

[Jackie]: So now we're going to move onto the Gottfried protocol. Dr Sarah what can we do, what is the protocol, to obviously create a better neighbourhood for our hair? Or

[Dr Sarah]: Yes, better neighbourhood. So, what I suggest to women in my practice is to order certain supplements and what we are going to do is apply the 80-20 rule here, where you really are focused on the supplements that are going to move the needle when it comes to your hair loss. So, let me give you headlines here of what it is I recommend, and then maybe we can circle back and get into some detail about some of these different supplements.

The first is to be on a potent multivitamin, one that fills those hair loss related nutritional gaps.

The second is to replace iron if you're low, and I'll give you some details, you know it's not just women who are cycling who are low in iron, I'll give you some percentages of women before menopause and after menopause and the likelihood of being low in iron.

Third is L-lysine, L-lysine, that amino acid you heard about shortly ago, that also is involved together with iron in hair loss, in about 90% of women.

Number four is Biotin, Biotin, vitamin B7, and I'm going to give you some details on some of the studies that we have looking at Biotin and your hair. And fifth is omega-3's, omega-3's, fish oil. There's lots of different sources of omega-3's out there, combined with a couple of food ideas; you really want to make sure you're getting enough protein intake, and as we talk about each of these supplements I'll talk about the ways you can get them from food as well, but this is one of those situations where it's really hard to get enough from food, if you're low in one of these issues that were talking about.

So that's kinda the headline Jackie, shall we go back and kind of circle around some of the details here?

[Jackie]: Yes, absolutely, starting off with the multivitamin.

[Dr Sarah]: Okay, so starting off with the multivitamin, I'm going to give you some suggestions that you may not have heard before, because as you know I struggled with her loss before, so I've really thought about how can we approach this differently, because I don't think women have been adequately treated when it comes to their hair loss issues. So, starting first with a potent multivitamin.

Here's my best suggestion here; I really think that you may want to consider, twice a year, doing a liver detox, and I want to suggest a relatively new multivitamin that helps you with this. So, whenever I talk about different supplements I like to give you a couple of choices, I don't like to go with one supplement manufacturer. So I am going to give you a couple of choices here.

When it comes to this liver detox, I want to mention a Thorne product that's relatively new, it's called the Thorne detox nutrients packet, it's a new formula for liver cleansing, and I recommend doing a month of the Thorne detox nutrients packet: one month twice a year. When you're not in your one month twice a year

doing your detox, I suggest you take a different multi, and that could be for instance the Thorne daily basic nutrients packet, or it could be another company that I like a lot because they're very evidence-based is Integrated Therapeutics, and they have a couple of different multi's and I'm going to mention a few of them, one is called clinical nutrients for women, another is called clinical nutrients for women 45+, and then they have another product that I like a lot called the complete, it's a mega multi vitamin, it's a powder, it's one that you can put in your therapeutic medicinal smoothie, if you are a smoothie lover.

So, those are some of the multivitamins I really like. What is especially important here is that you're not taking, like, Centrum or some other multivitamin that is like one pill, I know a lot of people like the simplicity of that, but the problem is that doesn't fill some of the gaps that were talking about. Some of the gaps that we've been discussing are being low in the B vitamins having issues with some of the cofactors with your thyroid, you have probably heard me talk about this before including copper, zinc, selenium, and silica. Those things you want to make sure you are getting those gaps filled, unless you are eating from composted soil on a daily basis and I suspect you Jackie in Boulder Colorado it's probably not all year round that you're able to eat from composted soils, right?

[Jackie laughs]

[Dr Sarah]: The composted soils rarely have these minerals that we need and most of us are eating from soils that are not richly composted, so we've got to fill in those mineral gaps, really important especially for your thyroid. One of the reasons why I'm suggesting this liver cleanse, this Thorne detox nutrient packet that you take twice a day, is that it's very good at getting rid of some of those toxins, some of those endocrine disrupters that we all get exposed to. Even your living room couch, since it is probably full of flame retardants which slow down your thyroid in about 12 different ways, and so we need to periodically get these endocrine disrupters out of our system to the best of our ability.

[Jackie]: and our beds have flame retardants in them as well, where were sleeping for 8 to 9 hours, hopefully every night, is obviously disrupting us as well.

[Dr Sarah]: that's right, many people are wondering why these thyroid problems also, why is it that hair loss is increasing and I think a big part of it is the exposure that we have two endocrine disrupters. Now that's a whole other conversation, and don't want to take up too much of our time on that, but one of the ways you can protect yourself is to reduce your exposure and we know all others are getting exposed no matter how vigilant we are, once you're exposed you want to periodically detox, and that stumble one. Number two is iron so less take on iron from moment and this is where we are going to have to take a couple of little timeouts to go over some of the science because I do think the science is really important here. Some people want to make this super simple, a lot of women think that they don't have to worry about iron once they get past

menopause and I just want to bust that myth first.

Here's what they found in terms of iron; I mentioned before that low iron, low lysine, are really common amongst women who have hair loss and a study from France looked at women who had either moderate or excessive hair loss and they found that about 59% of them had low iron stores. So this is a really rigorous study, its 5000 women from France, it's a little bit different from that study I told you about with lysine and iron, the let me just break it down into women who are premenopausal versus women who are postmenopausal. When they looked at women who were premenopausal they found that 23% of those women were completely depleted in iron. Completely depleted, so they had nothing left, the cupboard was bare, and defined that as a ferritin which was less than 15 µg/L. They then found that 57% of those women who were premenopausal had low iron stores, which means that those women had ferritin levels between 15 and 40 µg/L. So those are the general guidelines that dermatologists and experts with hair loss recommend as the numbers to watch out for, so if you have a ferritin which is 40 µg/L or less you are definitely in that camp of having a problem with your iron stores. One of the things they were able to say from the study is that if you are a 40-year-old woman and you have a normal ferritin which is defined as somewhere between 70 and 80 µg/L, if you then have 30 point drop in your ferritin levels and you go down to 40 µg/L then you have a 28% increased chance of excessive hair loss. So that is a very typical thing that I see for women happening between the ages of 35 and 50 where they will just suddenly have a drop in their ferritin and then they will have hair loss related to that. But, it's not just women before menopause, so let me just give you a little bit of the data for women after menopause. What they found in those women is that about 52% of all these women, and it was just a broad selection of women not chosen for hair loss, they found that 52% of those women after menopause had moderate or excessive hair loss, and among those 23% had low iron stores. So that means their ferritin was between 15 and 40 µg/L, and 5% were depleted. So overall after menopause fewer of the women were low in iron but it was still an issue. What this means is that 28% of the women after menopause were low in iron, whereas that number was much higher for women before menopause, in fact that number was 80%. So 80% before menopause and 28% after menopause related to low iron.

You want to actually be proactive about these things, so whether it's hair loss or feeling depressed or weight gain you want to be proactive about these things now! You want to take a moment now, you want to seize the moment because when you get into a place of severe or excessive hair loss, for instance, you lose that objectivity, you lose that ability to think very carefully through all the different options because there is a desperation that sets in. I don't know if I'm quoting what you said so well Jackie, is there something you want to add?

[Jackie]: that's exactly what it was because he said, whether this is dismal or pessimistic, that we all whether it's you or family members we all run into a health problem, and because you're so close to this issue being some personal that you

have a hard time stepping back from the problem, rather than following different options because you just want the the answers so desperately. It's very true what you're saying and whether it's hitting you right now or whether it's hitting your mother or whether it's hitting your sister, whatever it is you you finally have this baseline and people are so thankful, whether it's you or whether it's your friends and family, you have a go to plan to be the rational person in the midst of unfortunately a lot of hysteria when things are going wrong.

[Dr Sarah]: that's right, a really important point. Let us talk about iron. So, when it comes to iron you know it's a lot more common, before menopause versus after, but still an issue after. Get your ferritin checked no matter what as we talked about the little while ago and when it comes to iron there are a couple of things I want to say about it: if you low, if you have a ferritin which is less than 70 µg/L, you need iron. There is some debate about this, there is some controversy because we know that in conventional medicine if you have iron deficiency anaemia, which happens to a lot of women in pregnancy for instance, where you burn through your iron stores in your haemoglobin drops (we talked about checking your CBC your complete blood count) if you are anaemic, for sure you need iron. But even if your ferritin is less than 70 µg/L you want to keep it in that 70 to 80 range because it helps you keep the hair on your head and it also helps your other hormones work. So there is a way that the rising tide lifts all boats when it comes to these different nutrients, and iron is an especially an important one. In fact we know, just a little moment on the ferritin, I think this is important to keep repeating over and over again, we know that if your IM is less than 40 µg/L you're definitely going to have increased hair shedding, but you are also going to have a lack of new hair growth. So, I think about ferritin in a few different tiers, I think about their lovely Goldilocks tier of having it between 70 and 80 µg/L, and just as with everything you don't want to have too much iron because there's something called haemochromatosis which is when your ferritin climbs higher than that, and you want your ferritin between 70 and 80 µg/L. But if it drops below 70 but it's above 40, you able to still make new hair. But when you drop below 40 that's when things start to get more dire. So those are some of the goals when it comes to ferritin. Anyway, the practical part is that we know that many people are iron deficient. I like iron picolinate, iron picolinate, that's my favourite iron salt that I used to help women fill up the iron stores again and get their ferritin up. The reason I like it is because it is well absorbed, and iron isn't always well absorbed. Those of you who took it during pregnancy know what I'm talking about. It tends to be constipating, and you can just imagine that woman in her 40s in her 30s had a ferritin of 70 but now has dropped down to 40 or 35 or 20 µg/L and she started to lose hair and she's freaking out about it, and maybe her thyroid is not working so she's gaining weight and she's feeling more moody and sex drive's starting to go down, and then you add insult to injury by giving error iron and plugging up her poor gut and that's just not right, so let's avoid that shall we let's go with iron picolinate. As I've mentioned with these other supplement companies Thorne makes a really good iron picolinate, it's not expensive, integrative therapeutics also has one. So that is what I suggest when it comes to iron.

When it comes to the next supplement we're going to move onto lysine and let me tell you a couple of things about lysine. You've already heard from me that it's a really common nutritional gap that we see together with iron, is one of those amino acids or building blocks for protein that is involved in how iron is used in your body. So typically we want 1 to 1.5 g per day of L lysine and there's a few supplements out there (again we're going to give you the details and the dosing in a worksheet).

Now let's move on next to Biotin. Biotin has got a lot of press. It's called the hair growth vitamin or vitamin B7, and it's a really important nutritional deficiency, that is related to keeping your hair either happy or sad. If you are having hair loss I often start with biotin because I think biotin is a really important piece to add. We know that from several studies that have been done that biotin helps to reverse hair loss because it's key to the production of keratin. Keratin is this protein is found throughout your skin and a lot of people don't realise this but your skin actually includes your hair and your fingernails and toenails. So biotin has been shown to spur growth, your hair grows faster and it makes your hair less brittle, it strengthens both the hair follicle and also the hair shaft, so that you have more energy for rapid growth [hurray for that] and it also reduces split ends. Biotin is found in eggs, red meat, bananas, but as you know if you've been listening to me for a while I'm not the biggest fan of bananas due to their high glycaemic index. In a moment will get to the point that after menopause you especially want to keep your hand androgens low, you want to keep your testosterone levels low, and we know that a higher glycaemic index food plan is going to work against you, it actually raises your androgens, raises your free testosterone. For the most part you cannot get large enough amounts of biotin from food sources, it's just not found in large enough amounts and so you need a supplement. You can also use shampoo is that and not quite as effective as taking a supplement, and the dose that has been studied ranges from about 2 to 10 mg, but you know that I like to keep you really safe and I haven't been as convinced by the studies looking at higher doses. Now the cool thing about biotin is that it not only involved in supporting your skin, hair and nails, but it also helps to stabilise your blood sugar. It also supports your brain and your nerves, so that's kind of a cool part about biotin and if you're somebody who really struggles with blood sugar the higher doses may be appropriate, but I think it's one of those things you should talk about with your physician. Most of the studies that have been done looking at your hair, nails and skin have used between two and 3 mg per day. So there's a few supplements that get you into that range, one of them is called biotin forte from integrated therapeutics. So, that's biotin.

One other thing that I wanted to say about biotin, and if I can just say one thing about that and then I'm going to do hormones, for people who have more of a patch of hair loss; I mentioned before that if you have a patch of hair loss and it's not just diffuse or at your temples you definitely want to be working with your doctor on that, because patches tend to be the sign of something more severe.



We know that people have more severe biotin deficiency can to have that scaly, itchy, red, angry patches of hair loss. The good news is that biotin tends to help, but this is one of those places where you really want to be working with your doctor. Also if your biotin deficient you are more likely to have yeast infections of your skin, will talk more about that when we are in the skin section.

Last but not least I just wanted to mention omega-3's or fish oil together with adequate protein intake, there was another study from France... You can kind of hear how many studies are coming out of France, there was a study from France showing again that one of the predictors of hair loss is actually getting enough protein in your food plan. So when it comes to omega-3's we know that they reduce inflammation. We know that it's important for all ages, but it's especially important for women after menopause, and that's where the most common cause of hair loss becomes that topic that we got to before which is male pattern hair loss, or androgenic hair loss. That's where you have the hair loss near your temples and it's related to the amount of testosterone you have and the ratio of testosterone to other hormones. So, that's where fish oil becomes especially important because it helps to lower inflammation and lower some of the androgens imbalance that people have.

[Jackie]: and the other thing I just wanted to insert with Dr Sarah is because I know many people take supplements already and especially if you're taking certain supplements such as the detox nutrients, or the daily basic nutrients packs, some of those have small amounts already of biotin in them. Not the detox, but the daily nutrient packs, or maybe you're taking a B complex. So, always look at (especially after what Dr Sarah was saying about going on the lower side versus the higher side) look at some of the current supplements you might be taking. The daily supplements pack has the omega-3's in there. They have a little bit of biotin, not much, I think they have about 80 mcg or maybe 200 mcg. So, just if you're also trying to double up or say "okay maybe I'll start inching into this stuff" look at the current things that you're taking.

So, moving on to the last part of the Gottfried protocol that I'd know you wanted to cover was taking on your hormones more directly with your thyroid health. You know, your approach to stress and menopause.

[Dr Sarah]: Yes, good, so as many of you know with the Gottfried protocol the first step is to actually fill nutritional gaps and to do some of the lifestyle tweaks. The second step is to take proven botanicals, and I don't actually know of any proven botanicals shown in randomised trials to help you directly with hair loss. So unfortunately that one doesn't apply and that's where were moving on to hormones. Also, I just wanted to say that when it comes to supplements that just like with your hormones, just like with that bad boy friend hormone cortisol, you want to be in your Goldilocks position you don't want to take too few supplements and you don't want to take too many, because there is some hair loss associated with taking too many or excessive supplements. For instance if you get too much

vitamin A (we know that the limit is somewhere around 10,000) it's a little lower for some women and higher for others, but if you get too much of certain supplements it can also cause hair loss. So you want to be careful about that, plus if you're taking too much you just start to make really expensive urine and we don't want that! We want to have you take the supplements that are really done a move that little for you and the most effective way to do that is that you are taking the supplements that address your nutritional gaps.

Okay, hormones, my favourite topic. So, across-the-board when it comes to your hormones there is a single drumbeat, when it comes to hair loss, and that is you want to find stability with your hormones. You want to find equanimity or equilibrium. What we want to do is minimise the wide swings when it comes to certain hormones, and that includes your thyroid, cortisol, insulin and vitamin D. Another one is the androgens (that is number five). So those are the five hormones we really want to pay attention to, that we want to stabilise. So, drilling down a little further, when it comes to your thyroid, the way that you are able to stabilise your thyroid, I think about it in two different ways; one is you want to keep your levels in that optimal range we've been talking about. So, this is also available in this program Jackie, right? Giving those optimal ranges.

[Jackie]: mmm hmmm [yes]

[Dr Sarah]: What I mean here is you want to have TSH your thyroid stimulating hormone, you want to have that in your optimal range, and I've mentioned before that for some women that's 0.1 to 1.5, and for other women it's 0.3 to 2.5 (that's what I put in my book), because sometimes 1.5 is a little too aggressive for people, but that's the optimal range. We had a woman in a recent Q&A who is asking us about her hair loss. You might remember that question Jackie?

[Jackie]: yes

[Dr Sarah]: maybe we can even talk about her a little bit. She was saying that she had gone to her primary care doctor, she had her thyroid checked and she was told everything was fine. She went and saw her gynaecologist and was told that her FSH and her oestradiol, and it turns out that the TSH was above 2.5 which I do not think is fine. I think that can contribute to hair loss. So, you want to find stability, you want to keep your TSH in that sweet range, and one of the things that helps is to make sure that you are taking a potent multi-vitamin. So, those multitis that we just talked about are going to help you with keeping your TSH where you want it to be.

The second way to stabilise your thyroid is related to this problem of auto immune thyroiditis, that we've talked about. You've heard me dish before about how the cause of low thyroid function in the US is the burned-out phase of Hashimoto's thyroiditis, or autoimmune thyroiditis, where your immune system attacks your thyroid, and initially you have increased thyroid hormone levels,

whenever the war is being waged, but over time you burn out your production of thyroid hormone. Whenever you're in one of those war fazes, you know where the battle is on. That can increase your hair loss. You could be talked before about how people can have these flares.

[Jackie]: yes

[Dr Sarah]: for women who are really sensitive to it and attuned, they can feel when they have a flare. You know, a woman who talks a lot about this is Mary Schomer, and when she has a flare she really knows it, and she has increased hair loss. So, she takes her biotin and she takes her potent multi-vitamin and she's really careful to manage stress, so she's less likely to have one of these battles going on. So that's how you create some stability around your thyroid. Focus on the TSH and if you have antibodies, ideally, you want to keep them in the normal range, or at least as low as possible.

The second hormone is cortisol and I talked quite a bit in the hormone research programme about how to get cortisol into that lovely Goldilocks position of not too high or not to low. This is the main stress hormone, of course I'm oversimplifying in many ways because your stress response (the way that you deal with losing your keys, for instance) is varied and there's a whole family of hormones called the glucocorticoids and cortisol is the one that is the best-known. What I like about it is that it is this totally tangible hormone which we can manage, so we can manage it like we manage other things in our lives. With cortisol there's many ways to manage it. My favourite way is with yoga and mindfulness (and other doesn't work for everyone). I wanted to also mention another favourite thing, which is something called heart maths. Heart maths, have you heard of them before Jackie? I don't know if we talked about heart maths before?

[Jackie]: no

[Dr Sarah]: yeah, so hard maths is pretty cool, I want to give you some additional tips beyond what we have in the hormone research programme. The cool thing about heart maths, it's this company based in Santa Cruz, developed by a number of scientists who just realised that one of the biggest problems we have when it comes to our health is stress and our response to stress, especially our response, and women are so vulnerable when it comes to stress response. We just aren't designed to cope with the amount of stress that most of us have on our plates and as women are much more likely to have an abarent response, you know we have... errr.. We get wiggly [laughs], like our entire system, as sympathetic nervous system just totally gets wiggly. More so than men, and if any men are listening to this you probably know what I mean. Yes, well, let's just keep quiet about that part.

So, when it comes to heart maths they have these really cool different trainings. I was on the Ricki Lake show a while ago and I performed this on Ricki Lake.



There's a little handheld gizmo that's about the size of an iPhone that you can get called in M wave, and you put your thumb on the sensor and it detects your heart rate variability. I don't want to get too technical here, but it measures the time between each of your heartbeats and that is actually related to your stress response. So, for people who have kind of flat line or they're really jagged and irregular, they don't really have much stress resilience. They don't really have much adrenal suppleness. It turns out that using this little gizmo, and I have one right here next to my laptop, this gizmo when you train on it one or two times a day it reduces your cortisol level by up to 23%. That's pretty cool!

[Jackie]: oh my goodness. WOW!

[Dr Sarah]: so this is one of those things. A lot of women need external accountability, you know, you tell them they need to go to yoga more often all they need to meditate, they just feel like "are you kidding me, do you understand what my life is like "," you're telling me to add yet another thing". [laughs]

[Jackie]: and that's the people, like me included, who need it most, when I have that kind of reaction.

[Dr Sarah]: well, that is true, and the cool thing is this little device is super simple. It's not complicated, you stick your thumb on there, it turns red if you have a bad stress response and you need to sync your breathing too little lights that go up and down to show you how to breathe, and it turns green when you're doing well. So people train on this thing, and they just know how to do it, they just flip on the clam switch. The cool thing here is you are either stressed out or you're calm. There is no middle ground and if you're not choosing to be calm you're probably in the stress place. But, it just takes three deep breaths to flip the switch and get into the calm mode. It's kind of like a toggle switch. So, any other ideas about how to manage cortisol, we talked about some of the supplements that help, some people are big fans of mindfulness, you know, John Cabotsin, going to your local retreat centre, all those things I think are good, but I really think the heart maths approach is a good one.

The next hormone is insulin and as part of the tests tests that are recommended for you, either as a baseline or if you have moderate to excessive hair loss, just doing it as a diagnosis, and think it's really important to test your fasting glucose. So I mentioned that. We know from new data, Mark Hyman has reported its recently really well, we know that if you have a fasting glucose which is 87 or higher you have some degree of insulin resistance. Now that's more accurate tests, you can do a two hour glucose tolerance test. You can also do a fasting insulin. We want your fasting insulin to be less than seven. You can even go to [canaryclub.org](http://canaryclub.org) and test these things. You can test your fasting glucose, new fasting insulin, your haemoglobin A1C, which tells you about what's going on with glucose in your body for the past three months. That's kind of cool, so rather than looking at what happened overnight in doing a snapshot with the fasting glucose,

you can also do this haemoglobin A1C. I like people to be less than five when it comes to the haemoglobin A1C. So, insulin is a really important one to get into sweet spot. You don't want it to low, you don't want to honey, I know you keep hearing this mantra from me, but insulin is that fat storage hormone and if you're struggling with your weight and with that last resistance insulin is most likely involved. So, if you take on this really tangible hormone and get it into sweet spot, you will do much better with managing your weight, creating a good neighbourhood, and hanging onto the hairs on your head.

Vitamin D, vitamin D is so fascinating as many of you know; we are just learning every day a new job that vitamins D covers. I think there's about 400 jobs it's involved with now. You've probably heard me talk about how it's involved with your thyroid hormone production. It's really important for that. It's important for your brain. We know that it's linked hair loss, especially the vitamin D receptor, and when your low in vitamins D there are some women who have an increased risk of hair loss. So, you really want to keep your vitamin D in that happy place. I like vitamin D2 be between about 75 and 90. Toxic is greater than 150. I can't tell you how many people I see running around with a vitamin D that's less than 50. We know that you at least need a level of 52 to be in the camp for reducing your risk of breast cancer. So vitamin D, really important, really important for you hair.

Then, when it comes to testosterone, I want to say a couple of things about testosterone. I was emphasising that the number one cause of hair loss before menopause is that your low in iron and probably low lysine, and after menopause the number one cause of hair loss is usually related to the balance of androgens with your other hormones. So, it's important to check those things out. Low iron is the second most common reason for hair loss after menopause, so it still needs to be attended to. When it comes to your testosterone I just want to say couple of things since were grouping them together, maybe in a different format here and it bears repeating. The first thing is that I really want you to be eating a low glycaemic index food plan. But, they me just maybe describe for a moment what I mean about glycaemic index because this is really important, this is really important. So, if you struggle with hair loss and you know that your androgens are high or you have a problem with the androgenic pattern of hair loss which is near the temples, kind of like a male pattern, we know that it lowers your androgens to eat slow carbohydrates. So let me just tell you what I mean about glycaemic index, and of course I'm oversimplifying here, there's a whole thing called glycaemic load that I'm not going to get into, but the idea of glycaemic index is just that it is a ranking of carbohydrates on a scale from 0 to 100. According to the extent to which they raise your blood sugar after you eat them. So foods that have a high glycaemic index all G I are rapidly digested. What I mean by those is that they're fast carbs. So, there are absorbed fast, they result in marked fluctuations of your blood sugar levels, and that's not good. We know that that causes the bad neighbourhood. It creates higher androgens. It triggers acne. It causes your cortisol levels to go up and the link with hair loss isn't as tight as I would like to be, but they are all kind of group together. All of these

problems kind of group together. Creating a bad neighbourhood is not good for your hair.

So this is what leads to a problem with not just blood sugar but then your insulin and in your neighbourhood and your cortisol etc... It effects it affects your lypids. So let me just give you a couple of examples here. When you have a baguette, we've been talking about the French and I think they probably make bread differently in France, but we know the white bread has a glycaemic index of about 72, and as compared to Quinoi. Quinoi has a glycaemic index of about 50. I'm a big fan of Quinoi. It's a seed. So, that's an example of a difference in glycaemic index. We know that when you have a glycaemic index of 55 or less, out of 100, it will not raise your blood sugar to the extent that having a baguette would.

And, you can sometimes be surprise with glycemic index, like grapefruit for instance has a glycemic index of 25. When you eat a low glycemic index food plan it reduces your androgens by up to 20%. One study that was done in Australia looked at a low glycemic index diet where about a quarter of the plate was protein about 30% was fat and about 45% carbohydrates. They found out when they a low glycemic foods according to the food plan their ill to reduce inflammation and they also lowered androgens.

So the other things that help you with getting your androgens into balance are getting enough fiber.... We know this is true both before and after menopause and for women who have polycystic ovarian syndrome... By the way polycystic ovarian syndrome, we spoke with this before; polycystic ovarian syndrome is the number one endocrine problem that women have when they're in their reproductive years but it turns out that polycystic ovarian syndrome extends way beyond your menstrual years. It's defined based on having an irregular menstrual pattern, like a cycle that's every 35 days or less often, but it turns out that you can diagnose it in utero. You can also diagnose it after menopause and it's actually important to know if you have this.

The cool part is that if you get enough fiber in your diet it really helps you with testosterone because testosterone is secreted in the bile in your body and in his reabsorbed in the got and used again. Same thing with estrogen. You want to be careful to use your estrogen in and get rid of them and the fiber helps you getting rid of them. And I'm a good friend of JJ Virgin.. We talk quite a bit about this. The interesting part about fiber is that we know we know you need some where between 40 to 50 g of fiber a day and the average American woman gets about 14 g.... Like a third of what is ideal. We know that Omega-3s, those long - chain polyunsaturated fatty acids are so good for you. They're the most proven supplement on the market for improving health.

They're so important for many many different things including your hair, including your androgens, and we know that women who have a problem with inflammation in the body and have polycystic ovarian syndrome. We know that they have too many of the Omega-6 fatty acids versus Omega-3s and this is likely due to having an imbalance with your androgens. Getting more Omega-3s

is really helpful for you. The problem here is that often the vegetarian sources like flax oil don't actually move the needle very well. There are some people who just don't metabolize a well; they only get about 5% of the benefit of the flax oil that they're taking.

So, one last thing I want to say about your androgens: that is related to zinc. Zinc has a really important role in your hormone balance and we know that zinc deficiency is associated with higher androgens. So, foods that have zinc include green beans, sesame, and pumpkin seeds, and I really like for people to get zinc from food sources. You can often get enough from food but you want to be in that Goldilocks position has always because think toxicity can also be a problem. You want to be in that sweet spot not too much not to little.

I want for people to have hope around this because the vast majority of hair loss and problems with your hair, feeling like it's not growing well, feeling like your hair is getting more brittle, all of those things I have found the vast majority to be reversible. It's not that there's one pill that's a magic bullet. We started with that this idea of using things like Propecia which is only approved by the FDA for men and hair loss in the gets rid of every testosterone molecule in your body. I don't think that there is one pill that's all said but I want people to have hope that when you start to work on the neighborhood of your body and you make that turn and you start to manager hormones and get them working for you not against you and you step into that place of empowerment the cool part is your hair loss improves. Maybe you start making new hair maybe you have increased rate of growth of your hair, maybe use.losing more than 100 hairs per day, but it also helps all these other things.

The cool downstream effects of focusing on our hair and preventing hair loss or reversing hair loss is that you get all these other benefits. You notice that your energy is better, you feel like you got more vitality, you look in the mirror universe your eyes are sparkling again. They're all these other benefits that go along with creating a good neighborhood that helps to keep the hair on your head. I definitely want to end on a note of hope and for people to feel like the vast majority of people have reversible hair loss and it's a rare exception when you can't turn the boat around. Hooray for that. I was able to reverse my hair loss when I was in my 30s. You can just kind of imagine... I had two kids in my 30s, I was working full-time in McMedicine and I was what I call the four F's I was frazzled frumpy fat and you can imagine what the for theft was... I was losing my hair, I was constipated... It was not pretty. I turned the corner and if I turned the corner you can too. We're here to help you fix it.

Jackie: great and thank you Dr. Sarah and for everyone listening we will see you in the next call.