

## **You need deep learning about immunity – Stephen Cherniske**

We're all busy. The stock market is falling like a stone and we're in an election year. But it's time to focus on immunity. And there are three reasons other than the coronavirus (Covid-19).

1. It's winter
2. This year's flu is particularly virulent
3. You're getting older

This is going to be a three-part series on immunity from a biochemist with 50 years of academic, research and clinical experience. I directed the nation's first FDA-licensed clinical laboratory specializing in nutrition and immunology. No one knows everything, but I believe my perspective can help protect you and your family.

It's winter. There are many reasons why infections are more frequent and severe in the winter. Yes, it's cold, but that by itself is not associated with increased illness. It's what you do when it gets cold. Our activity levels go down. Less than one third of American adults exercise regularly. That means, for the vast majority, daily activity is the only movement, and peak immunity requires lots of movement. Your lymphatic system is a critical part of immune competence. You have more lymph fluid in your body than blood, and you have this fabulous pump to get blood to roughly 75 trillion cells. Lymphatic circulation has no pump, per se. it is circulated mainly by the movements and contractions of muscles. When you stop moving, your immune competence declines. Action steps: You can join a gym. Be sure to have a personal trainer for at least a few sessions to help you design a safe and effective workout. Yoga, because of the wide range of movements, is especially good for lymphatic circulation.

The winter/ vitamin D connection

Even if you do get out and expose your skin, the sun's rays (UVB) in the winter produce very little vitamin D. We've evolved to compensate for that by storing vitamin D in the liver and fat tissues. But what if you went into the winter months with insufficient Vitamin D? And how would you know, since very few doctors bother to measure this? Action Steps: Inform (do not ask) your doctor to include serum vitamin D in your next blood chemistry. You will probably be in the normal range, but remember that normal people get sick a lot and die in their mid-70's. Research suggests that the optimal range, where immune support, bone building and other benefits occur, is between 50 and 100 ng/mL.

Part Two, tomorrow:

The critical role of DHEA, inflammation and Immunity. Subtitle: If you are heading to the hospital with any infection, bring this with you and make your doctors read it.

## **Immunity Deep Dive Part Two**

Coronaviruses produce a two-phase infection, and each has to be treated differently. In phase one, the immune system is activated by inflammatory cytokines like IL-1 $\beta$ , IL-6, and TNF- $\alpha$ . Think of these chemical messengers as a blaring alarm, activating an army of immune cells to fight the invaders. In this stage, immune support can be really helpful. This includes all the things you know: hydrate with pure water, rest, lots of brightly

colored fruits and vegetables, garlic and onions, and no refined sugar. And some things you may not know: supplementing with Vitamin C, vitamin D, Vitamin A palmitate, zinc, magnesium, medicinal mushrooms, elderberry, echinacea, omega 3 fatty acids, olive leaf extract, selenium - sorry if I've forgotten your fave immune compound, but you get the picture. In phase one, you hammer immune support and monitor your condition with a thermometer and a pulse oximeter. Every home should have these two devices. The thermometer (thermoscan or conventional) measures your body temperature. The pulse oximeter (\$29 at Amazon) measures your heart rate and blood oxygen level. You want your percent oxygen saturation (PO) to be above 95%. A reading below 90% or a fever above 102 means its time to seek medical help.

If you're not feverish and your PO is over 95%, and you have optimal levels of DHEA (a hormone intimately involved in the immune response) you will recover in 3 to 5 days.

If you have other health problems, especially heart or lung disease, or you're obese, over 65 with very low levels of DHEA, you will probably move to phase two, which includes impaired lung function, a severe cough, sinus and nasal congestion, weakness, fatigue, impaired sleep and a persistent fever. People in phase two should seek medical help and may be hospitalized.

Hospitals are great for monitoring your condition. They can provide breathing treatments, pain management, IV fluids and can manage co-infections including bacterial and fungal complications. But with coronaviruses, phase two often includes body aches, which can indicate something called cytokine storm. The blaring alarm that mobilized your immune system via production of inflammatory cytokines... has continued and now poses another risk. These same cytokines are now causing inflammation in your joints, muscles and airways. Unfortunately, the conventional go-to response is prednisone or a related drug. These steroids rapidly reduce inflammation but they also suppress immunity, and that is the razor's edge that can determine the outcome of the infection.

The good news is that there are natural plant-based anti-inflammatories that do not suppress immunity. I'll discuss those in Part Three tomorrow. But since you are not about to get those in a hospital, there is another important step you can take. We have known for decades that the immune suppressing effect of prednisone can be minimized by co-administration of DHEA. You can instruct your doctor to measure your DHEA sulfate level. Even if you are not going to be treated with a steroid, this is vitally important information. Keep in mind that you will most likely be in the normal reference range; but that merely indicates the amount of DHEA sulfate in the blood of people your age. Research strongly supports an optimum range – where there are remarkable immune benefits – of 300-450 mcg/dL for men and 200 to 350 mcg/dL for women. With a serious infection, it is very likely that your blood DHEAS will be in double digits, which in my opinion is catastrophic. DHEA can be supplemented orally and if micronized, is highly bioavailable, delivering much needed immune support within hours. If your doctor needs scientific support for your decision, please download my e-book, The Case for DHEA available for free at [My2048.com](http://My2048.com).

### **Immunity Deep Dive Part Three: Inflammation**

In the Metabolic Model of Aging, two dynamic forces determine one's quality of life; an ongoing see-saw relationship between damage and repair. On the repair side, we have

the astounding regenerative forces of stem cells, growth factors, anabolic hormones, anti-oxidants and the homeostatic activity of the endocannabinoid system (ECS). On the damage side we have inflammation, oxidative stress, wear and tear, infection, and emotional stress. For most people, the turning point – when damage starts to exceed the body’s repair capacity- is age 40. And since unrepaired damage begets more damage, the downward spiral accelerates. In other words, the older you get, the faster you age.

Since the most damaging force is inflammation, I spent decades studying this process. I directed the nation’s first FDA-approved clinical laboratory specializing in nutrition and immunology, looking at the interplay of inflammatory proteins and the immune system. Then, I was privileged to work with a team studying anti-inflammatory compounds from medicinal plants, using microplate, high-throughput genomic analysis. The 96 well plate I’m holding in the photo was a breakthrough at the time. These could be loaded into auto-feed towers (to my right) so that 9,600 experiments could be run on a daily basis.

The result was the identification of plant compounds that could balance inflammation at the DNA level. And the operative word is balance. Merck was working on the same problem using a different strategy; creating synthetic compounds to turn these genes off. We thought that was a terrible idea because these genes, including COX 2, also perform important functions in the body. Ignoring the concept of balance led to the Vioxx disaster, which according to the American Heart Association, killed more than 30,000 people. But I digress.

You can read more about **plant-based anti-inflammatories** at [My2048.com](http://My2048.com). The ones Natalie and I are using are derived from three species: **scutellaria baicalensis**, **acacia catechu** and **morus alba**. There are others, of course, but none with multiple human clinical trials published in peer-reviewed biomedical journals. Tomorrow, I’ll discuss the current trend of producing drugs to impair immunity. I’m not an anti-pharmaceutical nut, but this may chafe your fanny. Onward!

#### **Immunity deep dive – Part Four**

If you watch TV, especially during the day, you cannot help but notice that, seemingly every week, there is a new drug to treat plaque psoriasis. According to [Drugs.com](http://Drugs.com), there are now 56 drugs to treat this one condition. Plaque psoriasis is not a fatal disease, but the new drugs to treat it can kill you. I am not an anti-drug fanatic. Pharmaceutical companies create products that save lives, but this explosion of new drugs for a condition that for most people is nothing more than an embarrassment... you have to wonder what’s going on.

It starts with the pharma mindset, which I call “drugs for bugs.” This came directly from the dramatic and world-changing effects of antibiotics - which also led to the dramatic overuse of antibiotics, but that’s another story. Point is that drug companies usually start with the assumption that there is something to kill. That is not the case with autoimmune disease, but they just can’t break the habit. I imagine drug companies gathered to brainstorm an approach to autoimmune disease.

“Hmm,” says Bob, “let’s see. The immune system is attacking healthy tissue... I know! Let’s cripple the immune system.” “Brilliant!” They all shout, and run off to their labs to develop more than 50 drugs to do just that.

If you think I'm being too snarky, watch a few ads for rheumatoid arthritis drugs, where they state that the cause of the problem is an overactive immune system, concluding that their immune-crushing drug is the obvious solution. There are two problems with this. First, of course is potentially fatal side effects associated with suppressing the immune system, ie leaving you defenseless against infections. And second, the premise is wrong. Autoimmune disease does not result from an overactive immune system. It results from a confused immune system. The solution requires a deeper understanding and a more nuanced approach. Natalie (my board-certified doctor wife) has a wonderful way of explaining this to her patients. "These drugs, she says, acting out the scenario with her hands, "are like a hammer; when all you may need is a screwdriver to make a few adjustments."

Some of the adjustments are diet and lifestyle related, and by lifestyle, I don't mean that lupus patients should go join a gym and take aerobics classes. But the natural tendency for people in pain is to become inactive, and that only compounds the problem. There are specific types of exercise for different conditions, and in all cases, guidance from a trained professional is important. Yoga is highly recommended for the gentle approach that incorporates a wide range of movements, as well as its stress-management benefits.

In regards to diet, the adjustments include focusing on a wide variety of fresh fruits and vegetables, wild-caught fish and hormone-free poultry; while avoiding pro-inflammatory foods like processed snack foods, saturated fats, dairy and all sugars. Switching from coffee to green tea has been shown to be helpful. Important supplements include omega-3 fatty acids from fish oil, krill or algae sources, vitamin E and most important, vitamin D. To help them remember, Natalie suggests her patients say the word, "auto-immuni-D."

Then comes the biggest, and no doubt the easiest adjustment. Getting back to the concept of a confused immune system, it's important to understand that immunity is controlled to a significant degree by signaling molecules called cytokines. Some, like interleukin-6 (IL-6) tell the immune system to "shoot anything that moves." Others like IL-2, tell the immune system to only go after the bad guys. Leave healthy tissue alone. In the early 1980's it was found that autoimmune disease is characterized by elevated IL-6 and very low levels of IL-2. Scientists knew that one of the effects of DHEA is to lower IL-6 and elevate IL-2, providing balance to the immune system. So they gave lupus patients DHEA and just about everyone improved. Every subject was able to reduce or stop their prednisone, while achieving the same level of pain control. Then they increased the dose and found that many subjects went into remission.

Was this heralded as a major breakthrough in the treatment of autoimmune disease? No, because DHEA is not a drug. It did spur a number of companies to create similar compounds (known as DHEA analogs) that could be patented. But these did not produce the same benefit as native DHEA. We now know that DHEA also acts as a natural anti-inflammatory in Rheumatoid Arthritis, and that adding DHEA can enable patients to achieve better results with a lower dose of immune-suppressing drugs.

#### **ACTION STEPS:**

If you suffer from any autoimmune disorder, instruct (do not ask) your doctor to measure your blood level of DHEA sulfate (serum DHEAS) . Most likely, you will be in double digits, when the optimum range for women is 200 to 350 mcg/dL. For men, research

supports a DHEA sulfate range from 300 to 450 mcg/dL. Tell your doctor that you want to play a more active role in your care, and that includes attention to diet, exercise and supplementation with DHEA.

Now, circling back to plaque psoriasis, the unanswered question is, why use powerful immune-crushing drugs that leave you vulnerable to infection (including flu and Coronavirus)? Why use a sledgehammer when a screwdriver will do? I believe it is because the profit margins on these new drugs are astronomical, so once again, I imagine the board room scenario. Chairman: "We're making carloads of money with these drugs for rheumatoid arthritis, lupus and MS. But there must be a way to sell even more." Bob: "well, psoriasis has an autoimmune aspect that we can exaggerate, er, I mean highlight." Chairman: "Excellent! get marketing on it right away!"

For a free download of Stephen Cherniske's e-book, The Case for DHEA, go to [My2048.com](http://My2048.com)

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### **Immunity Deep Dive Part Five: Medicinal Mushrooms**

How to make Reishi tea

NOTE: DO NOT pick, eat or prepare mushrooms unless you are trained in identifying specific species. Reishi (ganoderma) is pretty easy to identify (see photo). We collect Reishi mushrooms in the forest around our home in Olympia WA. They can be made into a tea right off the tree, or sliced and dried. These slices (see photo) will maintain their immune-stimulating properties for decades. Even without the threat of flu or Coronavirus, we will have a crock pot of Reishi tea brewing every few weeks in the winter.

1. Cut or break the slices into pieces about the size of your thumb.
2. Add 2 cups of pieces to 3 quarts of water in a pot or slow cooker.
3. Steep at a temperature just below boiling for at least an hour.
4. Sip 4 to 6 ounces twice a day. Keep refilling the pot to make sure there is enough for everyone. You can use the same pieces for 3 to 4 days .

If you don't live in the PNW, you can buy Reishi slices on the internet. You can also buy medicinal mushroom powders and tinctures. In the coming weeks, you will see scores of new immune products. I suggest buying from leading national brands or someone you know and trust. Healthy Skeptics will have a comprehensive immune product available in 10 days.

NOTE: Medicinal mushrooms are also available in co-ops and many supermarkets. While all mushrooms provide some immune support, SHIITAKE mushrooms (see supermarket photo) have the highest immune boost of the edible varieties. Chop and stir fry or add to soups and chilli.

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