Eating for Brain Health

Transcript

Hello, and welcome to "Eating for Brain Health". This is Dr. Ritamarie Loscalzo and I'm excited to bring you some cutting edge information about you can eat to nourish your brain chemistry.

Before we begin, I want to make sure that you're aware that this presentation is not intended to replace a one on one relationship with a qualified healthcare professional. It's not intended as medical advice. It's just my sharing of knowledge and information from my research, from my experience, from all my clinical cases. I encourage you, if you're on any medication at all for your brain, antidepressants, anti-anxiety medication; it's really tricky stuff. Don't try going off your medications as a result of what you're hearing in this presentation. Do bring it to your doctor, the prescribing doctor. Talk to them about what's going on. Talk to them about some possibilities and things that you want to try, because going off of brain altering medication requires care. It requires being really careful and really slow to make sure that you don't create any crazy imbalances.

I want to start out with just a quick synopsis of how your nervous system works. You really have multiple pieces that make it all work, that make so that you can think and that you can move and that your brain functions optimally.

You've got the various parts of the brain itself. Then you've got things called neurons, which are the nerves basically, and they have axons and they have tails. They communicate with each other. The spaces between them are called synapses. The reason I mention this is because one of the things we're going to focus on in this presentation in terms of how you can manipulate brain chemistry is via the manipulation of what's called neurotransmitters. Neurotransmitters are chemicals that get released from one nerve to communicate its message to the next nerve. Say one nerve is trying to communicate excitement down; it's trying to get you moving and excited.

That will take a neurotransmitter and pass it from one to the next in these places called synapses. Then the neurotransmitter carries the message to the next nerve and that to the next and that to the next. That's how our brains communicate. We're going to look at some of those neurotransmitters and how the nutrition affects those neurotransmitters and, in particular, how things like amino acids affect the neurotransmitters and how B vitamins can affect the neurotransmitters.

The last thing is myelin sheaths. Myelin sheaths are coatings around the nerve endings, they're kind of fatty, and they help to make the nerve conduction faster. Myelin sheaths help to make it faster.

In conditions like multiple sclerosis, where the myelin sheaths get damaged by an autoimmune process, the impulses slow down. You see people with MS have difficulty with walking and simple processes because their sheaths have been damaged. This is a picture of what it looks like. You've got a nerve, that's called a pre-synaptic neuron, that's going to communicate its message to the post-synaptic. That space in between is called the synapse. There's receptors that take the neurotransmitters and move the message along. There's a bunch of different types of neurotransmitters, there's excitatory and inhibitory neurotransmitters. They're really critical for communication.

Here's a list of the major neurotransmitters and we'll get into the nutrition of that in just a moment. The inhibitory ones are considered serotonin, dopamine, GABA, and glycine. The excitatory ones are considered glutamine, acetylcholine, and norepinephrine. A couple of the more popular neurotransmitters we'll talk about, serotonin. The reason I want to talk about it is it's important in cases of depression and anxiety. When you don't have enough serotonin you can be depressed or anxious. A precursor to serotonin is an amino acid called tryptophan which gets converted to 5-HTP, 5-Hydroxytryptophan, in the presence of various nutrients, iron, folic acid, vitamin D-3, pyridoxal phosphate, which is a vitamin B-6, pantothene, which is vitamin B-5.

All of these are important as well as SAM-e which is S-adenosylmethionine, that's a methalated form of methionine. All of these are important to make serotonin and also melatonin. Dopamine is another important one. Deficiency of dopamine make you depressed but also lethargic and lack of motivation. Again, it's a precursor of the neurotransmitter is phenylalanine, an essential amino acid, and then tyrosine. Tyrosine is also important in thyroid hormone production and tyrosine then gets produced down to L-dopa and dopamine, and also it's important for adrenal function because it's a precursor to noradrenaline and adrenaline. Lack of dopamine can lead to apathy, lack of energy, lack of drive, somebody who's always talking about being bored, lack of focus, inability to concentrate and ADD. This might sound like one of your kids.

GABA is another amino acid based neurotransmitter that's super important. It's an inhibitory; it helps you to be calm. You need GABA to fall into tranquil sleep. GABA deficiency can cause people to be more anxious and have an inability to sleep. It also can affect attention and memory. The pathways down to GABA and if any of these amino acids are deficient you can have less GABA being produced, so taurine, lysine, aspartic acid, glutamic acid, glutamine, and GABA.

When some people have a deficiency of a particular enzyme that converts glutamine or glutamic acid down into GABA, and that causes that person instead of being calm and relaxed from the production of GABA to be very anxious.

So when your brain and neurotransmitters aren't functioning properly, the kind of things that we get are depression, anxiety, lack of focus sometimes called ADD or ADHD, memory problems, bipolar disease and schizophrenia, which are much more serious.

So now let's take a look at some of the nutrition and how you can manipulate your neurotransmitters through nutrients. Amino acids are critical for neurotransmitter function. Amino acids are found in your protein food and there's eight essential amino acids, meaning your body can't synthesize them. There are 22 known amino acids that your body uses in various ways, only eight of them your body cannot make.

One of them is tryphtophan, a precursor to serotonin and melatonin. Very important that you get adequate tryptophan in the diet. Methionine is a precursor to the glutathione, it's also important for the creation of SAM-e, S-adenosylmethionine which is important in one of those conversions through the neurotransmitter pathways. Phenylalanine it's a precursor to the tyrosine, which is a precursor to dopamine and norepinephrine and phenylalanine.

Again you have to make sure you're getting enough of these in your food and that you're breaking them down. You may be eating plenty of protein; it's how much protein is actually reaching your cells. How well are you breaking it down? How good is your stomach acid for doing that first part of protein digestion and how good are your enzymes and how good is your gut in terms of transporting them in? If you're under a lot of stress, you've got a lot of toxic environment there are specific things that you're going to need more proteins and amino acids. You've got a leaky gut or you've been burned or injured you're going to need more of these to help you to do the repair, really, really important. Threonine is important for glycine, which is one of the excitatory amino acids, and then valine, isoleucine and leucine are all energy.

And we need energy to the brain, we need to have good neurotransmitter function, we have to produce energy. We have to be able to take the sugars that are in the food and convert them to ATP and valine, leucine and isoleucine are important for structurally feeding that cycle. And finally, lycine which is a precursor to glutamine, which again is an excitatory but also is a precursor to GABA. So those are the amino acids. We need to have proper functioning of the digestive track. Good stomach acid, good enzymes, you need to be eating in a way that's not stressful so your body can absorb these things. You can monitor how well your body is absorbing protein, simply in a blood test even, with an indicator called BUN or an indicator called protein and albumin and globulin.

And you look at those to see, “Do I have enough protein coming in?” Not do I have enough protein in my diet necessarily, but do I have enough protein. And sometimes you need to increase the dietary protein, while you work on getting the digestion to work better, so that you're exceeding your protein needs and the right percentage of it will get converted. Problem with doing it that way and not fixing the underlying problem, is that then you end up with too much protein. You get a lot of nitrogenous waste, It's very acidifying to the body. So the ideal is to have this perfectly functioning digestive tract, so you get just the right amount of protein that you need to have healthy neurotransmitter function and healthy energy.

The following is a list of amino acids that are neurotransmitter precursors. As we said, phenylalanine which is a precursor to tyrosine, tyrosine which is a precursor to dopamine and norepinephrine and epinephrine and thyroid hormone. Tryphtophan, which is a precursor to serotonin and melatonin and glutamic acid, which is a precursor to GABA and is an excitatory neurotransmitter in and of itself. GABA which is, it's classified as an amino acid, even though it's not considered one of our essential ones and because it can be synthesized. Taurine is a precursor to GABA.

So what nutrient deficiencies can lead to neurotransmitter imbalances?

Your B vitamins are super important and that's what's on the left hand side. B-1, B-3, folic acid, B-12 and B-6. Super important. Like them in the activated form. Folate, and it's actually methylfolate, which is the food form or the active form. If you're supplementing that's the form you should take is L-methylfolate. B-1 and B-2, B-1 is thiamine, really super important one, B-3 is niacine, extra super important, folic acid, extra super important. B-12 in the form of methylated. There are times when some people need to do different forms like adenosyl or hydroxy probably shouldn't be doing cyano B-12, cyanocobalamin because it's not the proper way to use it, plus there's a cyanide attached to it.

And then B-6 and often times in the form of pyridoxal-5-phosphate, P5P which is the active form. So if you're unsure if this all looks like you're having a problem, get a good B vitamin, preferably a liquid or powder that's easy to absorb; but the B-12 should be taken either sub-lingual or as a patch because the B-12 is hard to take in orally. The other nutrient deficiencies that can lead to neurotransmitter imbalances, vitamin C, also important for adrenal function, important for inflammation. It’s important for all sorts of things that will help with neurotransmitter. Vitamin D is super important, vitamin D deficiency has been linked to depression for a number of reasons, and vitamin D activates some of these pathways.

Vitamin E. This is a very potent antioxidant, vitamin E, and it helps to protect the nerves and the membranes of the nerves. Chromium imbalance can lead to neurotransmitter imbalances because it doesn't allow proper uptake of glucose into the brain, and then the brain doesn't function properly. Without proper glucose we can't have good neurotransmitter function in the brain, so chromium.

We saw that iron was a precursor for some of the neurotransmitter conversions from amino acids. And finally, choline, which is the acetylcholine that's part of that, and you can get choline in the form of phosphorylated or phosphatidylcholine, and lecithin is a good food for that, and I especially like sunflower lecithin. And you can do it from sunflower seeds you just have to eat more of them and make sure your digestion is working in order for you to extract it. But if you're looking at a therapeutic food, the lecithin itself is much more therapeutic, especially good for memory.

So let's look at each of the major neurotransmitters. In serotonin deficiency you're going to find that certain substances give you relief, and this is true for all of them. So, if you've been finding that when you get depressed or anxious and you're just feeling blue and you eat sweets or starches, you feel better, it's possibly a serotonin deficiency. Tobacco will help in a lot of people, chocolate, alcohol, marijuana, ecstasy, Prozac, Paxil, Effexor and Celexa. So depending on, if you've been on a series of antidepressant medications and some of them worked and some of them didn't, you can actually look up the mechanism by which the medications work and you can determine which neurotransmitter you may or may not be problematic in. Dr. Gabriel Cousens book "Depression Free for Life" is a really good source for that. He has lots of good charts in there.

Some of the amino acid possibilities you can do, 5HTP or L-tryptophan. 5HTP is a downstream metabolite of L-tryptophan. L-tryptophan is found naturally in foods, but 5 HTP is closer to serotonin and it requires less co-factors to go directly there. So if you're having a long standing problem, while you're fixing the digestion and while you're getting the nutrients up to speed, the 5HTP with the vitamin B-6, with maybe a good B complex, a mineral supplement is going to help much more profoundly.

Let's look at dopamine. Again, sweets and starch help dopamine. For some reason, aspartame, why? Well, aspartame comes from phenylalanine. So, that's why aspartame can be helpful in dopamine deficiency because it's providing a little bit of amino acid, phenylalanine. Chocolate and alcohol, marijuana, and marijuana is especially important in dopamine. If somebody is like they just love their marijuana, they don't want to get off of it, because they feel good and they function better, it could be because it's helping them with a dopamine deficiency.

Caffeine, cocaine, speed, you know, they say I take that or if I took Adderall or Ritalin, those sorts of things really help. And speed is really the same thing as Ritalin and Adderall, that's what they really are. They're just legalized pharmaceutical versions of speed. Tobacco, Wellbutrin, Ritalin and Adderall which I have down there. Wellbutrin is kind of one of those, they don't really understand the exact mechanism of how it works and it tends to work in a lot of different deficiency states.

The amino acid L-tyrosine or phenylalanine, especially if there's symptoms of low endorphins, sensitive to pain, cry easily, cravings for comfort foods or drugs. It's just for whatever reason the phenylalanine seems to be a better supplement for it than the tyrosine. And of course you want to have vitamin B-6 with this. And again, I would say a B complex and a good multi-mineral complex as well.

Then finally we'll look at GABA. Sweets and starch seem to top it off, so that not a differential, it's not something you use to differentiate it, so is alcohol and marijuana. But other things like Valium, Neurontin and Clonopin, So, if you're looking at drugs, “Wow I really felt good when I was on that drug”, maybe it's a GABA deficiency. Maybe you can look at taurine. To help with the GABA, of course, the taurine and glycine and also vitamin B-6 are really helpful in terms of supplementation if you have a GABA deficiency.

Overall the brain friendly diet and lifestyle — there's whole foods, whole fresh foods. You don't want to have nutrient depleted starchy foods that have been depleted of their B vitamins and their minerals because you need those. Antioxidant rich diet high in greens, fruits and vegetables. Fat balance is super, super important for neurochemistry. You need to have Omega 3's daily. You need to have flax, hemp, chia seeds, walnuts, purslane, algae or fish in your diet on a regular basis. If you're going with the plant based Omega 3's, it's important to help with the conversion to the long chains. DHA is especially important for brain chemistry, you can supplement that in algae oil. You can also now supplement EPA in algae oil as well.

You want to avoid the heated and processed fats because they interrupt the metabolism. They interfere with,.. they effect the cellular membranes which can effect the uptake and re-absorption of neurotransmitters. If you're going to be doing things like flax and hemp and chia and walnuts as your main Omega 3 sources, you want to make sure you're doing stuff to help the conversion. Which means, your B vitamins, your minerals, vitamin C, things like that.

Environmental toxins effect the brain, your brain is very sensitive and a lot of toxins will get passed up through the blood brain barrier and effect your brain. It can cause imbalances in your brain, it can cause toxicity to your brain. It can cause irritation inflammation and damage to parts of your brain, to the neurons, to the axons to the brain tissue itself.

Blood sugar imbalances are huge, if you're eating too much in the way of refined foods, you can develop insulin resistance in your brain. Your brain needs insulin, not all your whole brain but parts of the brain need insulin to be able to pick up sugar. It used to be thought that you didn't, when I was in school, I was taught that the brain doesn't need insulin to carry the sugar across. It just goes across the blood brain barrier, but many parts of the brain rely on insulin in order to be able to utilize that sugar.

And some of those brain parts would be, the hippocampus, which is the seat of the short-term memory. The hypothalamus, which is the regulation the regulatory part of the brain. The cerebellum, which is responsible for your balance and your equilibrium. Then your frontal cortex and your pre-frontal cortex which is where the high level thinking and problem solving happens. So it's really important that you balance your sugar because if your brain's not getting enough sugar and it doesn't have enough insulin, it's going to be problematic. And there's other functions that insulin has in the brain, in addition to just the transmission of energy to the cells. It has to do with some repair. So there's some really important functions that insulin itself has as a growth factor for brain tissue.

Be wary of medications and I don't mean just medications geared toward your brain, but a lot of medications cross the blood brain barrier and can be toxic.

And finally, managing stress. What happens when you're under stress and you have a lot of cortisone adrenaline in your system, is that you turn off the pre-frontal cortex. You damage the hippocampus. You're not going to have good memory function when you're under stress. You're not going to be able to do good problem solving when you're under stress.

A couple of other things I wanted to make sure to mention because we didn't talk about herbs much at all. You're going to hear about things like St. John's Wort and SAM-e and things like that.

SAM-e is important for the neurotransmitter synthesis. So, SAM-e can be one thing, especially if you have a methylation issue and your body can't produce the S-adenosyl methionine and your blockage is in those pathways, then SAM-e can be really important. St. John's Wort is an herb and it's been found to be quite helpful in cases of mild to moderate depression, at turning the depression around, at helping people to feel better, so that's a possibility. Other things that calm things down, there's Kava. Kava is a direct precursor. It helps you to make more GABA which helps to calm people down. Instead of having a cup of coffee which is a stimulant, you can have a cup of Kava which is going to calm things down.

Other things that are calming that you can do for bedtime if you tend to have a lot of anxiety, things like a Lemon Balm, which are nerviness. They affect the nervous system, the central nervous system. Milky Oat is another herb that calms the central nervous system down. So these are some of the things you can be doing from a natural perspective.

Again. we talked about elixirs in a lot of our segments. We can come up with a brain healthy elixir. We can put some liquid B vitamins and some vitamin C in there, and some liquid minerals and then add some herbs that can be helpful. We can add amino acids. You can have free-form amino acids or protein powders to that. You can add taurine if you think that's something you're low in.

Those are the main things for a brain friendly diet and lifestyle. Incorporating some herbs, nutrients, amino acids, B vitamins tend to be the biggest, minerals tend to be really big as well. When you eat a whole foods diet and you stay away from the *crap*, you're going to have much more of a chance of having good brain function.

The last thing. Gluten is a really important thing to avoid for brain functioning. Gluten can stimulate opiate receptors in the brain and cause addiction, and it can cause you to be depressed, and it can cause you to be unmotivated.

I had somebody, this was one of my most dramatic cases, of gluten in the brain. I actually had 2 cases of gluten in the brain. One was a woman who had been mostly off gluten for a long time, but once or twice a week, she and her husband had a whole grain pizza. Looking at her stuff I said, "I think you should go off of gluten completely." So she went off of gluten completely and after about 5 days of going off gluten completely, she picked up a manuscript for a book she had started to write 3 years ago, but lost interest, lost motivation and just started writing and wrote 3 chapters. She felt amazing, she felt energized, she felt great. About 2 days later her husband goes out and buys their weekly pizza. And she said, "Well, I'm not going to have the pizza anymore because of the gluten." Then she said, "Let me just see if these symptoms are related." So she had a piece of pizza and within 2 hours she just wanted to go to bed. She lost her motivation, she lost her drive, she was feeling tired and depressed. So it can have dramatic effects.

There's a lot of research linking gluten with depression, a lot of research linking gluten with schizophrenia, a lot of research linking gluten with autism and ADD, which effect the brain and the central nervous system. So, I highly recommend that the gluten goes and that's just touching the surface on how gluten affects the brain.