

## Why do we get fat?

The usual answer is 'eating too many calories'. If that were true, then you lose weight by simply eating fewer calories. But here's the awful truth that you already knew. That doesn't work. It doesn't work for you, it doesn't work for me. It doesn't work for anybody. In one study, over a 10-year period, the probability of an overweight person maintaining a normal weight is only about 0.5%. In other words, standard dietary advice for weight loss has about a 99.5% failure rate. So, forget about calorie counting. It's useless.

In the 1940s, the average American ate an estimated 2500 to 3000 calories per day, yet there was virtually no obesity. 1600 calorie a day diets were called 'semi-starvation diets'. As late as the mid-1970s Americans were not counting calories, dieting or exercising, yet maintained their weight effortlessly. How? Part of the answer is that they did not snack and fasted every night. They were not eating constantly. But the other part of the answer lies in the foods they were eating and not just the calories.

Food contains potential chemical energy, called calories. But that's not the end of the story. Our body must decide what to do with those calories. There are two choices. We can either burn these calories for energy, or we can store it as body fat, which is nothing more or less than an efficient store of calories.

Think of your body as a coal burning power plant. You take a delivery of 100 tons of coal. What do you do with that coal? You could burn it all for energy. Or you can store it all in your warehouse. The same problem exists whether it's one ton or 100 tons of coal. It's not the amount of coal that is important, it's what is done with it – burn it or store it.

Our body is the same. What determines whether or not we gain fat is not the NUMBER of calories but what our body decides to do with those calories. Do we burn those calories or do we store them? That decision is made by hormonal response to the foods we eat and the most important hormone here is insulin. When insulin is high, our body wants to store calories. When insulin is low our body wants to burn those calories.

When we eat, insulin goes up and we store calories. When we don't eat, insulin goes down and we burn calories. That's why fasting is an effective way to lose weight. Insulin is a nutrient sensor – telling us that food is now available, so we should store that energy and stop burning our stores of food energy. Essentially, insulin is the signal to stop fat burning and go into

fat-storage mode. When insulin falls, the signal reverses. We stop storing the food energy (calories) because none are available and we start burning the fat.

But what about our diet? How does food influence insulin levels? The key is that not all foods raise insulin to the same degree. Practically, this means one very important point.

### **Some Food Are More Fattening Than Other Foods**

This is a truth that your grandmother knew. If you eat cookies all the time, you get fat. If you eat a salad with grilled salmon, you don't get fat. This is true even if the calories are the same for those two foods. 100 calories of salmon has a completely different insulin response than 100 calories of cookies and therefore their fattening effect is different.

### **Carbohydrates**

Carbohydrates are sugars, such as glucose or fructose. Starches, such as found in bread, potatoes and rice are made of many hundreds of glucose molecules linked together in a chemical structure called amylopectin or amylose.

Which foods are more fattening depends also on their effect on satiety. If you eat a piece of salmon, you will feel full. If you drink a large soda, for example, you will not feel full, even if the two are the same number of calories. This is controlled by satiety signals, which are hormones that tell us that we're full and to stop eating, and they are actually very, very powerful. If you've ever gone to an all you can eat buffet and tried to eat after being completely full, you'll understand that the extra piece of pork chop will make you quite nauseated, even though 15 minutes before that was the same pork chop you were happily eating. That's the effect of the satiety hormones.

To understand more, let's talk about the different macronutrients of our foods. All our foods are made from the same three basic building blocks called macronutrients. They are carbohydrates, protein and dietary fat and they all have different effects on insulin.

If you are building a house, you need both energy, like gas for the construction vehicles, and building materials like wood. Our body is the same, requiring both food energy (calories) and building blocks (proteins and fats). The primary role of carbohydrates is to provide energy (calories) rather than these building materials. Protein primarily provides building material rather than energy, and fat provides both energy and is also used building materials. To stay healthy, you must eat a certain amount of essential fats and essential amino acids, from dietary protein. There are no essential carbohydrates, because remember, carbohydrates only provide energy. We could eat zero carbohydrates and still live a normal healthy life.

Since carbohydrates are sugars, eating carbohydrates raises blood glucose significantly, which stimulates release of the hormone insulin for metabolism. Carbohydrates, especially the refined carbohydrates, stimulate the highest insulin release of all the macronutrients. Refining removes most of the fibre from carbohydrates, which is that part of the carbohydrate that is not digestible or absorbed by our body. Almost all natural sources of carbohydrate comes with plenty of fibre. They tend to be bulky and activate stretch receptors in the stomach. This stretching activates nerves that tell us to stop eating. That's the satiety signal. Refining of carbohydrates makes them easy to overeat because of the removal of fibre, proteins and fats, and when eaten, absorption is quicker causing higher spikes in glucose and insulin.

### **Protein**

Dietary protein is digested into its components called amino acids. We need amino acids primarily for cell growth and repair rather than energy. If we eat more protein than we need, the amino acids cannot be easily stored, so they are converted into glucose in the liver. From there, it may be used for energy or stored or converted into body fat.

Dietary protein does not raise blood glucose but does moderately stimulate insulin compared to carbohydrates. But excessive protein can be converted to sugar or fat by the liver. Dietary protein activates satiety by stimulating the hormone Peptide YY, which is the signal for us to stop eating.

### **Fat**

Dietary fats are both structural building blocks but also a good source of energy. Dietary fat is absorbed directly into the bloodstream and then stored in body fat cells called adipocytes. It does not increase your liver fat, and the effect on insulin is minimal. Dietary fat activates the satiety hormone cholecystinin. The effect of these satiety hormones means that it's difficult to overeat foods high in protein and fat, such as a steak, as those restaurants that offer you a free steak if you can eat 42 ounces well know. When we eat these foods, we tend to stay full for a long time.

So, how do we change our foods to maximize weight loss? Let's review the process.

1. How much body fat we carry is not primarily determined by the number of calories we eat. All of our bodily functions are controlled by hormones and the amount of body fat is no different. Insulin tells our body to store calories instead of burning them. Different types of foods have different insulin effects, so some foods are more fattening than other foods.
2. The more we eat of a certain food, the more insulin effect it will have. How much we eat is controlled by hunger, which is controlled by those satiety hormones and satiety

signals. Different foods activate satiety hormones in different ways. This means, again, that some foods are more likely to be overeaten than others, and are therefore more fattening.

3. Insulin tells you to store more body fat, so the solution to weight loss is to LOWER INSULIN. This is done in two ways. First, when we don't eat, insulin falls. Therefore, fasting is a great way to lose weight. But we can't fast all the time. Fasting and eating are complementary pieces, like two sides of a coin. There's a balance. The second way to lower insulin is to eat foods with a lower insulin effect and a higher satiating effect.