Most of the carbohydrates in the diet are starches. Starches are long chains of glucose that are found in grains, potatoes and various foods. BUT not all of the starch we eat gets digested. Sometimes a small part of it passes through the digestive tract unchanged. In other words, it is resistant to digestion.

This type of starch is called **resistant starch**, which functions kind of like soluble fiber. Many studies in humans show that resistant starch can have powerful health benefits.

This includes improved insulin sensitivity, lower blood sugar levels, reduced appetite and various benefits for digestion.

Resistant starch is actually a very popular topic these days. In the past few months, hundreds of people have experimented with it and seen major improvements by adding it to their diet.

There Are 4 Different Types of Resistant Starch

Not all resistant starches are the same. There are 4 different types.

Type 1 is found in grains, seeds and legumes and resists digestion because it is bound within the fibrous cell walls.
Type 2 is found in some starchy foods, including raw potatoes and green (unripe) bananas.
Type 3 is formed when certain starchy foods, including potatoes and rice, are cooked and then cooled. The cooling turns some of the digestible starches into resistant starches via a process called retrogradation.
Type 4 is man-made and formed via a chemical process.
The classification is not that simple, though, as several different types of resistant starch can co-exist in the same food.

Depending on how foods are prepared, the amount of resistant starch changes. For example, allowing a banana to ripen (turn yellow) will degrade the resistant starches and turn them into

regular starches.

How Does it Work? What is The Mechanism?

The main reason why resistant starch works, is that it functions like soluble, fermentable fiber. It goes through the stomach and small intestine undigested, eventually reaching the colon where it feeds the friendly bacteria in the gut.

The bacteria in the intestine (the gut flora) outnumber the body's cells 10 to 1. In that respect, we are only 10% human. Whereas most foods we eat feed only 10% of our cells, fermentable fibers and resistant starches feed the other 90%.

There are actually hundreds of different species of bacteria in the intestine. In the past few decades, scientists have discovered that the number and type of bacteria can have a profound impact on health.

Resistant starch feeds the friendly bacteria in the intestine, having a positive effect on the type of bacteria as well as the number of them. When the bacteria digest resistant starches, they form several compounds, including gases and short-chain fatty acids, most notably a fatty acid called butyrate.

Bottom Line: One of the main reasons why resistant starch improves health, is that it feeds the friendly bacteria in the intestine and increases production of short-chain fatty acids like butyrate.
Resistant Starch is a Superfood For The Digestive System

So… when we eat resistant starch, it ends up in the large intestine, where the bacteria digest it and turn it into short-chain fatty acids. The most important of these short-chain fatty acids is butyrate. Butyrate is actually the preferred fuel of the cells that line the colon.

Therefore, resistant starch both feeds the friendly bacteria and indirectly feeds the cells in the colon by increasing the amount of butyrate.

Resistant starch has several beneficial effects on the colon

It reduces the pH level, potently reduces inflammation and leads to several beneficial changes that should lower the risk of colorectal cancer, which is the 4th most common cause of cancer death worldwide.

The short-chain fatty acids that aren't used by the cells in the colon travel to the bloodstream, liver and to the rest of the body, where they may lead to various beneficial effects.

Because of its therapeutic effects on the colon, resistant starch may be useful for various digestive disorders. This includes inflammatory bowel diseases like Ulcerative Colitis and Crohn's Disease, constipation, diverticulitis and diarrhoea. However, this needs to be studied properly in human controlled trials before any recommendations can be made.

In animal studies, resistant starch has also been shown to increase the absorption of minerals.

Resistant Starch Enhances Insulin Sensitivity, Lowers Blood Sugar Levels and Improves Metabolic Health

Resistant starch has various benefits for metabolic health

Several studies show that it can improve insulin sensitivity, as in how well the body's cells respond to insulin. Resistant starch is also very effective at lowering blood sugar levels after meals. It also has a "second meal effect" – meaning that if you eat resistant starch with breakfast, it will also lower the blood sugar spike at lunch.

The effect on glucose and insulin metabolism is very impressive. Some studies have found a 33-50% improvement in insulin sensitivity after 4 weeks of consuming 15-30 grams per day.

The importance of insulin sensitivity cannot be stressed enough! Having low insulin sensitivity (insulin resistance) is believed to be a major causal factor in some of the world's most serious diseases, including metabolic syndrome, type 2 diabetes, obesity, cardiovascular disease and Alzheimer's Disease.

By improving insulin sensitivity and lowering blood sugar, resistant starch may help you avoid chronic disease and may make you live both longer and better. However, not all studies agree that resistant starch has these beneficial effects. It may depend on the individual, the dose and the type of resistant starch used.

Bottom Line: Many studies show that resistant starch improves insulin sensitivity and lowers blood sugar levels, especially after meals.

Resistant Starches May Help You Lose Weight by Improving Satiety

Resistant starch has fewer calories than regular starch (2 vs 4 calories per gram). So… the more resistant starches found in a food, the fewer calories it will contain.

Several studies show that soluble fiber supplements can contribute to weight loss, primarily by increasing feelings of fullness and reducing appetite. It appears that resistant starch has the same effect. Adding resistant starch to meals increases feelings of fullness and makes people eat fewer calories.

How to Add Resistant Starches to Your Diet

There are two ways to add resistant starches to your diet… either get them from foods, or supplement with them.

Several commonly consumed foods are high in resistant starch.

This includes raw potatoes, cooked and then cooled potatoes, green bananas, various legumes, cashews and raw oats.

As you can see, these are all high-carb foods, so they are out of the question if you are currently on a very low-carb diet (although you can fit some in if you're on a low-carb diet with carbs in the 50-150 gram range – which is also low-carb).

That being said, you can add resistant starch to your diet without adding any digestible carbohydrates.

Raw potato starch contains about 8 grams of resistant starch per tablespoon and almost no usable carbohydrate. It tastes kind of bland and you can add it to your diet in various ways, by sprinkling it on your food, mixing it in water, putting it in smoothies, etc.

Four tablespoons of raw potato starch should provide 32 grams of resistant starch. It is important to start slowly and work your way up, because too much, too soon can cause flatulence and discomfort.

There's no point in taking much more than that, because when you reach 50-60 grams per day, the excess seems to just pass through.

It may take time (2-4 weeks) for the production of short-chain fatty acids to increase and to notice all the benefits, so be patient.

Should You Try it?

If you’re currently trying to break a weight loss plateau, have high blood sugars, digestive problems… or if you’re simply in the mood for some self-experimentation, then trying out resistant starch seems like a good idea.

There are also some commercially produced RS's that can be used to provide energy during endurance events instead of the high sugar/starch combinations that are traditionally used. The benefit of course is that they do not spike your blood sugar and insulin levels thus preventing the post sugar 'crash' that is typical of the sugary counterparts.