



## Cutting Edge Nutritional Strategies to Optimize Mental Health

**Guest: Dr. William Walsh**

**Niki Gratrix** Hello, everyone! This is Niki Gratrix. Welcome. Today I have the great honor of introducing a very distinguished guest, a world expert in the area of mental health and nutritional therapy, Dr. William Walsh.

After earning degrees from Notre Dame and University of Michigan, Dr. Walsh received a PhD in chemical engineering from Iowa State University. While working at Argonne National Laboratory in the 1970s, Dr. Walsh organized a prison volunteer program that led to studies of prisoners and ex-offenders researching the causes of their violent behavior.

Collaboration with the renowned late Dr. Carl Pfeiffer, a pioneer in the field of nutrition research therapy, led Dr. Walsh to develop individualized nutrient protocols to normalize body and brain chemistry. He went on to study more than 30,000 patients with mental disorders, acquiring an unparalleled database of more than 3 million chemical assays during his clinical and research work.

Dr. Walsh has conducted chemical analysis of more than 25 serial killers and mass murderers, including Charles Manson, and has assisted medical examiners, coroners, Scotland Yard, and the FBI in these forensic studies. He has designed nutrition programs for many elite athletes, including NBA players, major league baseball players, a heavyweight boxing champions, and others.

So he is currently the president of the nonprofit Walsh Research Institute and over the past 30 years has developed biochemical treatments for patients diagnosed with behavioral disorders, attention deficit hyperactivity disorder, autism, clinical depression, anxiety, bipolar disorder, schizophrenia, and Alzheimer's disease that are used by doctors throughout the world. And finally he is also the author of *Nutrient Power: Heal Your Biochemistry, Heal Your Brain*, which most of us nutrition practitioners call our Bible for mental health and clinical practice.

So, Dr. Walsh, we're honored to have you on the summit today. And a very warm welcome to you!

**Dr. Walsh** Well, thank you. And happy to be with you!

**Niki Gratrix** So just for the sake of our audience, studies are showing about 80% of chronic fatigue patients have an affective disorder or have had one at one point in their lives. And about 30% of people with current fatigue have some form of affective disorder, the most common being depression and anxiety.

We've been stressing that they aren't the same as chronic fatigue. But the level of comorbidity, the existence of both, suggests some kind of shared biological pathways.

And one may play a causal role in the other. But before we get talking a little bit more about the most common micronutrient deficiencies and metabolic disorders that are found in people with anxiety and depression, to start out, Dr. Walsh, I think people really don't realize that mental health imbalances can be due to metabolic imbalances that can be corrected with nutritional therapy rather than drug therapy.

So would you just like to share a little bit of your history working with the late great Dr. Carl Pfeiffer and perhaps some of the origins of this orthomolecular psychiatry and your work with this huge database?

**Dr. Walsh** Yes. I started with the great Carl Pfeiffer back in the 1970s, actually. And he and I started doing research on violent subjects. And I started sending him people straight out of American prisons, including people who had been on death row. And our goal was to try to see what chemistry abnormalities they might have that predispose them to this behavior.

We had a lot of success, not only in identifying what kind of abnormal chemistries tend toward violent behavior, but also he was the one that instituted treatment programs. And we've now treated more than 10,000 violent children and adults with very good success without having to resort to drug therapy.

**Niki Gratrix** Which is fantastic. And, of course, one of the great things about nutritional therapy is that there aren't the side effects that you would get from the drugs. Antidepressants are the conventional recommended drug treatment for chronic fatigue.

But I've seen people have a terrible time coming off those drugs sometimes. And they can have really bad side effects, especially in younger people. So would you like to comment on that, too?

**Dr. Walsh** Yes. Last May I was invited to the Annual American Psychiatric Association meeting in New York City, 17,000 psychiatrists from around the world. And basically I gave them a lecture telling them they were doing depression wrong in the sense that mainstream medicine considers depression to be a single entity, mainly low serotonin activity.

And in reality, there are five completely different forms of depression that have different neurotransmission abnormalities and require different treatment approaches. And the talk was very well received, to my surprise. I had been at APA four times before. And I thought nobody was listening to me. But this time it seemed to get a lot of traction.

And I was recommending to the psychiatrists that what they can do is when they first see a first-time patient, they can do inexpensive lab tests that can guide the treatment, that can guide them to understanding which neurotransmitter systems are not functioning properly, and can guide them to a selection of medication or even better can show them how they can use nutrient therapy to help these patients, also.

**Niki Gratrix** Some of these drugs that would raise serotonin is the exact opposite of what a subgroup of patients need, isn't it? And I guess they could react very badly.

**Dr. Walsh** That's right. That's why anyone who buys an SSRI antidepressant receives an insert of information where they warn about possible suicidal ideation or homicidal

ideation, especially in young boys. And there's a good reason for that. And the reason is that one of the five phenotypes that we've identified in depression is about 20% of all people with depression, they get dramatically worse if they take an SSRI because they happen to have an overload of serotonin activity to begin with. And it makes it dramatically worse.

And that seems to be a leading cause of the problem we have in the USA of school shootings. We've studied the last 50 cases of school shootings. And it turns out that more than 40 of them involve kids who were okay until they developed anxiety and depression, went on Prozac or Paxil or Zoloft or whatever antidepressant, and then got dramatically worse. And then disaster happened. So, yes, there are side effects.

On the other hand, these antidepressants have helped millions of people. Of the five different forms of depression that I was showing the psychiatrists last May, two of them actually are groups that actually benefit quite nicely from these medications, although often with nasty side effects. The problem with all these psychiatric medications is that they're foreign molecules. And they do not result in normalcy.

And I think that as time goes on and as brain science advances, the need for these drugs will fade away as we learn how to normalize the brain. The goal really should be to restore the brain to a normal condition rather than putting powerful foreign molecules in the brain, which cannot result in normalcy.

**Niki Gratrix** And really just suppressing symptoms rather than dealing with the true underlying causes, which is back to the biochemical imbalances.

**Dr. Walsh** Yes.

**Niki Gratrix** And it's very interesting. It's fascinating and quite disturbing, obviously, too, what you just said about the homicidal tendency because there's definitely a subgroup of chronic fatigue patients who actually have high serotonin levels, not low, despite the fact that the conventional approach is antidepressants for that group, as well. Very interesting.

And, also, would you be able to share with us an introduction to neurotransmitter biochemistry, a sort of a 101 introduction, how they're synthesized, transported, and broken down, and naming a few of them and how they affect how people feel?

**Dr. Walsh** Well, neurotransmitters are tentacles. And they're tentacles that are active in the brain. And you might think of them as messengers. They transmit—or you might even say talk—from one brain neuron to another. Everybody has about 100 billion brain cells or brain neurons. And each of these neurons has roughly 1000 little filaments coming off this tiny little brain cell. And at the end of many of these are receptors.

So what happens is that there are chemicals that can be ejected, that can be emitted into what they call a synapse, a tiny space between these neurons. For example, serotonin is one of those, better known in more dominant neurotransmitters and mental health. If a cell is activated, it can shoot out serotonin molecules within the synapse, which can then give a message to a nearby brain cell and then cause it to fire. And that's really how the brain actually functions. Every action, every thought, every emotion has to do with this symphony of chemical events in the brain.

Now, the five most dominant mental health neurotransmitters for mental health—depression, anxiety, schizophrenia, behavior disorders, etcetera—are serotonin, dopamine, norepinephrine—if that one gets too activated, that's cause of a lot of anxiety and in some cases even psychosis—GABA, and then the NMDA receptor, which is activated by glutamate. Those are the five that seem to dominate mental functioning with respect to mental health. And most people with a psychiatric diagnosis have one or more of those systems not functioning properly.

And interestingly, it's not so much the amount of the neurotransmitter that matters. It's reuptake. It's a process by which the neurotransmitter, once it's ejected into a synapse, there is a process by which it rather quickly goes back to the original cell. And that dominates more than the amount of neurotransmitters.

About 30 years ago, everybody was focusing on helping low serotonin activity people, especially the depressives, by increasing their serotonin levels. Now we know that the name of the game really is reuptake. And that has a lot to do with this new field of epigenetics and has everything to do with nutrient therapy.

**Niki Gratrix** And would you be able to share a few examples, just copper, B6, and maybe amino acids, zinc, some of these common nutrients that would affect transmitter levels and give some examples. I'm sure people don't even realize some of the basics about how those nutrients are involved with certain neurotransmitters.

**Dr. Walsh** Okay. Let's start with copper. Copper is a nutrient metal that we all need in our body. We have about 15 to 20 mg of copper in our body. And it's regulated very carefully. And we have what's called homeostatically controlled. There are systems in the body to keep your blood level of copper normal no matter what. Even if you were to be chewing on copper bars, if that system is working, if you have a healthy metabolism system working, your copper level will still be normal.

However, many people don't have that ability. There are special proteins that are regulating our copper. They're called metallothionein and ceruloplasmin. And people that don't have that ability can have very high levels of copper. Now, copper is a major cofactor in the conversion of dopamine to norepinephrine, two of the most important neurotransmitters.

And we now know that if you were to double the level of copper in a person, which we see many times, these people are extremely low in dopamine, which is considered a feel-good neurotransmitter and is needed for good mental functioning and skill at academics, and have a real overload of norepinephrine.

And it's a ratio of copper. If the amount of copper, say, doubles or triples from what it should be, it can cause a factor of two, three, or four times change in that ratio of those two really important neurotransmitters. So if you've got a copper overload, you can expect problems, especially anxiety, depression, and, in severe cases, psychosis.

Now, 95% of people with this copper imbalance are females. And the reason is that copper has a lot to do with hormones. Estrogen and copper generally are proportional to each other. And if one rises, the other does, too. So we published articles showing that almost all cases of postnatal depression involves copper overload.

And we treated more than 700 women who had severe serious postnatal depression that didn't go away after weeks or even years. And our success rate was extremely high. We didn't have to give them a medication. We just simply normalized their copper.

Another example is B6. B6 is really important in the synthesis of serotonin, dopamine, and GABA, three of the most important neurotransmitters. If the person has a genetic weakness or deficiency in B6, they're not going to have a sufficient amount of these neurotransmitters. And you can expect mental problems. There are just many, many instances of how nutrients have a massive effect on mental functioning.

Methyl and folate are two other aspects that are extremely important. Zinc is another example. If a person is zinc deficient—and it's amazing how many zinc deficient people we find—zinc deficiency has a lot to do with your physical health. But if you're zinc deficient, you're going to have trouble with GABA, which is a friendly, calming neurotransmitter.

And then also with NMDA, zinc deficiency has to do with oxidative stress. And that NMDA system would not function. And NMDA is the one that has so much to do with schizophrenia and so much to do with obsessive compulsive disorder and addictions. So those are a few examples. And there are others.

**Niki Gratrix** Some of the main ones, very interesting.

**Dr. Walsh** Yeah. We're learning that there really are only a few nutrients—about 7 or 8—that really have a powerful impact on mental health and often abnormal in mental illness. So we focus on those.

And that's really fortunate, because there's more than 300 nutrients in the body. It would be awful if we had to do lab testing for hundreds of these factors and treat hundreds of factors. But the good news is that there only are about five, six, or seven that are primarily responsible. So we need to focus on those and then normalize those factors.

**Niki Gratrix** It is a great point that we only need to check those few. And I'll come back to asking you about the specific test, the metabolic panel that you have for that.

But I want to talk to you about pyroluria because I find that it a lot in chronic fatigue patients. It's a cause of oxidative stress, which could be a commonality between anxiety, depression, and chronic fatigue. Would you like to expand on what pyroluria is and how it affects someone if they had it and exactly what are the imbalances associated with it?

**Dr. Walsh** Well, pyrrole disorder is a genetically inherited factor. It's present in about 15% of all humans. And it has to do with SNPs and with mutations that have developed over thousands of years. And if a person is born with the pyrrole disorder, it affects the chemistry in the spleen and in your bone marrow and the very chemistry that has to do with hemoglobin and other really important chemicals.

And what happens is that people with this disorder have a huge amount of these chemicals called pyrroles. Pyrroles have no real value in the body. They're byproducts of important reactions. So we all have some level of pyrroles. Some people may have 2 or 3 or 4 times the normal the level of pyrroles.

The problem with pyrroles is, yes, they leave the body quickly. They go through the blood and out in the urine primarily. But they have an affinity for chemicals that are aldehydes, meaning that they grab onto them and carry them out with it. And the number one aldehyde in your bloodstream is B6. So one of the nasty features, the primary problem with pyrroles, is they strip B6 out of the body. And this has a massive effect on physical health and also mental health.

They also tend to bind to zinc and strip zinc out of the body. So if you've got a pyrrole disorder, you tend to have a dramatic deficiency of B6 and zinc, which are extraordinarily important. This happens to be my favorite imbalance because it's the easiest...The people that have this tend to suffer greatly. And it's the easiest one to correct. And we've had many cases of people who became quite better within a week or certainly a month.

It's one of the major causes of depression. It's one of the primary causes. It's one of the major phenotypes of schizophrenia in severe cases. And, really, all one has to do is normalize zinc and B6 for these people.

**Niki Gratrix** That's very interesting because zinc and B6, if people are deficient in those, that's also going to massively affect methylation in the immune system, as well as effectively disarming the immune system if you're completely zinc deficient. So there's a huge overlap with chronic fatigue. And is it not also associated with anxiety? And can anxiety trigger it in any way? I thought I had read that was possible?

**Dr. Walsh** Yes, actually it works both ways. If a person has pyrrole disorder, they will suffer from extraordinary oxidative stress. However, if they have oxidative stress for any other reasons, it will tend to elevate the pyrroles. The really neat thing about pyrroles is it's so easy we identified.

A typical pyrrole person is a night person. They don't do well in the morning. Most of them are not hungry in the morning. And many of them skip breakfast. They usually have little or no dream recall. They tended toward sunburn. They live in a world of fear. They are bothered by stresses, especially cumulative stresses, stresses that hit them day after day after day.

They tend to have mood swings. Many of them are improperly diagnosed as bipolar disorder. And basically their cycles can go up and down in the same day. It's a nasty disorder, but really easily corrected with nutrients.

**Niki Gratrix** Amazing. That's very, very interesting. And perhaps now we can talk about the folate-methyl balance. It's a little bit more technical, this area. But perhaps if you can expand on that and share with us how those two imbalances can affect mental health.

**Dr. Walsh** Well, folate and methyl, we're learning more and more about it. And they have a massive effect on everything. And it has quite a bit to do with epigenetics. Epigenetics is an emerging science that is explaining a lot about everything from cancer and heart disease to mental illnesses.

And basically it has to do with how we regulate our DNA. Our DNA, we all have more than 1 trillion cells in the body. In every cell has got a little tiny nucleus. And in there is our DNA. And each person's DNA is identical in every one of the cells in your body.

But every part of your body, whether it's for kidneys, your liver, your skin, your eyeballs, where ever, you need different chemicals in every part of your body. And every one of your genes—you have 23,000 genes—every gene has only got one job. It has to make one particular protein.

Well, we don't want all those proteins produced in every part of your body. And it's methylation that regulates this. And right after conception, during the first couple months of gestation, there are methyl bookmarks—they're called bookmarks. But they're also thought of as switches—that can turn off the unwanted chemicals in every part of your body.

And that's what epigenetics is. It regulates. It has to do with regulation of your DNA. And methyl is extremely important is that. And so is folate. It turns out that methyl and folate have opposite effects on gene expression. Methyl tends to shut off gene expression, whereas folate tends to enhance it. So that ratio is extremely important in mental health.

Now, methylation is a chemical reaction involving usually what's known as SAME: S-Adenosyl methionine. And that is a relatively unstable molecule that can give up a methyl group rather easily. And, as I said, there are dozens and dozens of extremely important methylation reactions in the body.

Now, the SAME regulation itself is really important. We need to have normal methylation to function properly. And a person can be under methylated. Or a person can be over methylated. Now, back in 1999, I was the first person to realize and to discover that 95+ percent of autistics are under methylated. And I have this gigantic chemical database for autism, for depression, for anxiety, etcetera. So that has started a lot of interest in methylation aspects of autism.

And most of the focus around the world has been on under methylation. And some of the experts or some of the people who are really delving into this clinically have the mistaken idea that under methylation is the only methylation imbalance. Well, in reality, in the United States, about 22% of all people are under methylated. They are born with under methylation. And they will tend to be under methylated their entire lives. 8% are over methylated.

Now, there's been a lot of attention lately in genetic testing because we now know the enzymes in this complicated methylation cycle called the 1-carbon cycle, these enzymes might have mutations that are called SNPs—single nucleotide polymorphisms, which is easier when you say SNPs.

And there have been studies of these. And we now know for the key enzymes that enable that methylation regulation system to work, we know that if you have, for example, a 677T MTHFR SNP, which is the one that is most famous, if you have two copies of that, the chances are that the person will be under methylated.

And there are people out there now trying to just take genetic information to diagnose methylation, whether a person is over, under, or normal in methyl. And actually that doesn't work very well. And the problem is there are SNPs, there are mutations, that tend to cause over methylation. So you've got a tug-of-war, in a sense, between the MTHFR and those SNPs that tend to weaken methylation and then the AGAT and another

SNPs that tend to cause a glut of methylation. Fortunately, there are a couple of lab tests that can directly test methylation to see who won the war, methyl or folate.

**Niki Gratrix** So this was absolutely fascinating because this is what I took away from your book when I read it. And it was a real light bulb moment. But it's one of the things that's happening in nutrigenomics at the moment. It's an early science. But one of the things that we need to look at is the net effect of all these SNPs. And that can be identified quite easily. I think you do a whole blood histamine testing to get the net effect?

**Dr. Walsh** I do a whole blood histamine. There's also a test that measures the ratio between SAME and SAH, two of these methylation cycle chemicals. They're not perfect tests. But that together with medical histories can really help you because there are classic symptoms and traits that people that are under methylated have. And they are very different from people who are over-methylated. So that can be really helpful.

The biggest confusion among you might say nutritional practitioners, the biggest problem is that we know if a person is under methylated, the gold standard most effective way in general is to give these people a combination of folate therapy and B12. And we've known this for years. And it's true.

The problem is that the epigenetic impacts of folate is to reduce serotonin and dopamine activity. So if you have a person who has anxiety, depression, or a behavior disorder and if the reason they had this, in part, is under methylation, you cannot give them any form of folate because that will make their depression worse because of the epigenetic effect on serotonin and dopamine.

**Niki Gratrix** So the methylation cycle is one route to producing these methyl groups. And that's profoundly involved with the production of neurotransmitters.

But we have this other thing to do with epigenetics. And the other thing I found fascinating was that you've talked about genetics. Does that directly affect the reuptake? It's affecting the most powerful thing that you could affect—neurotransmitter reuptake. And epigenetics is affecting that with folate?

**Dr. Walsh** You're exactly right. That's the key to it all. Reuptake, we have genes that are producing special proteins. They go into the membranes of your brain cells. And they're called transporters. And really they're passageways. There are proteins that sneak in and out of that membrane. And they're passageways for the returning serotonin or the returning other neurotransmitters.

And we learned in the mid-80s that this is really the dominant effect with respect to, you might say, depression. If a person has low serotonin activity, it's not so much the amount of serotonin present. It's the reuptake. And this turns out that two nutrients have a dramatic effect on reuptake. And those two are methyl in the form of SAME and folate.

And they have an opposite effect. There's a methyl-folate competition right at our DNA and our chromatin that, if methyl wins the war and your DNA and your proteins that it's wrapped around, if they become highly methylated, it will shut off the expression of that particular protein. And if folate wins the war, it will tend to enhance it.



Well, this has a lot to do with reuptake and directly impacts reuptake. So with a person has low serotonin activity and depression, and let's say they take Prozac or Paxil or Zoloft. And it helps them somewhat, but they have side effects they don't like, what do these medications do? They go straight to those transport proteins. And they block the return of serotonin. So they're called reuptake inhibitors.

Well, what we can do with nutrient therapy is we can adjust the production, the genetic expression of these transport proteins by adjusting methyl and folate levels.

**Niki Gratrix** This is profound because standard nutritional therapy may be a little bit old science now. People understand about, say, for example, taking 5-HTP to help serotonin levels, a precursor to tryptophan. And this has been a more conventional approach to nutrition and neurotransmitters. But what you're saying is even more powerful is when we can start understand the folate-methyl balance.

**Dr. Walsh** That's right. 5-HTP can help a bit. And even fixing methylation can help a bit. But what really matters, the dominant effect as the pharmaceutical companies learned about 20 years ago, is the uptake.

**Niki Gratrix** I hope everyone appreciates how fantastic this is because it's a huge enhancement in understanding about the power and effectiveness of using nutritional therapy. It's like you've discovered the upgrade of what we should all be understanding about how we can powerfully use nutrition for brain and mental health. Fantastic. That's very good.

**Dr. Walsh** We have a capability now that we did not have five years ago. And by understanding epigenetics and the role of nutrients and gene expression, we can do something we never could do before.

We never had the ability to regulate enzymes, genetically expressed enzymes. That's been missing in nutrient therapy from the beginning, meaning, yes, we know how to change the levels of the neurotransmitters. But we've never been able to adjust and correct enzyme problems. And now we can.

**Niki Gratrix** So you have the metabolic test. I think that you work directly with a lab called Direct Healthcare Access, too, that have created something called the metabolic panel. Would you like to expand on what that panel includes? It seems to take up all the main offenders that people need to know and get tested for.

**Dr. Walsh** Well, guess. Actually work not directly connected with this lab. It's called Direct Healthcare Access. It's a lab near Chicago. I work with labs throughout the world. And there are a lot of really great labs. For example, in the United States, we use LabCorp a lot. And there are labs in Europe and Australia that we work with. And we try to identify the ones that we think are really good.

But, as I said, there are only about 5 or 6 chemical factors, nutrient factors, that dominate in mental health problems. And I had a lot to do with Direct Healthcare Access developing a protocol or an inexpensive testing panel that tests, for example, serum copper, serum ceruloplasmin, whole blood histamine, urine pyrrole, a set of key labs that can usually identify the neurotransmission problems and the nutrient therapy approach needed to help a person with a mental problem. And they are the only ones so far that

have been doing this routinely. And that's the lab that we use now if we can. But they're not the only lab that does good work.

**Niki Gratrix** Yes. So that particular lab's website is [PyroluriaTesting.com](http://PyroluriaTesting.com). Did you want to mention ones in the USA? Or leave that, as well?

**Dr. Walsh** Well, there's a lab in Wichita that does a nice job of pyrroles. There is a lab in New Jersey called Vitamin Diagnostics that does a good job of pyrrole testing. And then, of course, Direct Healthcare Access, which I think is the best in the world at this point. There are labs in Australia that do a fairly good job.

But it's something that needs to be standardized. The biggest problem is not what happens in the lab. The biggest problem is getting the urine sample to the lab in good condition because the pyrrole molecules are unstable. They tend to disappear unless you handle the sample really properly.

**Niki Gratrix** Well, thank you for sharing that honestly because obviously it's very important that people are doing proper lab testing and doing it accurately. So, Dr. Walsh, would you like to share your website details? Because I think there will be many practitioners on here that would be interested in having training directly with you, and also people who would like to see a practitioner trained by you.

**Dr. Walsh** Yes. Our website is [WalshInstitute.org](http://WalshInstitute.org). And we've been training doctors throughout the world. I have a team of specialists. And we travel throughout the world training doctors. We've now trained about 300 doctors throughout the world. And we have a major program in Australia where we handle a lot of docs from New Zealand and Singapore and that area. we have the USA training that we are now doing regularly.

I'm hoping to establish in a regular annual physician training program in mainland Europe. And we're working on that at the moment. But if a person gets on our website and looks at our resources section, they will get a list of doctors who have gone through the training who are doing this very type of testing and treatment.

**Niki Gratrix** And is there any final comments that you would like to make or advice for anyone out there?

**Dr. Walsh** Well, if you would like to delve into this, I would suggest you might consider reading the book *Nutrient Power* that I wrote a couple years ago. I think that gives a nice summary of all of this.

**Niki Gratrix** Yes.

**Dr. Walsh** So I just encourage people. If a person, whether it's a practitioner who wants to find a better way to help their patients or if it's a family that is challenged by a mental illness or a behavior disorder or anxiety, I think they need to be aware of this technology and that these treatments are available.

**Niki Gratrix** And I can't recommend the book enough. It's a reference book. It should be in the library for all of us nutritionists and anyone using nutrition therapies. So thank you so much for all your work and everything that you do. Thank you so much for spending your time with us here today.

**Dr. Walsh** And thank you, Niki, for spreading the word about nutritional therapies.

**Niki Gratrix** It was my pleasure.