

# Chapter II

**If You Change**

**Nothing Else**

## **Vegetable Timing is Our Parachute**

For the average person there is one change you can make to your nutrition that has a greater impact than any other: more vegetables. Most people think such advice stems from vegetables being high in nutrients, meaning they are healthy in and of themselves. Others think that vegetables fill you up so that you eat less of other things, cutting calories. While both true, these benefits are not enough for most people in Western society to lose weight and reverse metabolic disease risks. But vegetables do have another quality that can and does make the difference. They make the rest of a meal more available to lean tissue by slowing down the digestion rate of everything else you eat them with, particularly carbohydrate since carbs are the fastest-digesting component of most modern meals. The reason for slower digestion is likely slower stomach emptying stimulated hormonally or mechanically by the vegetables. To the extent that the effect is mechanical, vegetables mixing with carbohydrate in the stomach would slow down how fast those carbs empty from the stomach because the carbs cannot be separated out from the chunkier vegetable pieces. Coarser veggies would then have a greater effect.

## **Insulin & the Flow Model as it Applies to the Veggie Parachute**

To understand the recent research, a quick note on how metabolic rate increases quality of life by reviewing the function of insulin and the “flow model.” The studies were done with people suffering from type-2 diabetes, a condition that dramatically lowers metabolic rate (the number of calories burned throughout the day). In this condition, the body does not respond well to insulin, the hormone that tells all the cells in your body it is time for them to absorb the calories. When your body does not respond well to insulin, the calories go more to body fat. If the calories we eat go to body fat, they are converted into fat, stored as fat, and later burned as fat. Fat burns slower than the original nutrients, which is great for endurance, but not for metabolic rate. So we end up experiencing less mental and physical energy as we send our calories to fat cells instead of our brain, muscle, and other lean tissues. The simple act of slowing down the digestion rate of our meals allows calories to enter the bloodstream slower, giving our lean tissues more time to absorb and use those calories. When our lean tissues absorb and use more calories, we are burning more calories, and our metabolic rate is higher. With our brain and body more empowered, we think and move with more energy. All this at the expense of fat cells, since they get less, and we get leaner, as lean tissues get more. This principle implies that body-fat reduction can occur while feeling better, with more energy, instead lowering energy as is typical with dieting. Protein and dietary fats also slow digestion to provide these benefits, but not to the extent of vegetables, particularly on a calorie or nutrient basis. Trying out different

methods of eating or dieting may provide large initial benefits, even just from simply from thinking about how you are eating, but much of the gains end up being temporary. Vegetables, on the other hand, have a large and sustainable health and weight loss impact when timed properly.

## **Vegetables Eaten Before Carbs Cut the Digestion Rate**

The research showing this slowing effect of vegetables has only come out in the last few years. First, in 2011, it was shown that eating vegetables before carbs leads to dramatically better metabolism (insulin sensitivity) in type 2 diabetics at 6, 12, 18 and 24 months (both the short and long term) compared to comprehensive healthy eating (a food exchange system, the standard of care for diabetics) [1]. This is not saying that the combination of vegetables with junk food is better than over-all healthy eating. Instead, it's saying if you change only one thing in your eating, change the one thing that has the greatest effect. Trying to change more things has the potential for even greater benefits, but that might become overwhelming, or reduce your focus on the most important things, therefore leading to *less* benefit. Change is generally easiest if it is done one step at a time, and if only one correct step is actually ever *needed* for the effect you're after, even better.

## **Green Vegetables (Since Salad is Raw?) Are Best**

In 2012 it was shown that it takes about 200 grams of vegetables (half a pound) to significantly raise metabolic rate in diabetics [2]. If the vegetables were green, it only took 70 grams and there was also a drop in body weight, body fat, and waist circumference. We tend to cook green vegetables less than those of other colors (think salad). Cooked vegetables are softer, so they would not slow stomach emptying and therefore digestion as much, so the impact of cooked vegetables on raising metabolic rate would be less. In 2013 it was shown that having the vegetables 10 min before carbs resulted in dramatically slower meal digestion than when the vegetables were eaten 10 min after the carb [3]. This means having a lot of vegetables won't help you slow digestion much if you have already digested most of your meal before you eat them. It is shocking that the blood glucose and insulin rise is at least 1/3 higher when vegetables are eaten just ten minutes too late. This goes to show you how unhealthy carbohydrates have become in our toxic food environment in which everything is processed, digesting much faster than natural food (and with fewer nutrients). Fortunately, we have vegetables to save us from this mess without giving up our processed favorites. But the timing is critical: If the vegetables are not in your stomach until later they cannot help you.

## Eating Veggies WITH Your Meal

Presumably, eating vegetables together *with* the rest of your meal would be as helpful as eating them ten minutes *before* the meal, since either way the vegetables are in your stomach with the rest of the food. But this has not yet been tested. If the effect is mainly hormonal, ten minutes before would be better, but if mechanical, then vegetables at the same time would be just as good. I personally choose to eat my vegetables together *with* my meals because it is easier to eat more vegetables when you eat them with a tasty food at the same time. Spinach tastes like pizza when you eat it with pizza. Kale tastes like a burger when you eat it with a burger.

## Redefining Your Health Immediately

Before all of these studies, in 2010, it was shown that the blood sugar excursion, meaning the rate that a meal digests and therefore how quickly blood sugar rises, is twice as good an indicator of cardiovascular mortality for diabetics than the standard measure used to determine whether or not they are diabetic to begin with (fasting blood sugar levels) [4]. This is profound, indicating you can be diabetic, on medication for it, but cut your cardiovascular morbidity risk in half by slowing the digestion rate of your meals. It was subsequently shown [1] that vegetables could cut your meds with better metabolic benefits than others going up in meds while trying to eat healthy. Although adding a lot of vegetables to your diet might be challenging for a variety of reasons, it can be comforting to know that you can keep eating all of the other things you love while making physiological and medical headway without going on a diet. In fact, this research indicates the effects are stronger than if you *had* gone on a diet, probably because of the sustainability of eating things we like. No deprivation, no place you can't go to eat, no dish you can't order, and eating to the point of fullness. No restrictions. Instead, there is a focus on vegetables, in large amounts, right before or with any carbs that you are eating. If you want to turn the corner with your health using nutrition, this one change might be the only thing providing enough benefits to not have to change anything else.

## Effective Includes Sustainability, Meaning Enjoyment

Changing what you love to do is hard, and in the long term practically impossible or at the very least uncomfortable or even miserable. Adding something to your life that you don't particularly love (like vegetables) *to* something you love (like pizza) is easier than getting rid of what you love. We make such compromises all the time, like wearing a helmet to protect us while riding a motorcycle, a seatbelt while driving, or a parachute when skydiving. Use vegetables just like a parachute to slow the carbs so that you can get healthier without any other changes. No other food is as powerful in terms of both slowing capacity and in allowing us freedom with the rest of our eating.

## Not Just Fewer Calories, Not Just More Nutrients

You might say vegetables are so filling that this is just a trick to eat fewer calories, but the blood sugar response to meals in the studies use the same amount of carbs for everyone. Without changing the amount of carbs consumed, vegetables dramatically impact blood sugar, the insulin response, weight loss, and morbidity. If you end up eating fewer calories due to fullness from vegetables, that is an entirely different side benefit in addition to the slowing effect. The anti-oxidants protect the mitochondria where our cells burn fats, increasing metabolic rate, which also adds to the effect. In the end all these things come together to pack a wallop nothing else can nutritionally provide. But anti-oxidants would not require any particular timing of when you eat the vegetables, and fullness could be achieved with vegetables consumed at the end of a meal. Only the digestion slowing effect (mechanically and hormonally driven) requires that vegetables be eaten right before or at least together with the rest of your meal, not after or at some other time. See the best presentation of this data in a review of the topic [5]. Vegetable timing is our parachute.

### References

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2. "Effects of total and green vegetable intakes on glycated hemoglobin A1c and triglycerides in elderly patients with type 2 diabetes mellitus" by K Takahashi et al., *Geriatr Gerontol* 12 **2012** 50
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4. "Postchallenge Glucose, A1C, and Fasting Glucose as Predictors of Type 2 Diabetes and Cardiovascular Disease" by H Cederberg et al., *Diabetes Care* 33 **2010** 2077
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