

## HPA-D 3-5 – Part 13

What about the high cortisol-to-cortisone ratio? You'll notice that this will almost always appear in the context of another pattern like high free or high total cortisol. But remember, the factors that favor more cortisol include hypothyroidism, inflammation, visceral obesity, high insulin, excess sodium, and liquor issues, which often increases the circulating half-life of cortisol. So you'll want to make sure to check on these in addition to addressing the rest of the pattern.

<b>More cortisol</b>	<b>More cortisone</b>
Genetic polymorphisms	Genetic polymorphisms
Hypothyroidism	Hyperthyroidism
Inflammation	Human growth hormone
Visceral obesity	Estradiol
Insulin resistance	Testosterone
Excess sodium	Quality sleep
Licorice	Magnolia, Scutellaria, Ziziphus, Citrus peel
Obesity and insulin resistance	Ketoconazole
Hyperthyroidism	

If [the] cortisol-to-cortisone ratio is elevated, it pushes the entire picture further toward high cortisol. For example, if cortisol is only high normal, but the cortisol-to-cortisone ratio is high, I would treat that patient as if [they have] a high cortisol pattern. Obviously, it would be important to avoid licorice in these particular cases.

## Low cortisol: cortisolone ratio

More cortisol	More cortisolone
Genetic polymorphisms	Genetic polymorphisms
Hypothyroidism	Hyperthyroidism
Inflammation	Human growth hormone
Visceral obesity	Estradiol
Insulin resistance	Testosterone
Excess sodium	Quality sleep
Licorice	Magnolia, Scutellaria, Ziziphus, Citrus peel
Obesity and insulin resistance	Ketoconazole
Hyperthyroidism	

Here's the opposite pattern with more cortisolone. Factors that tend to favor this include hyperthyroidism, human growth hormone use, estradiol, good sleep, which is another reason it can be important because cortisolone is less active than cortisol, drugs such as ketoconazole, and adaptogenic herbs such as magnolia, *Scutellaria*, (*xysophis?* 01:15), and testosterone. As with the last pattern, this often occurs in the context of another underlying pattern. And I would treat the pattern that we see initially first. But a low cortisol-to-cortisolone ratio does bias toward low cortisol levels. It's the opposite of what we just described on the last slide. So if a patient has low normal cortisol, but a low cortisol-to-cortisolone ratio, I would probably go ahead and treat that as a low cortisol pattern overall because of the combination of the patterns. That's really the perfect situation for licorice because it decreases the conversion of cortisol to cortisolone, and it can help increase the half-life of cortisol.

## Low melatonin

Intervention	Dosage/Comments
<b>HPA Balance</b>	Contains Relora, Sensoril, L-theanine; take 1 cap BID or TID
<b>Acetyl-CH, 5-HTP, melatonin and/or Doc Parsley's Sleep Cocktail</b>	As needed if circadian rhythm/sleep/mood disrupted, melatonin is low (often is in high cortisol states)

Low melatonin also often appears in the context of another pattern. In particular, it accompanies high cortisol patterns. Since cortisol opposes melatonin, we often will see the two come together. In that scenario, you would treat using the protocols we've mentioned previously, often including nutrients for circadian disruption such as Acetyl-CH and phosphatidylserine. It also includes 5-HTP, which is a melatonin precursor, and melatonin itself can be an option. Typically, we'll use some sort of combination of all of the above, so maybe an HPA Balance to help reduce cortisol if that's present and then Acetyl-CH, melatonin, and/or Doc Parsley's Sleep Remedy. I like this as a starting place, generally, because it has a low dose amount of melatonin, about 300 micrograms, which, as we know, is typically more sedating for most people, as we mentioned previously, than the higher doses. It also has L-tryptophan, [5-hydroxytryptophan] (5-HTP), a little vitamin D, some magnesium, and the PharmaGABA that we talked about recently.

## High melatonin

Intervention	Dosage/Comments
<b>Neuroflam NT</b> (Apex Energetics)	Contains curcuminoids, rutin, baicalin (skullcap), apigenin (chamomile), luteolin (chrysanthemum); dose is 1 cap TID
<b>Phyto-Brain E</b> (Apex Energetics)	26:1 ratio of DHA to EPA. Each teaspoon includes 60 mg of phosphatidylcholine and more than 100% of the recommended daily value for vitamin E. Dose is 1 tsp/d

So let's look at high melatonin. Remember that if melatonin is high in the urine, it's almost always a result of supplementation. So make sure that you ask, you look at the supplement list. But if they just happen to not be supplementing, it can be a sign of neuroinflammation. One product that we like to use for this is NeuroFlam by Apex Energetics. You can see the combination of nutrients here up on the slide. And then also, Phyto Brain-E from Apex Energetics, which is a 26-to-1- ratio of [docosahexaenoic acid] (DHA) to [eicosapentaenoic acid] (EPA). So [a] really, really high dose of DHA, [and it] also includes 60 milligrams of phosphatidylcholine. DHA is really important for brain health and reducing inflammation. So I think it's important to keep this in mind if you see high levels of melatonin in the urine, you ruled out supplementing as a result of that, and that you also are correlating with symptoms.

## Elevated C.A.R.

Intervention	Dosage/Comments
<b>HPA Balance</b> (Vital Plan)	Contains Relora, Sensoril, L-theanine; take 1 cap BID or TID
<b>Phosphatidylserine</b>	PS dose: 100-200 mg TID
<b>Acetyl-CH (Apex Energetics), 5-HTP, melatonin</b>	As needed if circadian rhythm/sleep/mood disrupted, melatonin is low (often is in high cortisol states)
<b>Metabolic Synergy &amp; Glucosupreme</b> (Designs for Health)	Only if blood sugar high; Metabolic Synergy dose 2 caps TID; Glucosupreme 2 caps BID
<b>Boswellia, curcumin &amp; fish oil</b>	Only if significant inflammation present
<b>CBD</b>	Optional. Use if anxiety severe, or other conditions present

We covered the cortisol awakening response saliva tests in the last section. So we wanted to talk a little bit about how to address abnormal cortisol awakening response (CAR) results if you get them. If the CAR is elevated, i.e., you see over 600 percent increase in the first 30 minutes, you would likely treat that as a high cortisol pattern. So this is actually the same protocol for high cortisol that we talked about before. You can add supplements if there's evidence of disrupted rhythm or high cortisol at night. Then you'd use the phosphatidylserine, maybe Acetyl-CH to reset the rhythm. So you have all these different options that we've talked about previously. How to add different things in if there are different variables.

## Low C.A.R.

Intervention	Dosage/Comments
<b>Vital Adapt</b> (Natura Health Products)	Contains Eleuthero, Rhodiola, Schisandra, Ashwagandha, Cordyceps, Reishi, Ginseng, Licorice
<b>Adrenal glandulars</b> (Dr. Ron's)	Optional; some patients with high cortisol do well with them. 3 capsules in the morning
<b>Licorice</b>	Patients with very low cortisol may benefit from additional licorice; Vital Adapt contains 10 mg of glycyrrhizin per 2mL dose; patients with low cortisol can safely take up to 100 mg/d
<b>Acetyl-CH, 5-HTP, melatonin, L-theanine</b>	As needed if circadian rhythm/sleep/mood disrupted, melatonin is low
<b>Boswellia, curcumin &amp; fish oil</b>	Only if significant inflammation present
<b>CBD</b>	Optional. Use if anxiety severe, or other conditions present

If the cortisol awakening response is lower than 350 percent, it's considered low or blunted. And in that case, you would consider the low cortisol protocol that's pretty identical to what we've discussed before. But we're just putting it here, too, so you can see that again.

## Normal HPA lab results/ subjective HPA dysfunction

Intervention	Dosage/Comments
<b>Adaptogens</b>	Either HPA Balance, Vital Adapt, or Gaia Adrenal Support depending on presentation
<b>Adrenal glandulars (Dr. Ron's)</b>	Optional; some patients with high cortisol do well with them. 3 capsules in the morning.
<b>Acetyl-CH, 5-HTP, melatonin, L-theanine</b>	As needed if circadian rhythm/sleep/mood disrupted
<b>Relora and/or PS</b>	If sleep is significantly disturbed, may want to consider taking one or more of these before bed
<b>Metabolic Synergy &amp; Glucosupreme</b>	Only if blood sugar high; Metabolic Synergy dose 2 caps TID; Glucosupreme 2 caps BID
<b>Boswellia, curcumin &amp; fish oil</b>	Only if significant inflammation present
<b>CBD</b>	Optional. Use if anxiety severe, or other conditions present

In the testing section, we mentioned that not all lab tests for HPA axis function are perfect. And HPA-D is ultimately a clinical diagnosis. You will see patients with relatively normal labs but who have every sign and symptom of HPA-D in the book. I would still likely treat those patients for HPA-D. It's harder because you don't have the benefit of labs to track progress, and it can be harder to be specific about which supplements to use. In these cases, I typically avoid using strong stimulants or supplements such as licorice that clearly raise cortisol. I'd also minimize using supplements that clearly lower cortisol. This is where adaptogens such as a moderate or mild adaptogenic formula, possibly adrenal glandulars, can work really well. So [HPA] Balance, Vital Adapt, or better yet, the Gaia [Herbs] Adrenal Support depending on their presentation, whether they're more stimulated or more tired. I think [HPA] Balance is better when you suspect a high cortisol state. Vital Adapt is likely better for lower cortisol and fatigue. And Gaia is more balancing perhaps and a little more gentle if you're just not 100 percent sure which direction to go.

Then the adrenal glandulars, [and] those are optional, of course. Some patients do well with them. So you might want to consider Acetyl-CH if their circadian rhythm or sleep or mood is disrupted. Relora can be good for mood and phosphatidylserine if sleep is significantly disrupted. You could consider giving one before bed and then the supplements we've talked about for blood sugar and inflammation and then possibly [cannabidiol] (CBD), all the things that

we've discussed about different variables, different presentations, and imbalances that the patient may have. You might want to pull in and take out certain supplements to help augment the final product.

Okay, that was a lot. I hope you're still with me. As always, let us know if you have any questions, and we'll see you next time.