levels, a large waist circumference, and high levels of blood glucose.

These metabolic risks can be canceled out however, if people participate in one very simple activity, exercise. Research shows that people who actively exercise and then consume an unhealthy diet, can improve their chances of preventing most metabolic syndromes. A lack of exercise contributes to many health problems and is definitively linked to heart disease and excessive weight gain.

Inflamed fatty tissues and increased levels of fatty acids assist the formation of obesity-related insulin resistance.

### Occasional Bingeing Also Damaging

One might think that occasional overeating does not present a health concern since it is not done on a regular basis. Research suggests that people who occasionally overeat might experience metabolic abnormalities and an increase in their adipose tissue. Just one week of eating too much can cause people to enter a prediabetes state.

Researchers are unsure as to what impact exercise has on the function and structure of the tissue, but some evidence shows that the damage overeating does to the metabolic system, can be protected by exercising.

A team of researchers from the University of Michigan, conducted a pilot study to find out what would happen to the fatty tissue of people who continued to exercise for one week. The study consisted of participants between the ages of 21– 26. The theory of the study was based on the hypothesis that one week of aerobic exercise, during one week of overeating would counteract the effect that overeating has on the metabolic system.

The team was counting on exercise to break down the lipids, prevent fatty tissue inflammation and preserve lipolysis response. Participants consumed 30% more calories during the week of the study, and they continued their regular exercise. They participated in 90 minutes of aerobic exercise, over the course of a 6 day period.

## Exercise Appears to Counteract Harmful Effects of Overeating

Glucose testing was conducted before and after the study, of abdominal fat tissues. Researchers looked for obvious markers that would measure fatty tissue inflammation or circulating C- reactive protein. Individuals who do not exercise will show an increase in inflamed fat tissue. However, this time the tests were different. The study group showed no signs of inflamed fat tissues, in chemical breakdown of fat, and no change in glucose levels.

Researchers concluded that their early findings support the protective role exercise has on metabolic response.

---

*Effects of exercise on adipose tissue responses to short-term overeating in healthy adults, Alison C. Lipzki et al., presented at The Integrative Biology of Exercise 7 conference on 3 November 2016.*

## Permanently Reverse Diabetes

*Study concludes that people who reverse their diabetes and then keep their weight down, with a low-calorie diet, remain free of the disease.*



In 2011, a study led by Professor Roy Taylor, Professor of Medicine and Metabolism at Newcastle University, proved that diabetes can be reversed using a very low calorie diet. Although this looked promising, the study was of a limited length of time, only 8 weeks, and whether or not the diabetes would stay away long-term was questionable. A recent study, again led by Professor Roy Taylor, involved 30 volunteers with Type 2 diabetes, who undertook the same diet of 600-700 calories per day. Participants lost an average of 14 kilograms. Over the next six months, they did not regain any weight that they had lost. This group contained many participants who had longer duration diabetes, which they defined as over 8 years and up to 23 years. 12 patients who had diabetes for less than 10 years reversed their condition and were still free of diabetes 6 months later. Additionally, after 6 months, a 13th patient had also reversed their diabetes. Although the participants lost weight, they still remained overweight or obese, however they had lost enough weight to remove the fat out of the pancreas, allowing for insulin production to be normal. Professor Roy Taylor stated: "What we have shown is that it is possible to reverse your diabetes, even if you have had the condition for a long time, up to around 10 years. If you have had the diagnosis for longer than that, then don't give up hope - major improvement in blood sugar control is possible. "The study also answered the question that people often ask me - if I lose the weight and keep the weight off, will I stay free of diabetes? The simple answer is yes! "Interestingly, even though all our volunteers remained obese or overweight, the fat did not drift back to clog up the pancreas." "The bottom line is that if a person really wants to get rid of their Type 2 diabetes, they can lose weight, keep it off and return to normal."

---

*Very low calorie diet and 6 months of weight stability in Type 2 diabetes: Pathophysiologic changes in responders and non-responders. Sarah Steven, Keiren G Hollingsworth, Ahmad Al-Mrabeh, Leah Avery, Benjamin Aribisala, Muriel Caslake, Roy Taylor, Diabetes Care. DOI: 10.2337/dc15-9422 Journal reference: Diabetes Care search and more info website Provided by: Newcastle University*

## Mayr Cure: Gut Cleansing for Weight Loss

*Mayr Therapy, a naturally based holistic healing method, is focused on improving the size, shape, and function of intestines and digestion.*



Around the turn of the century, F. X. Mayr (1875-1965) was a medical student working in an Austrian sanatorium where it was his job to massage the abdomens of patients with intestinal problems. He often wondered how he would know when he had reached the goal of his treatment. When he asked a professor what norms existed for the abdomen, he was told that there were none (although normal criteria existed for all other organs). Another professor told him that "abdomens are as different as noses on the patients' faces." Mayr was not satisfied with these answers.

Consequently, Mayr decided that, as a physician, he would specialize in the treatment of the abdomen. Hence, the answer to such questions as, "How do we recognize a healthy digestive system?", "What are the external signs of a healthy intestines?", and "How are these reflected in the size, shape and condition of the abdomen?", became a lifelong search for him. Mayr began asserting the novel idea that the digestive systems of most people were not clean, no longer completely efficient, and unhealthy. Waste products deposited in the system caused it to be contaminated, often infected, and a dangerous source of toxicity. This was undermining people's health and making them prematurely ill, old and unattractive.

Because Mayr knew that a healthy functioning digestive system consisted of more than having a daily bowel movement, he decided to treat all of his patients, regardless of their complaints, as though they had digestive problems. As a result, he came to the astonishing conclusion that:

1. Disease begins in the gut as a consequence of what we drink and eat and how we chew our food;
2. Digestive systems are not completely healthy and;
3. Cleansing the digestive system and returning it to health helps other complaints abate or disappear.

By taking measurements, Mayr also realized that physical changes were taking place during and after his treatment. For example, the abdomen itself became softer, less tender, and more toned; "The diaphragm came to a proper level; and posture, skin tension, color, hair, and nails improved. Eventually, optimum physical measurements were obtained which became the basis of Mayr diagnosis as well as objective treatment goals. However, because modern-day "normal" are based on averages and not "optimal," it is possible that a patient who is considered to be healthy by conventional medical standards may still be unhealthy by Mayr standards. The dietary approach of Mayr Therapy was first conceived during WWII when Mayr worked as a physician in a military hospital. He discovered that patients who came with severe illnesses (e.g. cholera, typhus, etc.) were found to improve best with soups. He himself was able to derive great benefits from fasting with water.

As a result, he incorporated variations of controlled fasting into his digestive detoxification treatment of the abdomen. While obese patients typically lose a significant amount of weight on Mayr therapy, and obtain an improved ratio of body fat to muscle, weight loss is considered to be a secondary benefit of this approach. For example, Baron Rothschild once came to Mayr and said, "I want to lose 16 pounds." Dr. Mayr took him by the arm and led him to the front window of his clinic where he pointed to the butcher shop across the street and said: "The butcher works with pounds. I work with health. If it is just pounds you want to lose then you need to go somewhere else." Nevertheless, the close link between attractiveness and good digestion has earned Mayr Therapy such nicknames as "inner beauty treatment," "natural cosmetic aid," and "Mayr Cure."

In short, Mayr Therapy is focused on improving the size, shape, and function of one's gut through the use of a cleansing agent (e.g., "bittersalz"), controlled fasting, chewing food more thoroughly, and abdominal massage. While Mayr Therapy is primarily used as a treatment at health retreats in Austria and Germany, it can also be incorporated into one's lifestyle until weight loss goals are achieved. When doing so, it would not be unusual for one to lose five pounds a week along with a reduction in body fat. As a result, one becomes healthier not only through improved gut functioning, but from weight and fat loss as well. For these reasons, patients desiring optimal health and wellness should consider Mayr Therapy and experience its wonders for themselves.

by Daniel F. Royal, DO, HMD, JD  
Turtle Healing Band Clinic, Las Vegas, NV

█

---

*Health Through Inner Body Cleansing: The Famous F.X. Mayr Intestinal Therapy from Europe, by Dr Erich Rauch.*

## Diet Determines Behavior

*A high-fat diet prompts brain inflammation, in a lab animal model.*



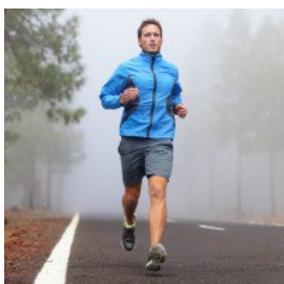
High-fat diets have long been known to increase the risk for medical problems, including heart disease and stroke, but there is growing concern that diets high in fat might also increase the risk for depression and other psychiatric disorders. Annadora J. Bruce-Keller, from Louisiana State University (Louisiana, USA), and colleagues employed a mouse model to assess the changes to the gut microbiome – the bacteria that resides in the GI tract, which thereby may trigger susceptibility to neuropsychiatric disorders. Non-obese adult mice were conventionally housed and maintained on a normal diet, but received a transplant of gut microbiota from donor mice that had been fed either a high-fat diet or control diet. The recipient mice were then evaluated for changes in behavior and cognition. The animals who received the microbiota shaped by a high-fat diet showed multiple disruptions in behavior, including increased anxiety, impaired memory, and repetitive behaviors. Further, the animals fed the high-fat diet showed many detrimental effects in the body, including increased intestinal permeability and markers of inflammation. Signs of inflammation in the brain were also evident and may have contributed to the behavioral changes. Observing that: “The mice given [high-fat diet] microbiota had significant and selective disruptions in exploratory, cognitive, and stereotypical behavior,” the study authors conclude that: “these data reinforce the link between gut dysbiosis and neurologic dysfunction and suggest that dietary and/or pharmacologic manipulation of gut microbiota could attenuate the neurologic complications of obesity.”

---

*Annadora J. Bruce-Keller, J. Michael Salbaum, Meng Luo, Eugene Blanchard, Christopher M. Taylor, David A. Welsh, Hans-Rudolf Berthoud. “Obese-type Gut Microbiota Induce Neurobehavioral Changes in the Absence of Obesity.” *Biological Psychiatry*, Vol. 77, Issue 7, p607–615.*

## Exercise Hormone Helps Shed, Prevent Fat

*New study discovers that exercise produces irisin, which helps convert calorie-storing white fat cells into energy-burning brown fat cells.*



The hormone “irisin” was discovered in 2012, by a Harvard Medical School professor and his team. The team discovered that the hormone levels of irisin rise through exercise, converting white fat (bad fat) into [brown fat](#) (good fat). The conversion of the good fat burns more calories than exercise alone, which is beneficial for individuals needing to lose a few extra pounds.

Dr. Li-Jun Yang, professor of hematopathology at the University of Florida College of Medicine, headed the new research. The team's main objective was to acquire more knowledge about the hormone, and how its conversion process works. The research will be the first of its kind to explore the hormone's effects on human fat cells and tissues. The team observed that the irisin hormone obstructs the formation of fatty tissue, when the hormone levels are increased at the time of physical exertion. While people are exercising, they are actually releasing a hormone that helps shed unwanted body fat, and prevents fat from forming. Not only does exercising release the fat burning hormone (irisin), it also helps to strengthen the bones, and improve the health of people living with cardiovascular disease.

Irisin shows promise as a possible target to support those with [obesity](#) and type 2 [diabetes](#). The exercise hormone increases the amount of energy the brown fat cells use. The test the researchers conducted began with the collection of fat cells, taken by 28 participants who have undergone breast reduction surgery. The fat samples were exposed to irisin, and the results showed a fivefold increase in UCP1 protein, a critical component in the fat burning process. Dr. Yang and his colleagues concluded that irisin suppresses the formation of fat cells, by reducing the amount of fat cells by up to 60%, when they were compared with the control group. The results prove that irisin reduces the amount of fat stored in the body, by impeding the process that turns undifferentiated stem cells into fat cells, while also promoting the stem cells' differentiation into bone-forming cells.

Although there are no magical cures, or single approach to treat obesity, exercise and lifestyle changes are effective in weight loss. The fact that the body reduces small quantities of irisin, is reason enough to exercise regularly. While plans are being made to improve the use of irisin in shedding unwanted fat, researchers say that people can help themselves. This means exercising regularly, eating healthy, and changing the way they think. Exercise reduces fat, burns calories, promotes stronger bones, and improves cardiovascular health. Irisin's role is to regulate fat cells, and help people to stay slender, trimmer and healthier. Another benefit of irisin is to reduce plaque buildup in the arteries, and prevent [inflammation](#) in the cells.

---

*Irisin exerts dual effects on browning and adipogenesis of human white adipocytes, Zhang Y et al., American Journal of Physiology - Endocrinology and Metabolism, doi: 10.1152/ajpendo.00094.2016, published online 1 August 2016, abstract.*

## To Trim Fat, Turn Down the Thermostat

*A cooler sleeping environment helps to raise brown fat tissue mass and activity, which could lead to metabolic benefits.*



Brown adipose tissue is a specialized form of fat tissue that produces heat by burning energy to maintain the body's core temperature. Previously, a team from Virginia Commonwealth University (Virginia, USA) observed that acute cold exposure promotes intercellular communication between skeletal muscle and brown fat tissue that is mediated by an exercise-induced hormone. This metabolic signaling may help the body more efficiently maintain its core temperature. Francesco S. Celi and colleagues report that their current study suggests that a cooler sleeping environment may be sufficient to expand brown adipose tissue mass and activity, whereas exposure to warm temperatures result in suppression of this tissue. The researchers enrolled five healthy, lean male volunteers in a four-month long study in which subjects slept in a researcher center in temperature-controlled rooms, while resuming normal activities during the day. During the first month, the overnight temperature was "neutral" at roughly 75 degrees. The next month it was cooled to 66 degrees; for the third, it went back to 75 degrees; and finally, for the fourth, it was 81 degrees. At the end of each month the volunteers underwent metabolic testing in the metabolic chambers at 75 degrees and 66 degrees. After four weeks of sleeping at 66 degrees, the team noted double the volume of brown fat, and insulin sensitivity improved. Writing that: "Circulating and adipose tissue, but not skeletal muscle, expression levels of leptin and adiponectin displayed reciprocal changes concordant with cold-acclimated insulin sensitization," the study authors submit that: "These results suggest regulatory links between [brown adipose tissue] thermal plasticity and glucose metabolism in humans, opening avenues to harnessing [brown adipose tissue] for metabolic benefits."

---

*Lee P, Smith S, Linderman J, Courville AB, Brychta RJ, Dieckmann W, Werner CD, Chen KY, Celi FS. "Temperature-acclimated brown adipose tissue modulates insulin sensitivity in humans." Diabetes. 2014 Jun 22. pii: DB\_140513.*

## Weighty Concerns for Cancer

*Obesity raises the risks of a weight-related cancer by 40%, among women.*



Cancer Research UK warns that obesity puts a woman at 40% increased risk of developing at least seven types of cancer – including bowel, post-menopausal breast, gallbladder, womb, kidney, pancreatic and esophageal cancer. Julie Sharp, of Cancer Research UK, urges that: "Lifestyle changes - like not smoking, keeping a healthy weight, eating a healthy diet and cutting back on alcohol - are the big opportunities for us all to personally reduce our

cancer risk. Making these changes is not a guarantee against cancer, but it stacks the odds in our favour."

---

*"Overweight and obesity," Cancer Research UK; at <http://www.cancerresearchuk.org/cancer-info/cancerstats/causes/overweight-obesity-statistics/#by>*

## Sip Before Dining

*Drinking 500 mL of water 30 minutes prior to a meal may assist weight management goals, among obese men and women.*



Regular physical activity and health diet are key elements for effective weight management. Helen Parretti, from the University of Birmingham (United Kingdom), and colleagues enrolled 84 obese adults in a study in which subjects drank either 500 mL of tap water 30 minutes prior to a main meal (“preloading”); or no pre-meal beverage (but asked to imagine having a full stomach before the main meal). Each subject was given a weight management consultation at the study’s start, and at 2 weeks. Study participants who preloaded with water lost, on average, 1.3kg (2.87lbs) more than those in the control group. Further, those consuming water before all three main meals in the day reported a loss of 4.3kg (9.48lbs) over 12 weeks; those who only preloaded once, or not at all, only lost an average of 0.8kg (1.76lbs). The study authors submit that their data is “preliminary evidence that water preloading before main meals leads to a moderate weight loss at follow up.”

---

*Parretti HM, Aveyard P, Blannin A, Clifford SJ, Coleman SJ, Roalfe A, Daley AJ. “Efficacy of water preloading before main meals as a strategy for weight loss in primary care patients with obesity: RCT.” Obesity (Silver Spring). 2015 Sep;23(9):1785-1791.*

## Citrus Fruits May Help Prevent Obesity-Related Diseases

*Antioxidants in citrus could reduce the risk of chronic diseases caused by obesity, such as heart disease, liver disease, and diabetes.*



Clinical trials show that more than one third of the adults in the United States are [overweight](#). Being overweight causes a variety of chronic illnesses and diseases such as liver disease, heart problems, diabetes, stress and inflammation. Eating citrus fruits containing antioxidants is believed to prevent these diseases, and contribute to a healthier lifestyle. Colored fruits and vegetables contain flavonoids, the largest group of plant chemicals, belonging to the phytonutrients group. Both phytonutrients and carotenoids are responsible for the bright colors we see in our vegetables and fruits. The phytonutrients group has more than 6,000 types, while flavonoids have several groups. Nevertheless, these antioxidants are available in abundance in citrus fruits, and have been linked to lower oxidation stress in vitro, and clinical tested animals.

### What Does the Study Reveal?

When people eat foods high in fat, their bodies retain the fat. Fat cells produce a toxic environment which causes damage or oxidative stress to the cells. Although the body is designed to fight off most chemical changes with oxidants, obese people have enlarged fat cells, which leads to much higher levels of reactive oxygen. These high levels in turn overwhelm the body's fighting ability to ward them off.

An experiment conducted at the University Estadual Paulista in Brazil used 50 mice, where each mouse was treated with flavanones from lemons, limes, and oranges. The three flavanones researchers were most interested in were eriodictyol, hesperidin, and eriocitrin. For 30 days, the test subjects were given a high-fat diet plus hesperidin, a high-fat diet plus eriodictyol, a high-fat diet plus eriocitrin, a high-fat diet, or a regular standard diet.

It's a known fact that fatty foods and high fat diets destroy the cells in the body. Obesity contributes to health problems, which leads to chronic illnesses and diseases. Although weight loss can lower the risk of developing some diseases such as type 2 diabetes, the true risk lowering factor comes from eating the right foods.

### Weight Loss Not Associated With Citrus Fruits, But Can Lead to a Healthy Lifestyle

The studies were not targeted at weight loss, but the studies did confirm that while undergoing the test, the subject mice were made healthier. The citrus flavanones reduced lipids, lowered glucose levels and oxidative stress, and lowered the risk of liver damage. These studies also suggest that eating a well-rounded amount of citrus fruits can provide beneficial results for people who are not struggling with a weight problem, but who have high fat diets. If this is the case, people in this category will experience a lower risk of developing abdominal obesity, heart disease, and type 2 diabetes.

### Next Level of Antioxidant Use

Next, the researchers will explore another beneficial avenue that will help them to

decide the best method to administer the flavonoids. The studies will search for the best way to consume them; by drinking plenty of fruit juice, to eat the fruit itself, or perhaps take a pill. Although the studies were successful with mice, the team is waiting to conduct studies using human models.

This information can change the way people view citrus fruits, and perhaps give them a natural alternative to eating healthy and living longer. The researchers are introducing the conclusion of their finding at the 252nd National Meeting and Exposition of the American Chemical Society.

---

*American Chemical Society. "Citrus fruits could help prevent obesity-related heart disease, liver disease, diabetes." ScienceDaily. ScienceDaily, 21 August 2016.*

## One Night of Sleep Deprivation Causes Insulin Resistance

*A single night of inadequate sleep could equal six months on a high-fat diet (canine model)*



Demonstrating once again the importance of a good night's sleep, new research has found that a six-month high-fat diet and one night of sleep deprivation could both impair insulin sensitivity in a similar manner. In this study, conducted at Cedars-Sinai Medical Center in Los Angeles, CA, researchers measured insulin sensitivity in eight male dogs, using an IV glucose tolerance test. They compared dogs before and after diet-induced obesity and one night of sleep deprivation, and compared those findings with the results of dogs that had a normal night's sleep. Prior to being fed a high-fat diet, one night of sleep reduced insulin sensitivity by 33%, similar to the reduction caused by being fed a high-fat diet alone, which reduced sensitivity by 21%. Dogs that had impaired insulin sensitivity from the high-fat diet did not have further impaired sensitivity with one night of sleep deprivation. The results from tests clearly showed that sleep deprivation can also lead to overall increased risk for metabolic diseases and increased food intake. "It is critical for health practitioners to emphasize the importance of sleep to their patients," said Caroline M. Apovian, MD, FACP, FACN, a Fellow and spokesperson for The Obesity Society. "Many patients understand the importance of a balanced diet, but they might not have a clear idea of how critical sleep is to maintaining equilibrium in the body."

---

*Broussard J. Cedars-Sinai Medical Center. Poster abstract presentation at: The Obesity Society Annual Meeting at ObesityWeekSM 2015; November 2-6, 2015; Los Angeles, CA. [www.obesityweek.com](http://www.obesityweek.com).*

## Lessen Lunch Calories

*Cooked oatmeal for breakfast increases feelings of fullness.*



Enjoying a hearty breakfast may help a person to eat fewer calories at lunch. Allan Geliebter, from Columbia University Medical Center (New York, USA), and colleagues enrolled 36 men and women (18 lean, 18 overweight) who consumed a breakfast of 350 calories of either: carbohydrates, a quick-cook oatmeal, or sugared corn flakes; or a control breakfast (water only). Subjects were assessed for feelings of hunger or fullness after the breakfast and until lunch (3 hours

later). As well, the team took blood measurements of glucose, insulin, leptin, glucagon, and a marker of gastric emptying. Those subjects who consumed the oatmeal for breakfast reported higher ratings of fullness and lower ratings of hunger, and consumed 31% fewer calories at lunch. The overall satiety effect was even greater among the overweight subjects, who consumed 50% fewer calories at lunch after eating oatmeal for breakfast.

---

*Geliebter A, Grillot CL, Aviram-Friedman R, Haq S, Yahav E, Hashim SA. "Effects of oatmeal and corn flakes cereal breakfasts on satiety, gastric emptying, glucose, and appetite-related hormones." Ann Nutr Metab. 2015;66(2-3):93-103.*

## Will a Protein Become the Next Big Sweetener?

*Brazzein, a fruit protein, is 2,000 times sweeter than sugar, and has fewer calories.*



As consumers become more aware of their [caloric intake](#), sugar and high-fructose corn syrup are losing their popularity and being replaced by low and no-calorie alternatives. A fruit protein called brazzein has attracted attention as a potential sugar substitute as it is sweeter than sugar and contains fewer calories, but producing the protein in large amounts has been difficult. Engineering microorganisms to make the protein has not shown high quality results, and purifying it from the West African fruit that makes it naturally on a commercial scale would be complicated. Fortunately, Kwang-Hoon Kong and colleagues are working on a new approach, where brazzein is produced by yeast. Using *Kluyveromyces lactis*, researchers were able to have the yeast overproduce two proteins that are needed for assembling brazzein. This process allowed the team to produce 2.6 times more brazzein than they had before, and created the protein to be 2,000 times sweeter than sugar, according to a panel of tasters. With this new step in commercial production of brazzein, the protein shows promising potential in becoming a popular substitute for [calorie-wary](#) consumers.

---

*Cho-Rong Yun, Ji-Na Kong, Ju-Hee Chung, Myung-Chul Kim, Kwang-Hoon Kong. Improved Secretory Production of the Sweet-Tasting Protein, Brazzein, in *Kluyveromyces lactis*. Journal of Agricultural and Food Chemistry, 2016; 64 (32): 6312 DOI: 10.1021/acs.jafc.6b02446*