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Having to do with blood sugar?The glycemic response (or glycemic response) to a food or meal is the effect that food or meal has on blood sugar (glucose) levels after consumption.[1] It is normal for blood glucose and insulin levels to rise after eating and then return again to fasting levels over a short period of time. This is particularly so after consumption of meals rich in certain carbohydrates. Glycemic management refers to the selection of foods to manage your blood sugar levels.Several tools have been developed to help quantify and communicate the effect of food on glycemic response. These include glycemic index (GI), glycemic load (GL) and glycemic glucose equivalents (GGE). A comparative glycemic response can also be determined, which compares the impact on blood glucose of one food to another based upon their total carbohydrate or total quantity. In 1981, the idea of classifying carbohydrates according to their Glycemic Index was first published. Since then, many studies have been undertaken to determine the impact of altering the blood glucose-raising potential (glycemic challenge) of the diet on a wide range of short- and long-term health outcomes. However, evaluating the impact of a single dietary change on health is notoriously complex, and opinions on the relevance of GI, GL and GGE have been divided. There are many different ways of lowering glycemic response, GI or GL, not all of which have the same effects on health. ILSI Europe published a monograph in November 2011 titled "Food, Glycaemic Response and Health", which concluded that "it is becoming evident that modifying the glycemic response of the diet should not be seen as a stand-alone strategy but rather as an element of an overall balanced diet and lifestyle". A low glycemic food will release glucose more slowly and steadily, which leads to lower postprandial (after meal) blood glucose readings. A high glycemic food causes a more rapid rise in blood glucose levels after meals. High glycemic foods are ideal for energy recovery after exercise or for a person experiencing hypoglycemia.The glycemic effect of foods depends on a number of factors such as the type of starch (amylose versus amylopectin), physical entrapment of the starch molecules within the food, fat and protein content of the food and organic acids or their salts in the meal adding vinegar, for example, will lower the glycemic response. The presence of fat or soluble dietary fiber can slow the gastric emptying rate, thus lowering the glycemic response. In general, foods with higher amounts of fiber and/or resistant starch have a lower glycemic response. While adding fat or protein will lower the glycemic response to a meal, the relative differences remain. That is, with or without additions, there is still a higher blood glucose curve after a high glycemic white bread than after a low glycemic bread such as pumpernickel.Unrefined wild plant foods like those available to contemporary foragers typically exhibit low glycemic indices.[2]^ Sadler M. Food, Glycemic Response and Health. ILSI Europe Concise Monograph Series 2011.1-30. Available from ILSI Europe.^ Foster-Powell K, Holt SH, Brand-Miller J (1 July 2002). "International table of glycemic index and glycemic load values: 2002". The American Journal of Clinical Nutrition. 76 (1): 556. doi:10.1093/ajcn/76.1.5. PMID12081815.Retrieved from " glycemic index is a measure used to determine how much a food can affect your blood sugar levels. Several factors affect the glycemic index of a food, including the ripeness, nutrient composition, and cooking method.Share on PinterestNadine Greeff/StocksyThe glycemic index is a tool that's often used to promote better blood sugar management.Several factors influence the glycemic index of a food, including its nutrient composition, cooking method, ripeness, and the amount of processing it has undergone.The glycemic index can not only help increase your awareness of what you're putting on your plate but also enhance weight loss, decrease your blood sugar levels, and reduce your cholesterol.This article takes a closer look at the glycemic index, including what it is, how it can affect your health, and how to use it.The glycemic index (GI) is a value used to measure how much specific foods increase blood sugar levels.Foods are classified as low, medium, or high glycemic foods and ranked on a scale of 0/100.The lower the GI of a specific food, the less it may affect your blood sugar levels.Here are the three GI ratings:Low: 55 or lessMedium: 56-69High: 70 or aboveFoods high in refined carbs and sugar are digested more quickly and often have a high GI, while foods high in protein, fat, or fiber typically have a low GI. Foods that contain no carbs are not assigned a GI and include meat, fish, poultry, nuts, seeds, herbs, spices, and oils.Other factors that affect the GI of a food include the ripeness, cooking method, type of sugar it contains, and amount of processing it has undergone.Keep in mind that the glycemic load (GL) is different from the glycemic index (GI), which doesn't take into account the amount of food eaten, the GL factors in the number of carbs in a serving of a food to determine how it may affect blood sugar levels.For this reason, it's important to take both the glycemic index and glycemic load into consideration when selecting foods to help support healthy blood sugar levels.The low glycemic diet involves swapping out foods with a high GI for those with a lower GI.Following a low-glycemic diet may offer several health benefits, including:Improved blood sugar regulation. Many studies have found that following a low GI diet may reduce blood sugar levels and improve blood sugar management in people with type 2 diabetes.Increased weight loss. Some research shows that following a low GI diet may increase short-term weight loss. More studies are needed to determine how it affects long-term weight management.Could benefit people with fatty liver. A low-glycemic diet could help reduce liver fat and liver enzyme levels in people with non-alcoholic fatty liver disease.A healthy, low glycemic diet should comprise mostly low GI foods, such as:Fruits: apples, berries, oranges, lemons, limes, grapefruitNon-starchy vegetables: broccoli, cauliflower, carrots, spinach, tomatoesWhole grains: quinoa, barley, buckwheat, farro, oatsLegumes: lentils, black beans, chickpeas, kidney beansFoods without a GI value or with a very low GI can also be enjoyed as part of a balanced low glycemic diet. They include:Meat: beef, bison, lamb, porkSeafood: tuna, salmon, shrimp, mackerel, anchovies, sardinesPoultry: chicken, turkey, duck, gooseOils: olive oil, coconut oil, avocado oil, vegetable oilNuts: almonds, macadamia nuts, walnuts, pistachiosSeeds: chia seeds, sesame seeds, hemp seeds, flax seedsHerbs and spices: turmeric, black pepper, cumin, dill, basil, rosemary, cinnamonSome pastas: Semolina and whole grain pastaAlthough no foods are strictly off-limits on the diet, foods with a high GI should be limited.Foods with a high GI include:Bread: white bread, bagels, naan, pita breadRice: white rice, jasmine rice, arborio riceCereals: instant oats, breakfast cerealsStarchy vegetables: mashed potatoes, potatoes, french friesBaked goods: cake, doughnuts, cookies, croissants, muffinsSnacks: chocolate, crackers, microwave popcorn, chips, pretzelsSugar-sweetened beverages: soda, fruit juice, sports drinksIdeally, try to replace these foods with foods that have a lower GI whenever possible.Determining the GI of foods that you often eat can be useful if you're following a low glycemic diet.Here are the GI values for a few ingredients:Apples: 44Strawberries: 40Dates: 55Oranges: 45Banana: 62Mango: 60Blueberries: 53Pineapple: 66Watermelon: 50Carrots (boiled): 62Plantains (boiled): 66Sweet potatoes (steamed): 71Pumpkin (boiled): 75Potatoes (boiled): 87Barley: 28Quinoa: 50Rolled oats: 57Couscous: 70Popcorn: 70Brown rice: 79White rice: 70Whole wheat bread: 73White bread: 81Soybeans: 16Kidney beans: 26Chickpeas: 33Lentils: 37Soy milk: 41Skim milk: 37Whole milk: 41Ice cream: 62Rice milk: 79Fructose: 23Coconut sugar: 54Maple syrup: 54Honey: 59White sugar: 91For certain foods, the cooking method used can affect the glycemic index.For example, fried foods tend to contain a high amount of fat, which can slow the absorption of sugar in the bloodstream and decrease the GI.At the same time, it's important to note that even though frying foods may lower the GI, they are high in calories and unhealthy fats, depending on the fat used, and can negatively impact health. Baking and roasting use significantly less oil with healthier results.Meanwhile, roasting and baking can break down resistant starch a type of starch that resists digestion and is commonly found in foods like legumes, potatoes, and oats thus increasing the GI.Conversely, boiling is thought to help retain more of the resistant starch and lead to a lower GI, compared with other cooking methods.The longer you cook foods like pasta or rice, the greater the digestibility of their starch content, and thus the higher their GI. As such, it's best to only cook these foods until they reach an al dente texture, meaning that they're still firm when biting into them.In addition to the cooking method used, the degree of ripeness may also affect the GI of some fruits, including bananas. This is because the amount of resistant starch decreases during the ripening process, leading to a higher GI.The glycemic index, or GI, is a measure used to determine how much a food can affect your blood sugar levels.Several factors affect the glycemic index of a food, including the nutrient composition, ripeness, cooking method, and amount of processing it has undergone.Following a low glycemic diet may offer several health benefits, as it could help balance your blood sugar levels, reduce liver fat, and increase short-term weight loss.Healthline has strict sourcing guidelines and relies on peer-reviewed studies, academic research institutions, and medical journals and associations. We only use quality, credible sources to ensure content accuracy and integrity. You can learn more about how we ensure our content is accurate and current by reading our editorial policy.Adeaday BC, et al. (2018). Effect of cooking on glycemic index, antioxidant activities, amylase, and glucosidase inhibitory properties of two rice varieties. J. et al. (2021). Glycemic index and Glycemic load values. DF, et al. (2013). Resistant starch: Promise for improving human health. search. (n.d.). CA, et al. (2017). Glycemic responses, glycemic index, and glycemic load values of some street foods prepared from plantain (Musassp., AAB genome) in Cte d'Ivoire. S, et al. (2022). Culinary strategies to manage glycemic response in people with type 2 diabetes: A narrative review. A, et al. (2019). The effect of low glycemic index and glycemic load diets on hepatic fat mass, insulin resistance, and blood lipid panels in individuals with nonalcoholic fatty liver disease. D, et al. (2020). Glycemic index (GI) or Glycemic load (GL) and dietary interventions for optimizing postprandial hyperglycemia in patients with T2 diabetes: A review. MI, et al. (2019). Low glycaemic index diets as an intervention for obesity: a systematic review and meta-analysis. up, you were probably told to limit sweets. That meant not overdoing it onHalloween candy or having that extra bowl of sugarybreakfast cereal.While the adult-you might be tempted to throw caution to the wind and eat whatever you want, maintaining a healthy diet is more important than ever.One way of looking at a healthy diet is considering where foods fall on the glycemic index.The glycemic index is used to classify foods that containcarbohydrates, their potential for raisingblood sugar, and how quickly they raise your blood sugar, says registered dietitian Anthony DiMarino, RD. LDiMarino explains how the glycemic index can help you choose healthy foods.What is the glycemic index?The glycemic index measures how quickly foods that contain carbohydrates can increase your blood sugar. The scale is 0 to 100. Foods can fall into one of three categories:Lowglycemic index: 1 to 55Medium glycemic index: 56 to 69Highglycemic index: 70 and higherEssentially, the glycemic index shows that not everything that contains the exact same amount of grams of carbs will behave the same way in your body. You can measure how your body responds to a cup of orange juice versus how it reacts to other food items: a banana, 25 grams of candy or 25 grams ofwhole-grain bread.The reason for these differences comes from how carbs react in your body. Simple carbohydrates like, say, the sugars found inosadaand sweet desserts are broken down faster than the more complex carbohydrates found in some vegetables and whole-grain foods. As a result, your blood sugar spikes and then falls rapidly. Over time, healthcare providers believe these constant surges and retreats play a part in people becoming insulin resistant.Like any diet, the glycemic index chartWhen it comes to how to calculate glycemic index numbers, doctors have measured only certain foods or classes of foods (foods like meats, fats and oil dont contain carbs).To determine glycemic index numbers, they observe how healthy peoples blood sugar levels change after ingesting carb-containing foods. By measuring subsequentblood sugar levels and comparing them to a baseline they can determine where a food falls on a scale of 0 to 100, where 100 represents pure glucose and 0 is a food with no sugar at all.Use this glycemic index food chart as a starting point.Low glycemic index foodsFoods with a number that's 55 or less include:ApplesBananasBarleyBroccoliCarrotsCashewsChickpeasDark chocolateEggplantLemonsLettuceLimesMangoesOrangesPeanutsPearsPeppersPlain yogurtSkim milkStrawberriesTomatoesWhole milkMedium glycemic index foodsFoods that have a range of 56-69 on the glycemic index include:Brown riceCouscousPineapplePopcornPotato chipsSodaSweet potatoHigh glycemic index foodsFoods that have a glycemic index number of 70 or more include:CerealCheeseburgersCorn chipsDoughnutsFrench friesFried chickenMashed potatoesPizzaPretzelsSports drinksWhite breadThe University of Sydney has a useful glycemic index of foods database you can also search.Glycemic Index FINALDiMarino cautions that determining the glycemic index ratings for individual foods is an imperfect science. Factors like how food is processed or prepared play a role.For example, one study of instantoatmealshows that it had a glycemic index of 79, which is in the high range. Yet steel-cut rolled oats have a glycemic index of 55, which puts it in the low-glycemic index.Different versions of the same food may also vary due to ingredients. For example, yogurthat's marketed for kids is going to taste delicious because it has a lot of sugar or artificial sweeteners, like high fructose corn syrup versus plain Greek, regular-fat yogurt.They might have very similar amounts of carbs, but the glycemic index is very different because of the number of proteins and fats and the quality and quantity of the sugar that's in there, clarifies DiMarino.How much you eat of a certain carb-heavy food can also have an effect. For example, a small sip or two of soda won't have as big an impact on your body as a large portion of whole-grain rice even though the latter is generally perceived as healthier.As with many diets, DiMarino stresses that moderation is key, as is striking a balance between eating low and high glycemic index foods.Were all human, he empathizes. It's very difficult for most of us to try to eliminate any one kind of food if we like it. So, it's all about having portions that are reasonable and not going overboard. The glycemic index(GI) is a relative ranking of how different carbohydrates affect blood sugar. When you have type 2 diabetes, one of the best ways to control your glucose levels is to eat foods that don't cause major blood sugar (glucose) spikes. Knowing the glycemic index of the carbohydrates you eat can help you fine-tune your meals to keep your blood sugar within a normal range. Foods with a higher GI value are more likely to spike your blood sugar than foods with a lower GI. Illustration by Jules Garcia for Verywell Health The GI is a rating system that ranks carbohydrates on a scale of 1 to 100 based on how much they raise blood sugar. Processed foods such as candy, breads, cake, and cookies have a high GI, while whole foods such as unrefined grains, non-starchy vegetables, and fruits tend to have a lower GI. Carbohydrates with a low GI value are digested, absorbed, and metabolized more slowly than their high-GI counterparts. They typically cause a lower and slower rise in blood glucose and, subsequently, insulin levels as well. Foods that are primarily fat or protein are not included in the index because they have a minimal impact on blood sugar levels. The GI values can be broken down into three ranges. Food with a low GI is a food that won't raise your blood sugar as much as a food with a medium or high GI. Low GI: 55 or lessMedium GI: 56 to 69High GI: 70 to 100 The following charts highlight low, medium, and high GI foods. Low-GI Foods (55 or Less)FoodsGIApple36Apple juice41Banana51Barley28Carrots, boiled39Chapati52Chickpeas28Chocolate40Dates42Ice cream51Kidney beans24Lentils32Mango51Orange43Orange juice50Peaches, canned43Plantain55Rice noodles53Rolled oats55Skim milk37Soya beans16Soy milk34Spaghetti, white49Spaghetti, whole grain48Specialty grain breads53Strawberry jam49Sweet corn52Taro, boiled53Udon noodles55Vegetable soup48Whole milk39Yogurt, fruit41 Medium-GI Foods (56 to 69)FoodsGIBrown rice, boiled48Couscous65French fries63Millet, porridge67Muesli57Pineapple59Popcorn65Potato chips56Pumpkin, boiled64Soda, non-diet59Sweet potato, boiled63Wheat flake biscuits cereal69Wheat roti62 High-GI Foods (70 to 100)FoodsGICornflakes81Instant oatmeal79Potato, boiled78Potatoes, instant mashed87Rice milk86Rice porridge78Rice crackers87Unleavened wheat bread70Watermelon76White rice, boiled73White bread (wheat)75Whole wheat bread74 Glycemic index values were developed by a rigorous testing process using 10 or more people for each food. Researchers measured blood sugar levels of healthy volunteers before and two hours after eating 50 grams of the same digestible carbohydrate (the test food). The points were then plotted on a graph and researchers determined the area under the curve (AUC) of their glucose response. At a separate date, the same 10 people consumed 50 grams of pure glucose (the reference food), and researchers again measured each person's glucose response AUC two hours after consumption. The GI value of the test food is then calculated by dividing the glucose AUC for the test food by that of the reference food for each person. The final GI value is an average of those 10 numbers. Ultimately, the GI value is the average person's blood sugar response to a specific carbohydrate. Individual responses may vary based on other factors including other foods eaten in combination with the carbohydrate. Since it's the carbohydratein food that raise blood sugar, understanding GI can help you figure out which foods are best for glucose management. Among the benefits of following the GI list when planning your meals: It helps you to be more mindful of your carb choices without fully restricting or severely limiting your intake.If you aim for a low-GI diet, you'll naturally be focusing on whole grains, fruits, vegetables, and legumes, as opposed to the higher-GI end of the spectrum, which includes more processed foods.Depending on your health goals, following a GI-based diet might mean you'll be able to rely less on standard dieting measures, such as calorie counting or regimented portion control.Simply being more mindful of your carb choices rather than severely limiting them can also be more sustainable in the long run, as compared to more restrictive diets. Charday Penn / Getty Images Critics of the GI system note it has several flaws that can make it an unreliable measurement. GI looks strictly at the carb count. Basing a diet around GI only means you will be ignoring a lot of other helpful information to determine the true health value of a food. The GI index doesn't take into account: How much food is being eatenOther nutrients such as protein, fat, vitamins, minerals, and antioxidantsOther components of the meal, which can change the effect of blood sugar rise For example, eating an apple on its own may result in a different blood glucose response than if you ate it with some peanut butter. Protein and fat can delay carbohydrate metabolism and, therefore, result in a slower blood sugar rise.The glycemic index (GI) is a measure of how much the carbohydrates in a food affect blood sugar. Since foods like meat and butter don't contain carbohydrates, they are not included. To counteract some of the issues with glycemic index, researchers developed the glycemic load (GL) measurement. Unlike GI, GL accounts for the quantity of the food being eaten. The main difference between GI and GL is: Glycemic index is based on eating 50 grams of a specific foodGlycemic load is based on eating a standard serving size of a specific food Glycemic load is calculated by multiplying the GI value by the number of carbohydrates (in grams) per serving, then dividing that number by 100. For example, an apple has a GI of 40 and contains 15 grams of carbs. (40 x 15)/100 = 6, so the glycemic load of an apple is 6. In theory, foods with a low GI would also have a low GL, but that isn't always the case. Research from the International Carbohydrate Quality Consortium (ICQC) suggests that glycemic load is a more reliable indicator of how a particular carbohydrate affects blood sugar. Like GI values, GL values can also be broken down into three ranges: Low GL: 10 or lessMedium GL: 11 to 19High GL: 20 or more Some foods fall under the same category for both glycemic index and glycemic load. For example, apples and oranges are both low GI and low GL, while cornflakes and boiled potatoes have both high GI and high GL. But for other foods, the glycemic index and glycemic load are different. For example, bananas have a low GI but a medium GL and dates have a low GI and a high GL. A food that perhaps best highlights the difference between glycemic index and glycemic load is spaghetti. Both whole grain spaghetti and spaghetti made from white flour are considered low GI (48 and 49, respectively). However, whole wheat spaghetti has a medium GL (14) while regular, white flour spaghetti has a high GL (20). The following charts highlight low, medium, and high GI foods based on data from the Linus Pauling Institute at Oregon State University. Low-GL Foods (10 or less)FoodsGLApple6Carrots, boiled1Cashews2Kidney beans8Lentils, dried and boiled7Orange5Peanuts1Pear4Skim milk4Watermelon8White bread (wheat)10 Medium-GI Foods (11 to 19)FoodsGLBanana13Pearled barley, boiled11Puffed rice cake17Spaghetti, whole wheat14 High-GL Foods (20 or more)FoodsGLBrown rice 20Cornflakes20Dates25Potato, boiled25Spaghetti20White Rice35 The American Diabetes Association states that carbohydrate amount (grams of carbohydrates) and available insulin may be the most importantfactors influencing blood sugar response after eating and should beconsidered when developing an eating plan. The most reliable way to assess how your body is affected by certain foods is to test your blood sugar two hours after a meal or use a continuous glucose monitoring system. For most people, an ideal blood sugar result is less than 180mg/dL two hours after the start of a meal. If you are not sure of what your target blood sugar should be, discuss it with your physician. The glycemic index is a measure of how much carbohydrate-containing foods raise blood sugar. Research shows that eating a low glycemic diet can help you manage your blood sugar and weight. A low GI is considered 55 or less. Some good food choices low on the glycemic index include most vegetables and fruits, nuts, minimally processed grains, and pasta (both regular and whole grain).What is GI?GI scoresLow GI foodsHigh GI foodsSummaryThe glycemic index is a scale that ranks the number of carbohydrates in foods from zero to 100, indicating how quickly a food causes a persons blood sugar to rise.Foods high on the glycemic index (GI) can cause harmful blood sugar spikes in people with diabetes. High GI foods also make it more challenging for a person to maintain a healthy weight. This is why some people with diabetes use GI to plan their meals.A nutritious, balanced diet includes a wide range of foods, so a person is not limited to consuming just low GI foods. However, knowing where a specific food rests on the GI can help a person make healthful choices.In this article, learn more about GI, as well as about high and low GI foods.Share on PinterestA person can refer to a foods GI score to see how quickly it will raise their blood sugar.The GI provides information about how the body digests carbohydrates using a scoring system of zero to 100. Pure sugar has a score of 100.Nutrition experts used to classify carbohydrates as either complex or simple. For example, table sugar is a simple carbohydrate, while beans and grains are complex carbohydrates.While researchers once believed that complex carbohydrates were less likely to cause blood glucose spikes, further research found that the relationship between carbohydrates and blood glucose is more complex.GI accounts for this complexity by ranking foods according to how quickly they elevate blood sugar.To assess GI, researchers gave volunteers without diabetes a test food that contained 50 grams (g) of carbohydrates. On a different day, they gave participants a control food, such as white bread or sugar, that has the same amount of carbohydrates.They then compared blood sugar levels at regular intervals for both foods, which means GI is simply a way to compare the effect of various foods on blood glucose.The higher a foods GI is, the more rapidly it elevates blood glucose. A high GI food can cause blood sugar spikes, followed by rapid declines in blood sugar.As blood sugar declines, a person may feel hungry. Eating only high GI foods can cause a person to overeat since they will quickly feel hungry again after eating.Eating a diet with a low average GI may reduce a persons risk of developing diabetes and heart disease. In people who already have chronic conditions, a low GI diet may reduce the risk of complications and prevent blood glucose spikes.The GI scores are as follows:low GI foods: 55 or lessMedium GI foods: 56-69High GI foods: 70 or aboveThis does not mean that a person can only eat foods with a GI score of 45 or lower. Rather, a person should balance their intake of higher GI foods by eating foods with a lower GI.It is important to note that the GI of a specific food is an estimate. Several factors can affect the GI of a given food:Cooking tends to raise GI. The same type of pasta will have a lower GI if it is al dente than it will if a person cooks it to the point of softness.Processing typically raises GI. For example, fruit juice typically has a higher GI than whole fruit.Riper foods usually have a higher GI. The GI of a banana, for example, will get higher as the banana ripens.The foods a person eats together can affect GI. Fiber lowers the total GI of a meal.Share on PinterestFoods such as white rice, white bread, and white pasta typically have a high GI score.Foods with a higher GI include:heavily processed grains, such as white rice, white bread, and white pastapuffed riceinstant oatmealpopcornsaltine crackerspretzelsstarchy vegetables, such as potatoespumpkincorn flakesmelonspineapplebran flakesThe GI can help a person make healthful decisions about their overall diet and nutrition. People with diabetes, those trying to lose weight, and people at risk of heart disease can reap significant benefits from a low GI diet, though the benefits extend to everyone not just people with chronic illnesses.Eating a low GI diet does not have to mean avoiding all high GI foods. Instead, a persons goal should be to stay balanced over time, with a strong focus on fiber-rich foods with a low GI. A doctor or dietitian can help with planning a delicious and nourishing diet that features a wide variety of low GI foods.DiabetesType 1Type 2Nutrition / Diet Thanks for visiting. Don't miss your FREE gift. 25 Gut Health Hacks is yours absolutely FREE when you sign up to receive health information from Harvard Medical School. Sign up to get tips for living a healthy lifestyle, with ways to lessen digestion problemskeep inflammation under controllearn simple exercises to improve your balanceunderstand your options for cataract treatmentall delivered to your email box FREE.

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