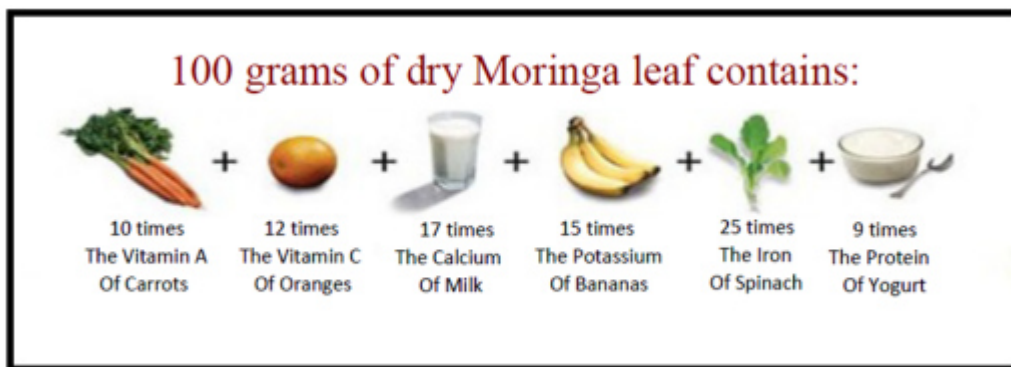


# Obesity, Diabetes and Moringa Oleifera

Because of the increasing prevalence of obesity and diabetes, many are looking to more natural ways to control blood sugar and help reduce weight. And this search includes Moringa Oleifera, used for thousands of years for just these purposes.

Moringa oleifera is a fast-growing, small, drought-resistant tree. It's native to the sub-Himalayan areas around north-west India and has spread to tropical and sub-tropical areas of Africa, Arabia, South East Asia as well as the Pacific and Caribbean islands and on into South America.

Ancient cultures have found that over 20,000 plants have shown to have medicinal effects. And people have found that practically the entire Moringa oleifera tree is useful for medicinal purposes. This includes its fruit, seeds, flowers, leaves, bark and roots. Modern research has identified many essential nutrients including vitamins, minerals, amino acids, antioxidants, anti-inflammatory agents as well as omega 3 and omega 6 fatty acids.



From [Health Benefits of Moringa Oleifera](#) published in the *Asian Pacific Journal of Cancer Prevention*

## Discovery Channel Documentary of Moringa Oleifera The Miracle Tree

### What Scientific Studies of Moringa Oleifera Have Shown

Of course, like most scientific studies, animals are used first before human subjects. Animals like mice, rats or rabbits. Here are the results of two such animal studies.

In the first animal study 15 rats were divided into three groups of five each. Each group of rats was fed ad libitum (as much as they wanted). The

first group was fed a standard diet. The second and third groups were fed a high fat diet. The third group, however, also received a daily dose of *Moringa oleifera* leaf extract in an oral solution providing 1 mg per g of body weight.

As expected, the rats fed a high fat diet increased cholesterol levels in the serum (blood), liver and kidney. The third group of rats on the high fat diet plus *Moringa oleifera* showed reduced cholesterol levels by 14.35% in serum and 6.40% in liver and 11.09% in kidney. It's clear that *Moringa oleifera* can definitely lower cholesterol levels.

The second animal study involved young wistar albino rats. They were divided into 5 groups and treated as follows:

- **Group 1** was a normal control where the animals were fed on a normal pellet diet and had free access to water.
- **Group 2** was a negative control in which the rats were fed on high-fat diet for a period of 7 weeks.
- **Group 3** was standard control in which rats were treated with simvastatin (a lipid-lowering medication marketed under the trade name Zocor among others) (3mg/kg, administered orally).
- **Group 4** was test treatment group where rats were treated with methanolic extract of *M. oleifera* (200mg/kg) along with high-fat diet.
- **Group 5** was test treatment in which rats were treated with methanolic extract of *M. oleifera* (400mg/kg) along with high-fat diet.

As expected, rats fed with high-fat diet showed significant increase in body weight compared to those fed with normal pellet diet.

Also rats fed on high-fat diet showed an increase in lipid level including elevated levels of total cholesterol, triglycerides, LDL, VLDL, and reduced levels of HDL when compared to rats receiving the normal pellet feed.

But, treatment with methanolic extract of *M. oleifera* (as well as treatment with the simvastatin) significantly reversed the hyperlipidemic effect produced by high-fat diet. Also, methanolic extract of *M. oleifera* tended to reduce the formation of fatty plaques in the arteries.

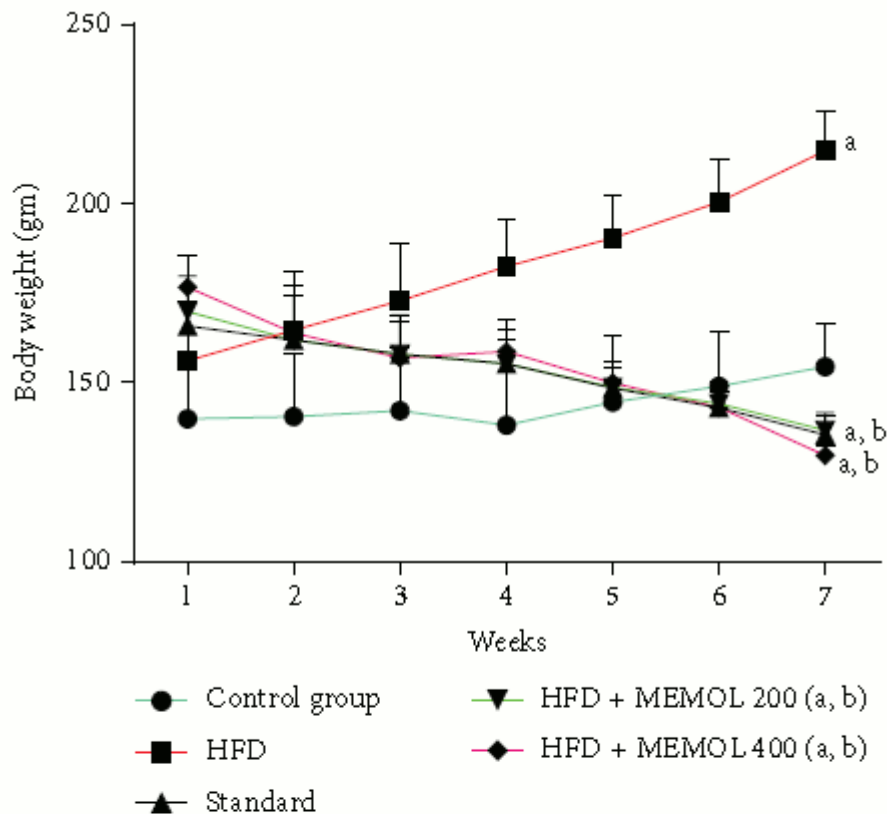


FIGURE 1: Body weight of rats fed a high-fat diet and treated with MEMOL extracts for 7 weeks; all values are expressed as Mean  $\pm$  SEM, ( $n = 10$ ). (a) Significant difference compared to control; (b) significant difference compared to HFD,  $P < 0.001$  (one-way ANOVA, Tukey's post hoc test,  $n = 10$  per group).

From [Antiobesity and hypolipidemic activity of Moringa oleifera leaves against high fat diet-induced obesity in rats](#) as published in *Advances in Biology*

As can be seen in the above graph, treatment with both 200mg/kg and 400mg/kg methanolic extract of *M. oleifera* causes a significant reduction of body weights when compared to both the control group (feed normal pellets) and the high-fat diet rats.

The next study investigates the effects of *Moringa oleifera* leaf powder and *Azadirachta indica* seeds powder on human diabetics. Here, 55 patients with type 2 diabetes between the ages of 30-60 years were divided into two experimental groups and one control group. The experimental groups received either 8 g of *Moringa oleifera* leaf powder or 6g of *Azadirachta indica* seed powder each day. The control group did not receive any supplements.

Both the experimental groups showed very significant ( $P < 0.01$ ) reductions in fasting glucose levels compared to the control group. Also, both experimental groups showed reductions in post prandial (after meal) blood glucose levels. The reduction of post prandial blood glucose was significant at the 0.05 level for *Azadirachta indica* seeds powder and highly significant at the 0.01 level for *Moringa oleifera* leaf powder.

Again, this study indicates that the herbs tested, especially Moringa oleifera leaf powder, had significant blood glucose level lower effects on people with diabetes.

In another study 15 obese people with type 2 diabetes were given 50 g packets of Moringa oleifera leaf powder. They took the powder for 40 days. It was found that serum glucose levels were significantly lowered and serum LDL cholesterol levels were significantly decreased by 30.94%.

## Conclusions About Obesity, Diabetes and Moringa Oleifera

Moringa oleifera has been tested with both animals and humans. It has been found effective for managing lipid levels including lowering bad LDL cholesterol and raising good HDL cholesterol levels. It helps control blood glucose levels both after fasting and after eating. It is effective at reducing weight even on a high fat diet.

While you should take normal measures to manage your glucose and lipid levels, like reducing your carbohydrate intake and feeding your good gut microbes, Moringa oleifera can be another tool in your toolbox to help manage your condition.

## Obesity, Diabetes and Moringa Oleifera References

- [Antiobesity and hypolipidemic activity of Moringa oleifera leaves against high fat diet-induced obesity in rats](#) from the journal *Advances in Biology*
  - [A REVIEW ON SOME ANTIDIABETIC PLANTS OF INDIA](#) from the journal *Ancient Science of Life*
  - [Health Benefits of Moringa Oleifera](#) from the journal *Asian Pacific Journal of Cancer Prevention*
  - [HYPOGLYCAEMIC EFFECT OF MORINGA OLEIFERA AND AZADIRACHTA INDICA IN TYPE 2 DIABETES MELLITUS](#) from the journal *The Bioscan*
  - [EFFECT OF MORINGA OLEIFERA ON BLOOD GLUCOSE, LDL LEVELS IN TYPES II DIABETIC OBESE PEOPLE.](#) from the journal *INNOVATIVE JOURNAL OF MEDICAL AND HEALTH SCIENCE*
  - [Hypocholesterolemic effects of crude extract of leaf of Moringa oleifera Lam in high-fat diet fed wistar rats](#) from the *Journal of Ethnopharmacology*
  - [Hypolipidemic activity of Moringa oleifera Lam., Moringaceae, on high fat diet induced hyperlipidemia in albino rats](#) from *The Brazilian Journal of Pharmacognosy (Revista Brasileira de Farmacognosia)*
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# Can You Lose Weight and End Obesity by Managing Your Gut Microbiome?

Your gut microbiome consists of billions of organisms from many thousands of species. Your gut biome consists of about three pounds of tiny single-celled microbes living in your gut which have a profound effect on your health.

These gut microbes can be grouped by phylum into firmicutes, bacteroidetes, actinobacteria and proteobacteria, fusobacteria and verrucomicrobia. The population ratios of these organisms are determined by our exposure to the environment. And, the diversity of bacterial species and the ratios of these organisms can determine your health are associated with various negative bodily conditions, including obesity.

Your body is covered with microbes from the outside on your skin into your mouth and all along your gastrointestinal tract. About 700 bacterial species may live in your oral cavity alone. Some of the factors that determine the makeup of your body's microbiome are:

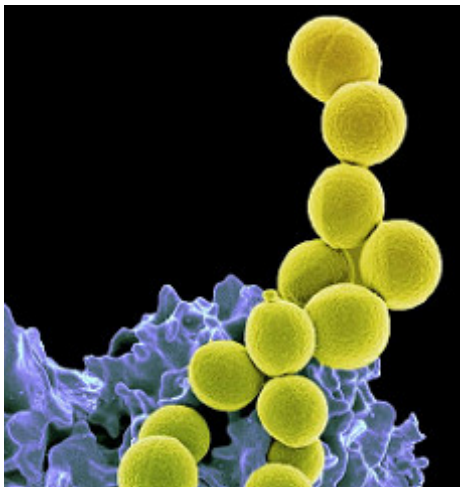


Photo by [NIAID](#) 

- Gestational age
- Vaginal or caesarian delivery
- Breast or formula fed
- Age when you first ate solid food
- Infant hospitalizations
- Malnutrition
- Antibiotic treatments
- Foods you consume
- Hormonal cycles
- Travel & exposure to “foreign” microbes
- Therapies
- Illness

- Lifestyle changes
- Nutrients you consume
- Susceptibility to infections and inflammatory diseases
- Drugs you take

## It's All in Your Gut

Perhaps it was Hippocrates (460–370 B.C.) who first told his students that “All diseases begin in the gut.” But, today, numerous studies have been done to show a relationship between differences in gut microbiota (as either a cause or consequence) and various conditions such as obesity, irritable bowel syndrome, inflammatory bowel disease, Crohn’s disease, ulcerative colitis, colon cancer, diabetes, cardiovascular disease, stress and anxiety, food allergies, asthma, autism, hepatic encephalopathy, chronic fatigue, and eczema.

Stress, for example, is a concern for many of us living in a fast-paced society. A study of two probiotics, *Lactobacillus helveticus* and *Bifidobacterium longum*, showed that when these probiotics were introduced into the gut there was a reduction of anxiety in mice and a reduction in blood cortisol (the stress hormone) in humans.

Results obtained in both rodents and humans suggest that obesity is associated with an altered composition of microbiota. One key to obesity seen in some studies seems to be the ratio of firmicutes to bacteroidetes in the gut. A higher firmicutes/bacteroidetes ratio is associated with obesity while a lower ratio is associated with lean people.

**How can you tell if a woman is overweight?** A study of 313 overweight women and 232 healthy individuals showed that the bacteria in saliva was a good indicator of being overweight. A single species of bacteria (*Selenomonas noxia* in the phylum firmicutes), if its presence was greater than 1.05% of the total bacteria population, was an excellent predictor of being overweight. High levels of this bacteria were able to pick out 98.4% of the overweight women.

**How do you get fat mice?** In another study, human twins (one overweight and one normal weight) were used. Researchers used the gut bacteria from these twins and added them to mice. All the mice were fed an identical diet and at the same amount of food. But, the mice that received gut bacteria from the overweight twins got fat while the mice that received the gut bacteria from the normal weight twins did not.

**How do you get fat cows?** This is an important question if you raise cows for sale. The answer is you adjust the bacteria in cows using antibiotics. Antibiotics reduces the diversity of bacteria in the cow and leads to weight gain.

The problem for us humans is that when we eat the meat of animals that have been given antibiotics, some of those antibiotics are still in the meat. So, we too reduce the diversity of our gut biome and start gaining weight.

## **Rob Knight: How our microbes make us who we are**

Rob Knight is a pioneer in studying human microbes, the community of tiny single-cell organisms living inside our bodies that have a huge – and largely unexplored – role in our health. “The three pounds of microbes that you carry around with you might be more important than every single gene you carry around in your genome,” he says. Find out why.

Read more about the [Human Microbiome Project: American Gut](#) mentioned in this video.

## **Manipulating Your Gut Biome**

So, how do you manipulate your gut biome to stop looking like a fat person who gains weight and start looking like a slim person and lose weight?

Several methods of manipulating the gut biome are being investigated as a means of treating various conditions. Among these techniques are:

- Using prebiotic and probiotic agents
- Using antibiotics to induce dysbiosis (reducing gut biodiversity)

Of course, there are many probiotic products available today. The most important features of a probiotic supplement are the number of colony forming units (CFU) and the number of individual species. A good combination would be around 50 billion CFU and 15 species of live probiotic strains.

In addition to supplements, you can get good bacteria from fermented products like yogurt and kefir. Aged cheeses also contain live cultures. Also consider pickled veggies, kimchi, kombucha, sauerkraut, miso and tempeh.

Good bacteria thrive in your gut by digesting fiber. Prebiotics is simply a name for the nondigestible fiber that good bacteria love. Some specific fibers associated with prebiotics include inulin, oligofructose, galacto-oligosaccharides, and fructooligosaccharides.

These are pretty hard to remember. So, simply think of fruits and vegetables and whole grains. Start to love bananas, onions, garlic, leeks as well as asparagus, artichokes and soybeans. And, make sure wheat products you consume are made from whole wheat rather than refined flour.

Firmicutes thrive on fats and the fermentation of carbohydrates. So, reduce your fat and carbohydrate intake, including sugars, sweets, soda pop, breads, and pasta.

Keep your good gut bacteria healthy by avoiding antibiotics. This means keeping medical use of antibiotics to a minimum and avoiding meats in animals raised with antibiotics.

## References

[Gut Microbiota Composition and Activity in Relation to Host Metabolic Phenotype and Disease Risk](#) as published in *Cell Metabolism*

[Is Obesity an Oral Bacterial Disease?](#) as published in the *Journal of Dental Research*

[The role of the gut microbiome in the healthy adult status](#) as published in *Clinica Chimica Acta*

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[A core gut microbiome in obese and lean twins](#) as published in *Nature*

[The Firmicutes/Bacteroidetes ratio of the human microbiota changes with age](#) as published in *BMC Microbiology*

[4 Ways to Get Firm and Cute by Lowering Firmicutes](#)

[Human gut microbes associated with obesity](#) as published in *Nature*

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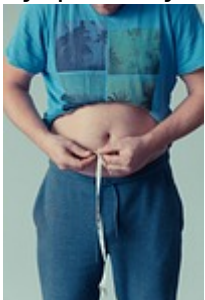
## Treating Metabolic Syndrome Naturally

Metabolic syndrome is a group of symptoms that have been associated with an increased risk of type 2 diabetes and cardiovascular diseases. About [35% of the US adult population](#) has metabolic syndrome. For those aged 60 or more, the rate is close to 50%.

Women are more likely to suffer with metabolic syndrome than men, and Hispanics have a higher rate than non-Hispanics.

### Just What is Metabolic Syndrome?

Metabolic syndrome is a group of 5 symptoms. If you have 3 or more of these symptoms you are said to have metabolic syndrome. These symptoms are:



1. Elevated blood pressure of 130/85 or more.



2. High triglycerides of 150 mg/dl or more
3. Low HDL cholesterol, less than or equal to 40mg/dl for men and 50mg/dl in women
4. Elevated fasting blood glucose levels of 100 mg/dl or more
5. Central obesity generally associated with a BMI of 30 or more

A study reported in the [Journal of the American Medical Association \(JAMA\)](#) reported that metabolic syndrome is increasing long term in the United States. In 2003-2004 the rate was 32.9% but increased to 34.7% in 2011-2012, a 5% increase. Some short term studies indicate that in recent years the rate have leveled out.

The prevalence of metabolic syndrome means that many people are suffering from increased risks for a number of diseases including heart disease, stroke and diabetes. And often the symptoms and diseases result in limitations of lifestyle options. In addition, [a study of members](#) of 3 health care plans indicated that those with 3 symptoms had 60% higher costs for health care than those without symptoms. And, the costs increased by a further 24% when a fourth or or fifth symptom was added.

These individual symptoms are pretty common among Americans. About a third of Americans have high blood pressure. About a third of American have high triglycerides. A fifth of American adults have low HDL cholesterol. Slightly under 10% of the population has elevated fasting blood glucose levels. And, a third of the population is obese.

Next, let's look at how doctors treat metabolic syndrome.

## Treatment of Metabolic Syndrome

The best advice doctors can give is to avoid metabolic syndrome. To this end, [WebMD](#) advises you to:

- Exercise
- Eat a healthy diet
- Lose weight
- Quit smoking

Then, if this advice is not enough, you should take medicines to help you eliminate symptoms of metabolic disorder.

The traditional medical doctor is taught to identify symptoms that are not "normal" or healthy in the body. The idea is that the body is having difficulty keeping these symptoms under control, so it needs help in the form of drugs. Once a symptom is identified, the physician then prescribes one or more pharmaceutical drugs that have shown some effectiveness at reducing the symptoms.

Some types of the pharmaceutical drugs dealing with metabolic syndrome include:

### Symptom

### Pharmaceutical Drug

<b>High Blood Pressure</b>	Diuretics Calcium-channel blockers ACE inhibitors ARBs (angiotensin II receptor blockers)
<b>High triglycerides</b>	Statins like: Simvastatin (Zocor) Atorvastatin (Lipitor) Rosuvastatin (Crestor)
<b>Low HDL cholesterol</b>	Prescription niacin Fibrates such as gemfibrozil (Lopid) Statins like simvastatin (Zocor) and rosuvastatin (Crestor)
<b>Elevated fasting blood glucose levels</b>	Biguanides (Metformin) Sulfonylureas (Amaryl, Glucotrol, Glucotrol XL) Thiazolidinediones/Glitazones Meglitinides Gliptins Alpha-glucosidase inhibitors Sodium-Glucose Transporter-2 Inhibitors
<b>Central obesity</b>	Orlistat (Xenical) Lorcaserin (Belviq) Phentermine-topiramate (Qsymia) Naltrexone-bupropion (Contrave) Liraglutide (Saxenda)

While drugs can help control symptoms, they almost always have side-effects that are harmful. The doctor needs to determine if the patient will overall be better off with one drug or another.

On the other hand, most natural healing doctors believe that the body is quite capable of controlling the symptoms associated with metabolic syndrome. They typically believe that, for example, high triglycerides is **not** caused by a lack of Zocor or Lipitor. It is caused by a less than optimal lifestyle, including diet and exercise.

Next, let's look at some clinical studies that describe the natural causes and cures of metabolic syndrome.

## Natural Treatments of Metabolic Syndrome

Natural treatments of metabolic syndrome primarily involve managing the intake of carbohydrates (like sweet beverages, bread, pasta, rice, potatoes). There are two considerations in the management of carbohydrate intake.

1. **Limiting the amount** of carbohydrates consumed
2. Consuming selected carbohydrates with a **low glycemic index**

### Lower Carbohydrate Diet

An article in [The Journal of Nutrition](#) described two clinical trials which tested a low-fat meal plan against a low-carbohydrate meal plan. For half the trial period participants ate an amount of food that provided for their daily

caloric needs. For for the other half of the trial period the participants ate less food in what we normally think of as “dieting.”

The results of these trials showed that during the non-dieting portion of the trial, the participants on a lower-carbohydrate meal plan lost significantly more abdominal fat (11%) than those consuming a lower-fat meal plan. In the traditional “dieting” phase the participants on the lower-carbohydrate meal plan lost significantly more total fat than those on a lower-fat meal plan.

The authors concluded that “restriction of dietary carbohydrate (relative to restriction of dietary fat) resulted in favorable changes in body composition, fat distribution, and glucose metabolism that may reduce the risk of T2D [type 2 diabetes].”

Another study reported in the journal [Lipids](#) worked with 40 overweight subjects who had elevated levels of triglycerides and small-dense low-density lipoprotein (LDL) and low levels of high-density lipoprotein cholesterol (HDL). Half the group was put on a calorie restricted low-carbohydrate meal plan and half the group was put on a calorie restricted low fat meal plan. Both meal plans provided about 1500 calories per day.

After 12 weeks, the results indicated the effectiveness of the low carbohydrate meal plan.

- The total weight loss was nearly twice as great for those in the low carbohydrate group.
- The low carbohydrate group experienced a 12% reduction in fasting glucose levels while the low fat group saw almost no change.
- The low carbohydrate group had 3 times the fasting serum total ketones of the low fat group, indicating greater mobilization and utilization of fats.
- The low carbohydrate group had significantly better measures of fasting triglycerides and higher HDL cholesterol than the low fat group.

The results indicate that a limited carbohydrate diet significantly improves the overall symptoms of metabolic syndrome, more so than by a low fat diet.

The authors of this study conclude, “There are many options for treating obesity or the individual components of MetS [metabolic syndrome], but carbohydrate restriction has the ability to target the range of markers with a single intervention.”

## **Consuming Low Glycemic Index Carbohydrates**

The glycemic index is a measure of how fast the carbohydrates you consume are digested to sugar and enter your blood stream. A value of 100 represents consumption of pure glucose that does not need digestion. The measure of blood glucose is taken two hours after the consumption of carbohydrates. The higher the glycemic index of a food, the faster the carbohydrate is digested to form sugar that enters the blood stream. The lower the glycemic index of the food, the slower its sugars enter the blood stream.

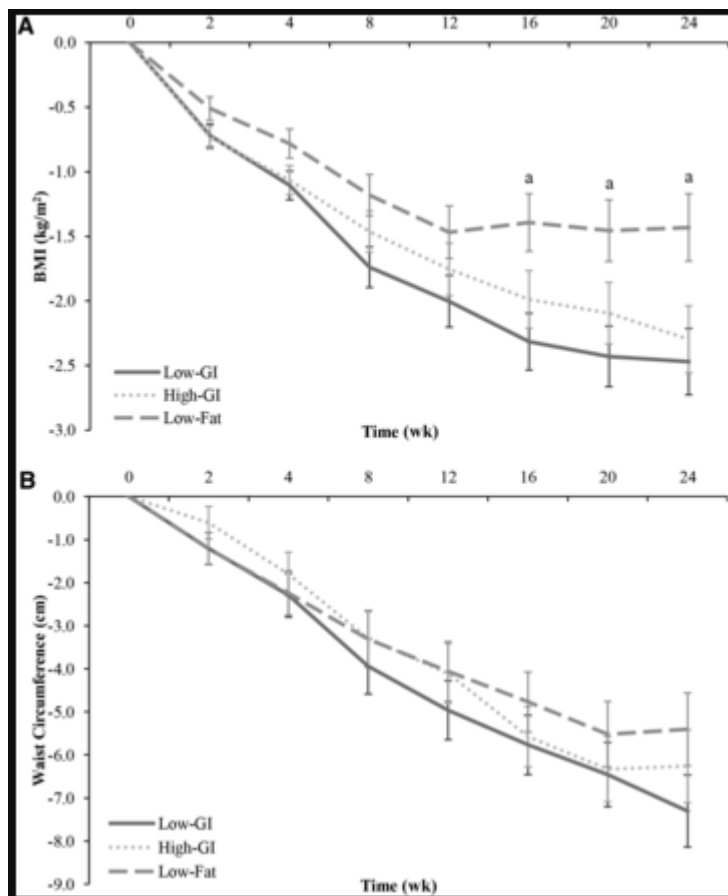
Low-glycemic index diets have been shown to benefit those with chronic conditions such as type 2 diabetes, ischemic heart disease, and some types of cancer.

[The American Journal of Clinical Nutrition](#) reports on a 6-mo randomized clinical trial that tried to determine effect of dietary glycemic index on a variety of metabolic risk markers.

The 122 participants were randomly assigned of the the following meal plans:

- Low glycemic index meal plans
- High glycemic index meal plans
- Low fat meal plans as specified by the American Heart Association

104 participants completed the study. The following graph shows that the low glycemic index meal plans produced the greatest reduction in waist measurements and the greatest reduction in BMI.



From [Effect of the glycemic index of the diet on weight loss, modulation of satiety, inflammation, and other metabolic risk factors: a randomized controlled trial](#)

In addition, the low glycemic food plan resulted in significantly improved insulin sensitivity than the low fat diet.

The authors conclude, “we showed that following a moderate-carbohydrate, LGI [low glycemic index] diet may be more effective for weight loss than a moderate-carbohydrate, HGI [high glycemic index] diet or a conventional LF [low fat] diet. Metabolic benefits observed for insulin resistance and sensitivity in subjects who were consuming an LGI diet and the tendency to improve other inflammatory and associated metabolic risk markers also indicated that LGI diets are better tools for managing obesity and its associated comorbidities.”

## Conclusions You Can Use Today

Metabolic syndrome is basically a lifestyle issue. Carbohydrates are a prime controlling factor for the symptoms of metabolic syndrome.

You can reduce and even eliminate these symptoms by reducing your overall carbohydrate intake and selecting carbohydrates with a lower glycemic index.

If you do not control your carbohydrate intake you should expect your health care costs to grow and your lifestyle choices to become more limited.

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## Is Drinking Diet Soda a Good Weight Loss Strategy?

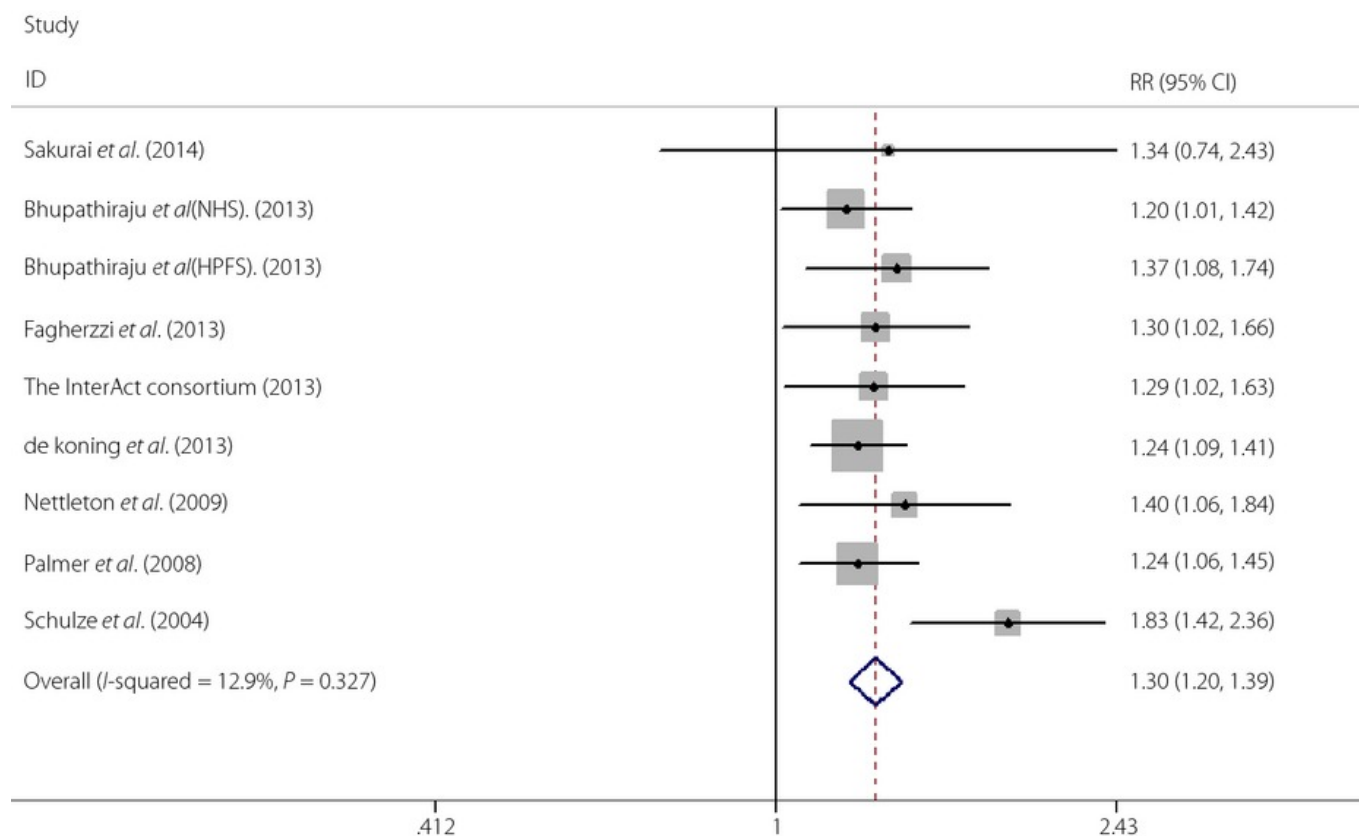
Non-nutritive sweeteners (like aspartame, saccharin, stevia, acesulfame K, rebaudioside A, neotame, and sucralose) are in common use in thousands of products, including diet sodas, yogurts and desserts . These artificial sweeteners provide the sweet taste without the high calories of traditional sweeteners like table sugar (sucrose), honey, fruit juice concentrates, or corn syrup.

The [American Diabetes Association](#) lists buying diet sodas as a **good way to lose weight**.



This seems like good advice because a study reported in the [Journal of Diabetes Investigation](#) reported research reporting that consumers of sugar sweetened beverages had an overall 30% greater risk of developing type 2 diabetes. This study pooled risk data from a number of other studies showing increased risks of type 2 diabetes in sugary beverage drinkers.

The risk from these studies vary slightly and are shown here:



Pooled Sugar Sweetened Beverage Data

## Diet Sodas May Not Be As Safe As You Think?

While most people thinking about diet soda focus on weight loss, other problems seem to be cropping up among frequent consumers of diet soda.

The American Heart Association cites [a new study](#) about artificially sweetened soft drinks indicating a hazard ratio of 2.96 for ischemic stroke and 2.89 for Alzheimer's disease for higher than average drinkers of diet soft drinks compared to those who did not consume diet soft drinks.

## Diet Soda May Advance Metabolic Syndrome and Type 2 Diabetes

And, a study reported in the journal [Diabetes Care](#) described a study of 6,814 adults between 45 and 84 years of age. The researchers wanted to investigate subclinical cardiovascular disease. They found that, compare to those who did not drink diet soda, those who drank diet soda on a daily basis increased their risk of metabolic syndrome by 36% and increased their risk of type 2 diabetes by 67%. Metabolic syndrome was evidenced by higher waist circumference and high fasting glucose.



Photo by [colros](#) 

Another study in the [European journal of Nutrition](#) examined both sugar sweetened beverages and diet sodas over 7 years to determine the risks for type 2 diabetes. As expected, more people developed type 2 diabetes who drank the most sugar sweetened beverages. And, for diet sodas, the relative risk of getting diabetes increased on 5% for those who drank less than 1 serving a week, but jumped to 70% for those who drank more than one serving a week.

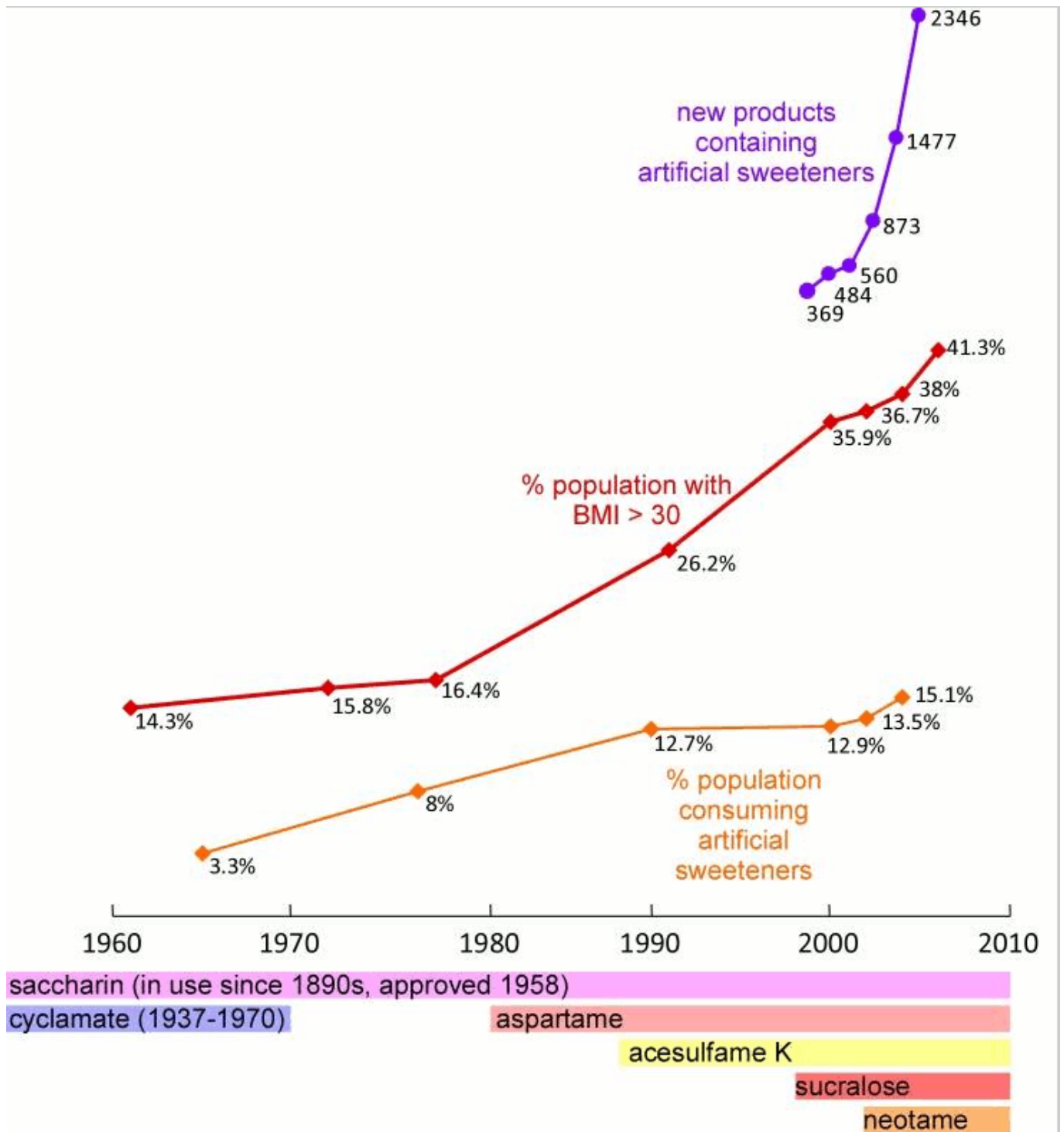
The authors of this study concluded that “Diet soda is not always effective at preventing type 2 diabetes even though it is a zero-calorie drink.”

## **Historic Effects of Non-Caloric Diet Sweeteners on Obesity**

Over a week in the Spring of 2017 it is estimated that [nearly 29 million people consumed at least one Diet Coke](#). Overall, about [20% of Americans consumed a diet drink on any given day](#).

But, artificial sweeteners are more widespread in our food supply than you might imagine. One would expect artificial sweeteners to help reduce our obesity statistics. But, as you can see, although artificial sweeteners have been added to thousands of products, our obesity rates (with a BMI of 30 or more) continue to rise.





Time line of artificial sweetener use and obesity trends in the United States from [Gain weight by going diet? Artificial sweeteners and the neurobiology of sugar cravings](#)

While cutting calories by using low calorie artificial sweeteners seems like good idea to lose weight, the data does not lend support to this concept.

## Why Artificial Sweeteners Are Not The Best Weight Loss Technique

Food should both provide nourishment and provide a satisfying sensory reward.



This sensory reward comes from our senses (like taste, touch and smell) as well as post-ingestive rewards. These post-ingestive rewards are moderated by the hypothalamus and help regulate energy, salt balance and the desire to eat.

While artificial sweeteners taste sweet and can stimulate the taste buds, they do not seem to produce the same level of post-ingestive rewards as actual glucose. This produces two results that promote weight gain:

1. **Eating Reward:** The lack of a complete reward when ingesting artificial sweeteners (as found in diet sodas) fails to fully satisfy and **further fuels the food seeking behavior** and results in consuming foods with high calorie sweeteners.
2. **Flavor Preferences:** In addition, consuming sweet foods or drinks (with natural or artificial sweeteners) simply trains the person to favor sweetness. And this sweetness is sought throughout the diet, including food items containing natural, high calorie sweeteners.

These could be major reasons that artificial sweeteners are not helping people control obesity and lose weight.

## Conclusion You Can Use

Your “natural” flavor preference for sweetness is not inherited. It is developed. It is a result of your being in the habit of repeatedly consuming sweet foods. This is how you think food should taste, so you prefer sweet tastes.

Substituting diet soda for traditional soda is not helping to change your flavor preferences or lose weight.

To reduce your long term sugar intake you must get used to foods that are unsweetened. Purchase more natural foods that do not have added sweeteners. Get used to the natural flavors of real foods.

This will help you cut back on unnecessary calories and help you maintain a healthy weight.