

# Hormones & Neurotransmitters

HOW DO YOU FEEL today? Seriously, how do you really feel on various scores like this:

- Does your mood and energy level swing up and down?
- Do you crave sugar or salt?
- Are you overweight and putting on more and more belly fat?
- If you are a woman do you have premenstrual syndrome, painful or heavy periods and low sex drive?
- Are you depressed?
- Do you sleep poorly?
- Do you feel tired but wired?
- Do you have to live on coffee in the morning and a few glasses of wine at night just to wake up and calm down every day?

If you do, you are not alone. In fact this is how most Americans feel because we are living out of harmony with our natural biological rhythms. The reason is this: two kinds of small molecules in our body, which we depend on to keep us in balance, are running haywire.

They are hormones (messenger molecules of our endocrine systems) and neurotransmitters (messenger molecules of our brains and nervous systems). Both are involved in almost every function of the body in one way or another, and both are critical to our well-being. Understand how, and why, these systems get out of balance and you will go a long way toward understanding why Americans run around tired, depressed, and overweight!

First let me review how they work and why so many of you may feel miserable.

*It is not a genetic defect or a mistake by God.*

*We have strayed from eating in harmony with*

*our genes. In other words, we do not fit into our  
genes.*

All of our hormones and brain messenger chemicals work together in a symphony. The command center for our endocrine glands is in our brain – the hypothalamus and pituitary glands – and they send signals to distant parts of the body to control everything from our stress response through our adrenal glands to our blood sugar balance through our pancreas to our thyroid hormone via our thyroid gland to our sexual behavior and function through our reproductive organs. They also control growth, sleep, mood and much more. They must work together harmoniously to keep everything in balance.

The brain chemicals or neurotransmitters send messages throughout the body to every cell, organ and tissue helping you do everything from move your arm to feel happy or sad.

Then there are the three big epidemics of hormonal problems in American today: too much insulin (from sugar), too much cortisol and adrenalin (from stress), and not enough thyroid. While I will cover all of these, right now I want to focus on the biggest one, too much insulin.

### **Insulin resistance**

Let me tell you about a man who came to me. His story may be all too familiar to you but it has a happy ending and yours can too. James was a 46-year old Wall Street executive who came to me for a cardiac stress test. He was a hard driving, don't-look-up type of guy who was convinced that he was dying of heart disease. Every day, sometime in the late afternoon, he would experience the sudden onset of sweating, a racing heart, anxiety, shortness of breath; in other words, he thought he was going to die!

He was thick around the middle and after listening to his story and taking one look at him, I said, "You don't eat breakfast do you?"

“And you feel tired after eating, which is why you skip food during the day – to keep sharp for work, and when you feel like that you go for the vending machine or a soda and get a quick sugar fix and in a few minutes you feel better.”

Shocked, he said, “How did you know?”

I explained to him that he was fighting with his genes and was insulin resistant, leading to wide swings in blood sugar. Low blood sugar (hypoglycemia) was responsible for his symptoms. In other words, his hormones were severely out of balance. He couldn't control his metabolism of carbohydrates because of too much insulin so his blood sugar was out of balance, leading to all his symptoms and taking him down the slippery road toward high blood pressure, heart disease, obesity, cancer, brain aging, dementia and more. He is not alone.

Eighty-million Americans suffer from this condition we call insulin resistance. It affects many varieties of people and is not exactly the same in everyone, but the ultimate consequences can be similar. Most afflicted have extra fat around the middle (check your waist to hip ratio – a measurement around your belly button divided by the measurement around the hips – if it is greater than 0.8 you likely have insulin resistance). You may be tall or thin, short or fat or any combination and still have insulin resistance.

The only sure way to know is with an insulin response test (measuring blood sugar and insulin fasting and one and two hours after a 75-gram sugar drink). It is not a genetic defect, an error in our development, or a mistake by God. The simple fact is that we have strayed from eating in harmony with our genes. In other words, we do not fit into our genes. Historically we ate the equivalent of only 20 teaspoons of sugar a year as a hunter/gatherer species, now we eat 150lbs per year per person, or about 1/2 pound each day. The average school kid has 34 teaspoons of sugar a day.

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*efficient, to make your cells more intelligent and cooperative, not resistant.*

We evolved in a world without super grocery stores, convenience stores, and fast food restaurants. We had to work for our food and had limited access to refined foods or excess calories. In fact, our genes are pre-agricultural. We only started farming 10,000 years ago and only started refining flour about 200 years ago with the advent of the steam engine-powered flourmill.

Then came the advent of 15,000 “low-fat” foods on the market over the last 15-20 years. With the help of these high-sugar, high-calorie foods we’ve created an epidemic of increasing obesity, diabetes and heart disease. The scientific foundation for the low-fat movement was shaky from the start. Madison Avenue got ahead of medical science to the detriment of us all.

### **Dangers of too much insulin**

Our bodies normally produce insulin in response to food in our stomach, particularly sugar.

We once thought that insulin’s only role was to help sugar enter the cells to be metabolized, combining stored energy with oxygen and creating the energy we use every day to run our bodies. Now we recognize insulin as a major switching station, or control hormone, for many processes. It is a major storage hormone – fat storage that is.

Here is what too much insulin really does to your body and health:

- Try as you may, as long as your insulin levels are high you will fight a losing battle for weight loss. It acts on your brain to increase appetite and specifically an appetite for sugar.
- It increases LDL cholesterol, lowers HDL cholesterol, raises triglycerides and increases your blood pressure. Insulin resistance causes 50% of all

- reported cases of high blood pressure.
- It makes your blood sticky and more likely to clot, leading to heart attacks and strokes.
  - It stimulates the growth of cancer cells.
  - It increases inflammation and oxidative stress and ages your brain.
  - It even increases homocysteine because sugar consumption decreases B6 and folate.
  - It also causes sex hormone problems and can lead to infertility, hair growth where you don't want it, hair loss where you don't want to lose it, acne, and low testosterone in men and more. It also leads to mood disturbances.

### **How to control insulin**

Balancing blood sugar and correcting insulin resistance is well within our reach. Scientific advances of the last few decades point the way to managing this. While there are some new medications that can help such as Glucophage, Avandia and Actos, they have side effects and are only a band-aid unless used with a comprehensive nutritional, exercise and stress management plan I describe in a moment.

My goal is to make your metabolism more efficient, to make your cells more intelligent and cooperative, not resistant. In other words, you will need much less insulin to accomplish the task of balancing your blood sugar.

While I want to tell you how to balance your stress hormones, thyroid function and all your sex hormones, and all your brain and mood chemicals that will take a few more lessons! For now I want to show you how you can reset your metabolism of sugar and insulin by stopping the things that knock you off balance, and providing the things that put you balance in balance allowing you to thrive.

Here is what to do:

- Stop eating flour and sugar products, especially high fructose corn syrup.

- Don't have liquid calories – your body doesn't feel full from them so you eat more all day!
- Stop all processed, junk or packaged foods. If it doesn't look like the food your great-great-great grandmother ate, then stay away.
- Stop eating trans or hydrogenated fats.
- Slow the rate of sugar uptake from the gut through balancing your meals (low glycemic load) with healthy protein (nuts, seeds, beans, small wild fish, organic chicken), healthy carbs (vegetables, fruit, beans, whole grains) and healthy fats (olive oil, nuts and seeds, avocados, fish oil)
- Rough it up: eat plenty of soluble fiber (30-50 grams a day)
- Eat smaller more frequent meals
- Get an oil change: Make your cells smarter by giving them an oil change with omega-3 fats, fixing the cell membranes so that they can more readily receive the messages from insulin.
- Move your body: exercise improves your cells ability to work better, respond to insulin better and burn sugar faster.
- Relax! Stress reduction also helps improved blood sugar control.
- Make your cells smarter through increasing specific nutrients such as chromium, vanadium, magnesium, vitamin E, biotin, the B vitamins, zinc, bioflavonoids and some newer compounds including alpha lipoic acid, arginine, and carnitine.
- Herbs may also be of benefit including Panax ginseng, ginkgo biloba, green tea, fenugreek and gymnena sylvestre, bitter melon and garlic.

Just balancing this one hormone, insulin, can have wide-ranging effects on all your other hormones and brain chemicals so just start there.