

>> Okay, so we just talking about soluble and insoluble fiber. Here's an example over here, here's an apple. And on the outer part, the skin has your insoluble fiber, the chewy part. And then inside is going to be the soluble fiber. So that's why apples are so healthy for you. Help lower cholesterol and colon cancer. Here's a whole grain. Again, you can see this outer layer, very chewy and that's the insoluble fiber. Helps lower colon cancer risks. Your book goes through and summarizes again the insoluble versus the soluble. The different names you'll see on maybe food packages. What it does in your body and the major food sources. So, soluble fiber, again, citrus fruits, oatmeal, beans, but also apples have it, apples have both types. So you can look at that chart in your book and you can see which foods have which type of fiber. So, fiber basically adds some bulk to your stool. It attracts water, which is why it helps with preventing constipation. A lot of Americans don't get enough fiber in their diet and it causes constipation, which then from the straining can cause hemorrhoids. And then some people get diverticulitis. Now, diverticulitis you might know somebody who has that. It's a very serious condition. This is an inflammation in the colon, in the large intestine. It happens in people that have low fiber diets, that have a history of constipation and basically your constipated, you have a lot of buildup of stool in your colon and it starts weakening the intestine walls and creates these pockets where bacteria can form and create an inflammation and an infection. Some people ends up into an emergency situation. So it's real important to have fiber in your diet to prevent all of that. Fiber also slows down stomach emptying. It helps, therefore, with satiety, which is keeping you full longer. That's good for dieting. You should know how much fiber you should get. The RDA is about 25 grams a day for women and 38 for men. How do you know how much you're getting? You know, look at your labels. When you guys do your nutritional program, that's that software program that analyzes your diet, it will also give you an idea of how much you're getting. Now, fiber is also good at slowing down the absorption of glucose into your bloodstream. So after you eat a meal, if you have fiber in that meal it will slow digestion, slow the release of the sugar and that can keep your blood sugar within normal ranges. If you are diabetic, you definitely want to do that. Even if you're not diabetic, you want to prevent from getting diabetes, it's important to have fibers in your meal. Okay, excuse me. So these are different foods that have a lot of fiber. Flax seeds, of course, lots of fiber. You can either just take them by the handful and chew them. Some people grind them up, some people add them to smoothies. Great source of fiber. Chia seeds also. And hempseeds, these are hempseeds, also great sources of fiber. And all of these also have a lot of omega 3 fats, which are the healthy fats. Now, again, you need to know what glycogen is. Glycogen is the storage form of glucose. This is how we store sugar in our body. Again, it's made up of hundreds of sugar units and we have glycogen in both the muscle and liver cells. So muscle glycogen, liver glycogen. And that glycogen breaks down to glucose when your body needs it. So the muscle glycogen feeds your muscle cells glucose, the liver glycogen will breakdown to glucose and bring it back into the blood to bring up your sugar levels. Now, let's talk about sweeteners. There's a lot of different types. The nutritive sweeteners have calories. You read a label

it might see it's got added glucose, fructose, sucrose, lactose. It might say high fructose corn syrup, that's, of course, a very common sweetener. These are all – they all have calories. Stevia is more natural. I would say you want to avoid, definitely, the high fructose corn syrup, because that raises the sugar levels the most. Then there's the alternative sweeteners or artificial sweeteners. These have no calories, but they're very unhealthy for us. So you have Equal, Sweet'n Low, Splenda, NutraSweet, Aspartame, Aculsafame-K, sucralose. Most of us you read a food label, you don't know what it is, you don't think it's harmful, many doctors are still having diabetics and other people drink diet sodas or eat diet candy, but actually research shows that these artificial sweeteners also raise your sugar levels and also increase your risk for diabetes. That is the latest research, because they're very very sweet and it tricks the brain thinking that you just took in a lot of sweetness, so it spits out more insulin that also increases your hunger. And you want more. Because when we eat sugar, we want more sugar. So, even though it's not technically sugar, it's a – it's a sweetener and it's more sweet than regular sugar. Also these artificial sweeteners many of these have been linked to cancers, leukemia, brain tumors. They're chemicals, they're not anything from nature. So, I would stay away from it as best as possible. Look at your chewing gum. Chewing gum always has Aculsafame-K. A lot of times also sucralose and Aspartame. It's in things that you would never believe. Whey protein power, a lot of students bringing me their whey protein powder to see if it's any good, their creatine powder and other things and they almost always have these artificial sweeteners. So I would stay away from it. Sugar alcohols, sorbitol, mannitol, xylitol, these also marketed for diabetics, like sugar free candy. These are not as bad, of course, for you, however, they do – because they don't digest, they stay whole in your colon and in some people cause intestinal issues. Okay, here from your book you can see the sweetness level. Here's lactose in dairy, it's not even a one. It's a .2. Here's sucrose, table sugar, it's just a one, okay. Fructose is slightly sweeter. The sugar alcohol's not as sweet. Now let's get into Aspartame or Equal, it is a 180 times sweeter than table sugar. A 180 times, and again they put in your gum and drinks and teas and whatnot. Aculsafame-K, which is in most chewing gum, not just sugarless gum, but all gum, and gelatin and other items, 200 times sweeter than regular table sugar. Sweet'n Low 300 times. And sucralose. Sucralose or Splenda, 600 times sweeter. This is why it's so bad for us, because again, your brain thinks all this sweet cane and spills out all this insulin, which then is going to create major problems in your body. I cannot stress this enough to stay away from this. Google it, you know, do the research for yourself. And see, of course, there's going to be people promoting it and people not, you got to see what's behind their thought process. okay, sugarless gum, of course, has so much junk in it. here's all this, I mean, really Stevia is fine at this point, it's from a plant. But this other stuff, Sweet'n Low, Equal, Splenda I would again avoid it. found this, too many people counting calories, not enough people counting chemicals. Look at the colors on that. This is why, again, we are such a sick nation. Our rates of disease are just going up by the year. Okay, let's talk about how we digest carbs. You eat something that is made up of a carbohydrate and the

digestion starts in the mouth. And what that means is, there's an enzyme in your mouth called salivary amylase, please not that. And it helps break down the polysaccharides into smaller sugar units. Remember, a polysaccharide can be hundreds of glucose units. So you chew a piece of bread, for instance, the salivary amylase helps break that down from groups of a hundred, let's say glucose units to groups of 20. And then it goes into the stomach, there's more enzymes there and it further breaks it down into smaller groups. The stomach kind of makes a smoothie out of the carbs, as we talked about in chapter 3. It churns it around and mixes it. basically mixes it with a lot of the enzymes to further break it down the food into smaller pieces. Because that's going to go to the small intestine, where we finish digestion and absorb the nutrients. So, the food particles have to be pretty small. If they're not small enough they didn't get digested enough, it's going to go to the large intestine and you're basically going to excrete it. so, the small intestine gets pancreatic amylase, that is amylase any carb digesting enzyme. And this one particularly comes from the pancreas. And it breaks down these disaccharides into now monosaccharides. Okay, so that's the process. We start with a polysaccharide, goes to a disaccharide, eventually to a monosaccharide. It must be a single sugar unit, or a monosaccharide to be absorbed through the small intestinal wall. So, you don't need to know this, but for instance, sucrase is an enzyme, most enzymes end in A-S-E. Sucrase breaks apart sucrose into component monosaccharides. Lactase breaks apart lactose. Again, if you are lactose intolerant, you are missing that lactase enzyme and you cannot break this too sugar unit apart and it cannot get absorbed in the small intestine and, therefore, it goes into the colon where there's bacteria which is now going to create gas and bloating and all kinds of things. Okay, so by the end of digestion you have these monosaccharides or single sugar units. That's what gets absorbed through the small intestine. And then it gets into the blood stream. Okay, so the fructose, the glucose goes to the portal vein, which then takes it to the liver. If you remember from chapter 3. The liver's going to filter everything. it will also transform fructose into glucose. But, again, everything must get filtered in the liver. Here, from your book, this is why I love the book. Great picture. You eat a piece of bread, the salivary amylase helps break it down, goes down to the esophagus into the stomach. In the stomach you've got more amylase, which is going to break it down to further smaller glucose units. And then it goes into the small intestine, which is then going to go to the liver to be filtered and then it goes to the whole blood stream in your body to provide glucose for energy. Now, if you did not break something down in the small intestine, then it's going to go out into the large intestine and out the body. So, the pictures really help explain all this. So, the glucose, like I said, once it goes to the liver, now what? Well, glucose we need for the body. So, it's either going to be brought into the blood stream where the brain's going to use it, your muscles, your kidneys, every organ, every tissue in your body needs sugar, needs glucose, your heart. It needs it, remember, it's the main source of energy. Once all those organs and cells have enough sugar, then some of it, if there's excess, is going to be converted into glycogen. And, remember, we store glycogen in both the liver and muscles. So, depending on how much carbs you

had, you're either going to have enough for your cells or if you had a big carb meal, you're going to store some of that. And if you really had a lot of carbs and it's more than your cells need, more than you can store, then it's going to be stored as fat. And nowadays the low carb diets really are what the researchers are pointing to as the most effective. We'll get into that in later chapters. Again, liver and muscles store glycogen, you don't need to know this for the quiz, but you can see that your liver stores about a 100 grams, your muscles store about 350 grams. Your blood stream only has about 30 grams. You don't want too much in your blood. And, again, your muscle glycogen breaks down to glucose for your muscle cells to work and the liver glycogen breaks down into glucose that then delivers it to the blood stream. Why do we need glucose? Again, it is the main source of fuel for your body, red blood cells, your brain, your central nervous system, all your nerves, only get energy from glucose. So, if you skip a meal, you skip breakfast, your red blood cells, your brain, your nerves, they are going to have to steal sugar from someplace else and we'll get into that. Your muscle cells also use sugar, but can also get energy from fat. Too much carbs, as we talked about, will be stored as fat cells. But too little your body, like I said, can break down some of that glycogen to glucose, but once that glycogen store is completed, nor your body has to steal glucose from somewhere else, because your brain must have glucose. Okay? So, we'll continue that story in part 3.