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# Inflammation: The Silent Killer

**#Stop The Myths and Mis-Inflammation**

NEAL SMOLLER, PHARMD

# House Keeping Items

- Rewatch at any time!
- Slides will be posted shortly
- Other tools and guides will be posted as we discuss
- Questions? Ask away!
- I need feedback! Check follow up email.
- LOTS TO COVER!



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# Who The Heck is Neal?

- I'm a registered pharmacist, practicing for 15 years
- I own a pharmacy and supplement store in Woodstock, NY
- I'm a HOLISTIC PHARMACIST. I've seen the power of lifestyle interventions, natural products, *and* traditional medications.
- But I know both "healthcare" industries are sick.
- I've developed Woodstock Vitamins, because we need a new path for managing and preventing disease.
- We've weaponized my approach - my almost obsessive rigor - to deliver **better products, better advice, and better information** to help you live your healthiest life.



# A Holistic Pharmacist?

- That's largely a made up term.
- My goal isn't to push drugs. It's quite the opposite.
- I want more people off medications, using nutrition, exercise, stress management, sleep, and yes, supplements to prevent as much disease as possible.
- I also know that while our healthcare system is a bit jacked up, I know that medicines, doctors, and the traditional stuff is a part of the whole thing.
- We can't live our best lives without all 3 pieces - lifestyle, supplements, medications.
- That's what I believe a real holistic pharmacist is.



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**I'm a big-mouth professional who gets a little crazy and asks tough questions...**



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# THE BIG MOUTH PHARMACIST



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# THE BIG MOUTH PHARMACIST



## Upcoming Episodes:

Fandom  
Social Media  
Vaping  
Fitness  
Sleep



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# Important Disclaimers

- The statements in this webinar have not been evaluated by the Food and Drug Administration. Any products discussed are not intended to diagnose, treat, cure or prevent any disease.
- The information provided is for educational purposes only and does not constitute medical advice.
- Always seek the advice of your physician or qualified healthcare provider with any questions or concerns about your health.
- Check with your doctor before beginning any exercise program.
- Never disregard or delay seeking medical advice because of something you have heard or saw here, or read on the internet.



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# My Responsibility

To be responsible!

No outrageous claims. Real, practical advice around products and what the current evidence shows.

In other words: No B.S.!

# Today's Discussion

- There are a million blogs that will talk about botanicals and their “anti-inflammatory” properties
- They're just filling up a page without really telling you anything
- There's no one saying what I'm going to say
- I want to challenge our preconceptions
- I want to challenge the framework that these “experts”, the blogs, social media say inflammation lives in
- This isn't about why ginger is great for you
- This is me teaching you how to really think about inflammation and what actions you can take that will actually matter.



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# What We Will Cover

- What Inflammation Is: Acute vs Chronic
- Causes & Effects of Chronic Inflammation
- Mis-Inflammation
- Reducing Inflammation Holistically

# Inflammation Science

Making Boring Stuff Fun



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# What Is Inflammation?

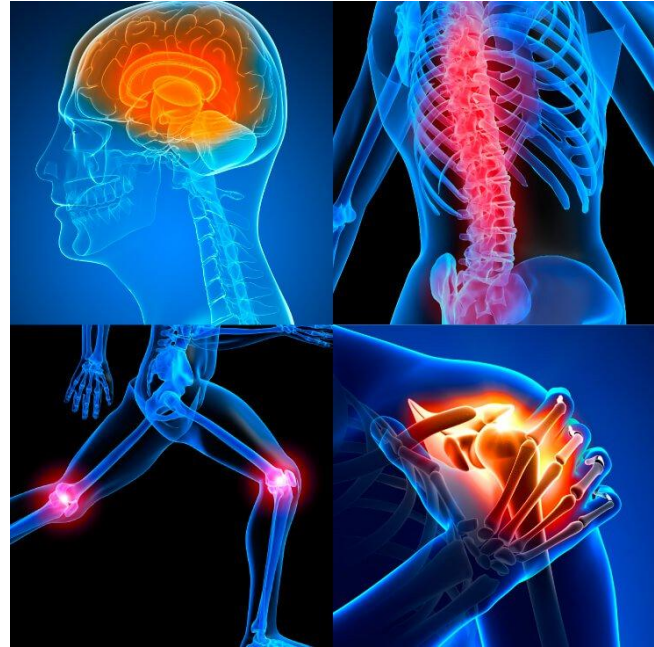
- Inflammation is a natural response to stimuli.
- What does that mean? Let me show you!



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# Classic Signs Of Inflammation

- Redness
- Swelling
- Pain
- Heat
- Loss of function



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# Inflammation Is A Rapid, Broad Response

- Inflammation is a generic response to danger
- Cells contain these signalling molecules
- “Something’s wrong. Go clean it up. Send more help if you need!”
- Part of the innate immunity (vs pathogen specific adaptive immunity)

# The Immune System

- If you've read my stuff or heard me speak before, you know I take one definitive position about the immune system:

***The immune system is complex!***

- Not respecting the complexity (i.e. promoting “boosting”) does a disservice and highlights an “experts” incompetence
  - **It's totally OK if you say it!** but not an advisor
- Inflammation, being a part of the immune system, is also very complex
- We'll try to stay north of the specifics



# Stimuli? What Stimuli!?

- Bugs! Pathogens - bacteria, fungii, virii
- Irritation
  - Chemicals - pesticides, herbicides, environmental contaminants, smoke
  - Allergens - pollen, mold, dander
- Broken cells
  - Tissue damage for the above reasons
  - Physical injury - cuts, strains, pulls, breaks, scratches

# The Purpose Of Inflammation

- Very smart system
- Our cells have compounds that, once released, signal to the body that there's a problem.
- “A cell has popped!”
- Looks like this ->



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# The Purpose (continued)

- These signals will attempt to
  - Eliminate the cause of cell injury
  - Clear out dead cells and damaged tissue
  - Start the repair process
- Inflammation and the signals are our bodies first responders



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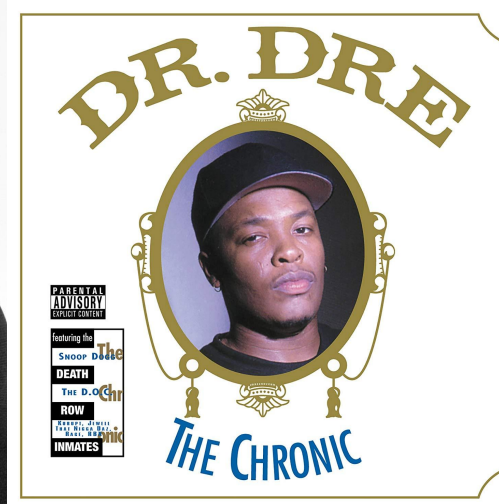
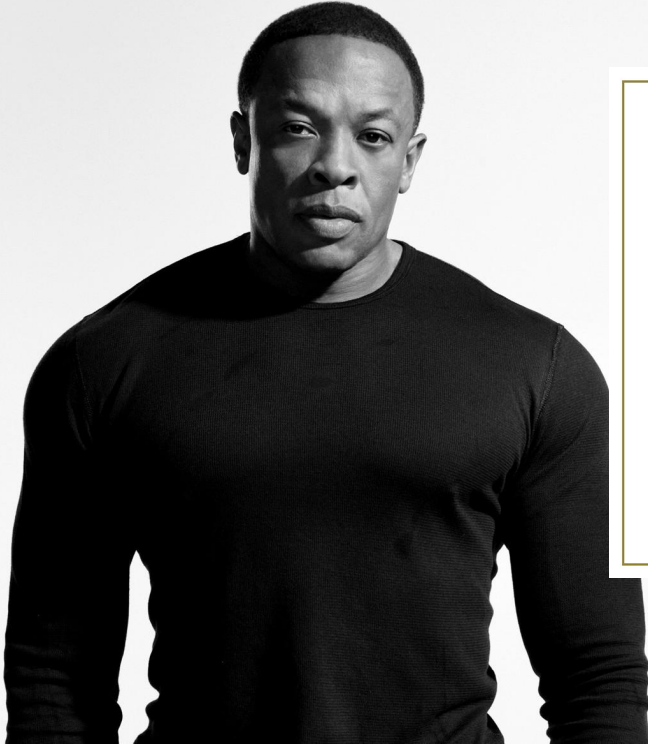
# Inflammation is good!

How good is it?

# Acute Inflammation

- So good, we call it [a] cute.
- Inflammation is NECESSARY
- Suppressing this inflammation would be **very bad**
- Acute inflammation can last up to 2 weeks
- Some inflammation can last 2-6 weeks (called subacute)
- Some inflammation can get a little chronic...

# Get That CHRONIC Inflammation!



# Chronic Inflammation

- Prolonged inflammation
- Inflammation that takes place over months to years
- **Eventually the types of cells present at the site of inflammation shifts**
- Simultaneous destruction **and** healing of the tissue
- Low-level inflammation becomes activated even when there is no apparent injury or disease







# Chronic Inflammation Is A Cycle

- **When unchecked, the immune system, responding to inflammatory signals, will prompt white blood cells to attack nearby healthy tissues and organs.**
- Without addressing it properly, you can get “locked in”
- Must work to remove the cause (The Night King, The War)
  - Didn't get rid of the bug
  - Continuous exposure to a low grade foreign material
  - Autoimmune disorders
  - Recurrent acute inflammation responses
  - Low level inflammation caused by poor lifestyle choices



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# Chronic Inflammation Symptoms

- Body pain
- Constant fatigue and insomnia
- Depression, anxiety, mood disorders
- GI distress
- Weight gain
- Infections

# How Bad Is Chronic Inflammation?

- We're not just suffering individually
- Chronic inflammation is a major GLOBAL problem
- 60% of people have 1 chronic condition associated with inflammation
- 42% have more than 1
- This data is 5 years old, predicted to escalate dramatically over next 15 years

# Mis-Inflammation

“Inflammation is bad”



- Acute inflammation is a vital part of human immunity, growth, and life in general
- Chronic inflammation is a unique, complicated situation that is associated with feeling bad and serious diseases



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# Diseases Associated With Chronic Inflammation

- **Diabetes**
- **Cardiovascular disease**
- **Arthritis**
- **Allergies**
- **COPD**
  - Acne vulgaris
  - Asthma
  - Autoimmune diseases
  - Autoinflammatory diseases
  - Celiac disease
  - Chronic prostatitis
  - Colitis
  - Diverticulitis
  - Glomerulonephritis
- Hidradenitis suppurativa
- Hypersensitivities
- Inflammatory bowel diseases
- Interstitial cystitis
- Lichen planus
- Mast Cell Activation Syndrome
- Mastocytosis
- Otitis
- Pelvic inflammatory disease
- Reperfusion injury
- Rheumatic fever
- Rheumatoid arthritis
- Rhinitis
- Sarcoidosis
- Transplant rejection
- Vasculitis



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## Notice How I Said That???

“Diseases **associated** with chronic inflammation.”

-Me, a moment ago

# Mis-Inflammation

“Inflammation is the root of all disease.”

“Chronic diseases are *caused* by chronic inflammation.”

- The broad claim that chronic inflammation is the root of all disease is inaccurate and irresponsible.



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# Chicken Or The Egg?

- Elevated inflammatory factors, among other things, seem to be a risk factor for chronic diseases
- **What causes the inflammation in the first place?**
- Is chronic inflammation present in a diabetic? **YES**
- Does a chronic inflammation CAUSE diabetes? **MAYBE**



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# The Scientific Footing of Cause and Effect Isn't Sound

- Great leaps are being made connecting the two
- Chronic diseases are multifactorial.
- Inflammation from unmanaged risks could contribute to worsening conditions, but it is not the SOLE factor.
- **Don't look to oversimplify this like the media does**
- The fight to fix chronic inflammation takes place on many fronts.

# Do I Have Chronic Inflammation?

- “Hey Neallie poo... I have all of those symptoms you mentioned, even a couple of those diseases. I feel tired all the time. Can I get a test to see if I have chronic inflammation and see how bad it is?”

Probably/most definitely you have it.

And yes, there are tests...

# Testing For Inflammation

- Testing for specific inflammatory mediators
- Homocysteine (technically)
- Fibrinogen
- Myriad of TLA's (Three Letter Acronyms)
  - C-Reactive Protein (CRP) is most common
  - SPE
  - SAA
  - TNF, IL1, IL6, IL8

# Mis-Inflammation

“You need to test to determine the presence and severity of chronic inflammation.”

- No, you don't. And how helpful will it really be?



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# Should We Test For Inflammation?

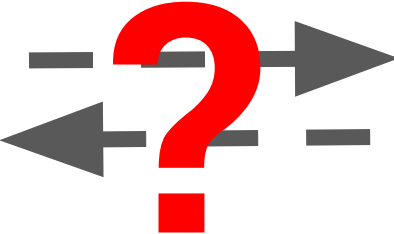
- Generally no.
- First, **what will the test tell you?** Inflammatory markers are up!
- Is this a result of an acute inflammation RIGHT NOW?
  - Am I sick?
  - Is there pollen?
  - Am I injured? Inside or out?
- Some are standardized, some are not.
- Most are stupid expensive.
- If you test, **how will that change how you behave?**
- What's the impact of a false negative?

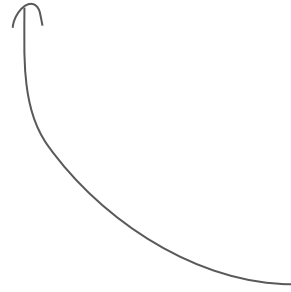


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# Watch For The Charlatan's Tricks...

- “I have the secret” *No you don't*
- “Get my consultation” ...\$750 *later*
- “Take this test” ...\$500 *for something that doesn't really tell you much*
- “Buy these 10 supplements.” ...\$350 *and you get expensive urine*
- **If it's so natural and you are so anti-establishment, why do you act like a doctor, especially when you really aren't?**

**Chronic  
Inflammation**  **Disease**



**Risk  
Factors?**



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# Chronic Inflammation Risk Factors

Getting To The Low Saturated Fat, Non-Deli Meat Of The Discussion



“Chronic inflammation is an **undesired, complex** immune response that is a result of many factors, all of which have to be managed or eliminated to break this unhealthy cycle.”



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# Risk Factors For Chronic Inflammation

- Diet
- Age - degradation over time or accumulation of oxidants?
- Obesity
- Smoking & exposure to chemicals or triggers
- Low sex hormones
- Sleep and stress disorders

**Doesn't this sound familiar? It should!**



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# Nutrition

- Inflammatory foods themselves
  - Unhealthy fats
  - Refined sugar
  - Junk food!
- Not eating enough anti-inflammatory foods
- Not eating enough antioxidants
  - Oxidation - cellular damage that increases inflammation

# Inflammatory Foods

- Foods that have been shown to trigger inflammatory responses in the body
- Chronic intake leads to chronic inflammation

# Inflammatory Foods

- **Sugar & HFCS** - processed sugars promote the release of inflammatory mediators. Displays addictive properties
- **Saturated Fats** - trigger inflammation in fatty tissue
- **Trans Fats** - fast foods, fried products, partially hydrogenated oils
- **Omega 6 - in excess**
  - Ratio should be close to 4:1 Omega-6:Omega-3, it is closer to 17:1 in most of us.
  - Excess intake decreases anti-inflammatory Omega-3 benefit!
- **Refined carbohydrates** - white bread. *This is why we are fat or unhealthy.*
- **MSG** - activates inflammatory pathways and can affect liver health
- Note: Obesity itself creates an inflammatory state



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# Inflammatory Foods List

- White bread, pasta, etc
- French fries and fried foods
- Soda & sugar sweetened drinks
- Artificial sweeteners
- Red meat
- Margarine and fake butters
- Vegetable and seed oils
- Deli meats - contain AGEs which are inflammatory
- Processed, packaged foods will normally contain one or more of these

# Anti-Inflammatory Foods

- Tomatoes
- Avocado
- Olive Oil
- Green, leafy vegetables
- Broccoli
- Nuts
- Fatty Fish
- Fruits - blueberries, berries, pineapples



# Inflammation From The Diet

## EAT THIS

- Tomatoes
- Avocado
- Olive Oil
- Green, leafy vegetables
- Broccoli
- Nuts
- Fatty Fish
- Fruits - blueberries, berries, pineapples

## AVOID THESE

- White bread, pasta, etc
- French fries & fried foods
- Sugary drinks & soda
- Artificial sweeteners
- Red meat
- Margarine and fake butters
- Vegetable and seed oils
- Deli meats
- Processed, packaged foods

# Dehydration and Inflammation

- What happens when you get dry skin?
  - Red
  - Painful
  - Swelling
  - INFLAMMATION
- That's happening where you can see it.

# Dehydration and Inflammation

- Water is a lubricant
  - Our connective tissue, joints are mostly water
  - Too little water → tissue damage → inflammation
- Water is an irrigant
  - Allows easy transport of inflammatory and immune cells in and out of the area
- Drink Up!
  - Half your body weight in ounces (minimum 64 ounces)
  - + Any losses from exercise
  - + 8 oz for each serving of caffeine or alcohol
- Further Reading: [Hydration/Cramps Blog!](#)



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# Sleep and Inflammation

- Sleep  $\leftrightarrow$  Inflammation
- Good sleep helps us clear up inflammation
- Inflammation prevents us from getting good sleep
- Not all inflammation is bad, of course!
  - Inflammatory components (cytokines) are directly involved in inducing sleep
- Further reading: Sleep blog!
- Future podcast episode with an internationally known sleep expert!

# Obesity and Inflammation

- Fat cells release a steady, low grade level of cytokines - inflammatory signalers
- Higher weight, higher release
- Inflammation may have a role in insulin resistance
- Lose weight via healthy diet!

# Stress and Inflammation

- Stress, like inflammation, is good and can be needed
  - Bears
  - Mother-in-Law
- Constant stress → elevated cortisol
- Cortisol suppresses inflammation where it's needed, impairing immune system
- Leads to constant tissue breakdown

# Exercise and Inflammation

- Moderate exercise produces anti-inflammatory compounds
  - Fast walking!
  - 20 minutes at a time
- Doesn't need to be intense
- On the other hand, elite athletes can have increased inflammatory markers (i.e. marathon runners)
  - Isn't that far too long to run?
  - Who's ready for a joke?

## Running Joke Courtesy of Mike Speirs

- I asked my runner friend why he wore Band Aids on his nipples.
- He said it prevents chafing, which can lead to severe nipple bleeding.
- Then, completely serious, he said, “You’ve never run so far that your nipples bled?!”
- I said, “I’ve never run so far that I couldn’t see where I started from.”
- [www.MikeSpeirs.com](http://www.MikeSpeirs.com)



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# Treating Inflammation

Neal, The Lawyer, Ready For Duty



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# The Natural Vs Traditional False Dichotomy

I believe we consumers are being misled by the natural products industry. They paint themselves as different from the traditional medical establishment. I believe they are the same.

This isn't good or bad, it just is.

- We are, put simply, a complex set of reactions
- Breaks in those reactions are attack points for therapies
- All medicine - natural and traditional - have ONLY those attack points



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# Your Body: The High School Hallway

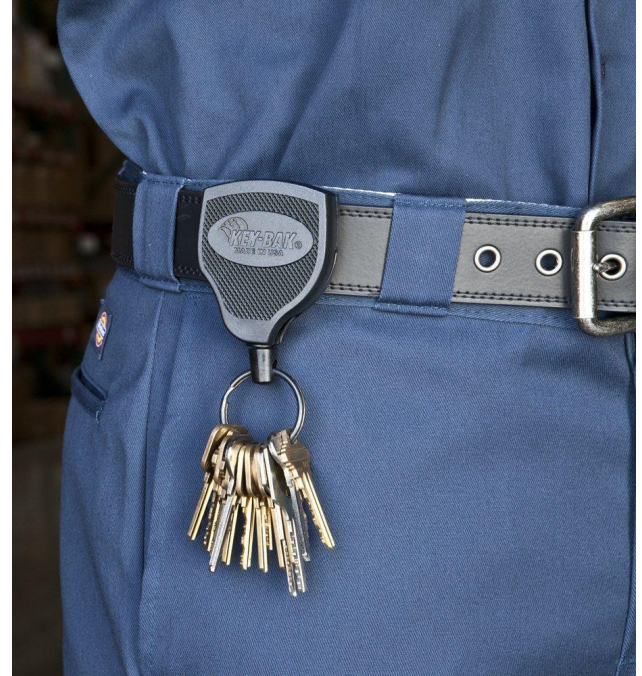
- Think of your body like a building with lots of doors - like a high school
- There are a finite number of doors
- It's not like a drug or herb will blast open a hole in the wall to get access to a room
- Your body's natural compounds, drugs, and natural products are all using the same doors



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# Drugs And Supplements Are The Keys

- Some keys will open a very specific door - **the target/desired effect**
- Some keys will open that door and others - **the side effect(s)**
- In fact, that's most keys.
- “Drugs don’t do one thing.”
- We’re complex!



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# What, Then, Is The Difference Between Drugs And Supplements?

- In general, **older drugs and supplements are similar**
- Older drugs and supplements are keys that open many doors
  - i.e. Many side effects
  - Less refined
- Supplements tend to be “weak”
  - The doors are heavy
  - They don’t push them open all the way



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# Mis-Inflammation

“Natural anti-inflammatory compounds are safer, especially when compared to medications.”



- “Natural” anti-inflammatory compounds will interact with the SAME pathways that traditional anti-inflammatory compounds will
- Natural products are often less potent, or weaker
- They are not studied as much - so side effect profiles are largely unknown and often downplayed



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“We are too quick to downplay the side effects and risks associated with natural products.

We must measure the risks and benefits of any therapy, using the best available data in an **honest and objective** way, whether the product is natural or traditional.”



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# Anti-Inflammatory Medications

- We know the most about these compounds
- At the cellular level, inflammation is created by the glitter bomb signalers being released
- 2 Major Pathways
  - Shut down production of inflammatory compounds (COX, prostaglandins, cytokines, etc)
  - Turn off production of inflammation signalers (NF-kB)
- Medicine and supplements will use these same doors!



# Anti-Inflammatory Medications

- Steroids
- NSAIDs
- Metformin - reduces inflammatory mediators, CRP and fibrinogen
- Statin drugs - anti-inflammatory effect partly responsible for improving CV outcomes
- Immune suppressive therapy
- Biologicals

# Separating Inflammation From Pain

- When most of us think of inflammation, we think of joints or pain
- Tissue damage leads to inflammation
- Frequently used joints may not be able to fully heal
- Chronic inflammation
- Pain is signaled using the same pathways and compounds involved in inflammation (which makes sense, right?)



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## Ask This Question:

- When you use any product for its “anti-inflammatory” benefit, ask yourself, “Is it really reducing inflammation, or is it just changing how I feel about the pain?”

## Pain vs. Inflammation

- NSAIDs reduce pain and inflammation
- Pain reduction happens within hours
- **The anti-inflammatory component takes regular use for up to 2 weeks before it begins.**
- So is the case with most other anti-inflammatory compounds: they require repeated use.
- A single dose of Advil, turmeric, ginger, etc doesn't reduce inflammation. Continuous use does.

## Chronic Use For Chronic Inflammation?

- The thought process is - for both natural products and traditional - to take these products on the regular to reduce the inflammation to help with the disease
- **We don't know if these anti-inflammatory compounds treat inflammation in THAT way.**
- Will doing so reduce chronic inflammation and disease? **Or just the inflammatory markers?**
- It is VERY specific to the condition. No generalizations can happen.



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# NSAIDs As The Sacrificial Lamb

- What would you say to me if I told you to take Advil on the regular? **Hopefully, no.**
- Dose AND duration of therapy can increase your risk for serious side effects.
- Drugs that affect inflammation pathways can have these risks!
- Affecting these inflammatory components over a long period of time increases risks of...
  - GI ulceration
  - Bleeding (via platelets and ulceration)
  - Kidney disease
  - Reduced wound healing
  - Heart attacks
- NSAIDs do this because they are more potent

## Food For Thought

- If all these compounds are working on the exact same pathways, aren't they the same thing?
- Wouldn't the positives of the therapies be equal if we gave equal amounts (potency equivalents)
- Wouldn't then, all negatives be equal, too?
- Before we swallow the info they all put out there about natural anti-inflammatory compounds being ok to use long term, let's be honest about what we're chewing on.



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## Here's My Fear

- We use supplement forms of plants to reduce inflammation...
- ...thinking they are safer
- We're more likely to use them longer.
- And even push the envelope of dosing.
- In reality, the risks are quite possibly the same as with traditional medicine, especially with continuous use or higher doses!
- **Non-judicious use of natural anti-inflammatory supplements (turmeric specifically) will be our next “oopsie” moment.**



# Anti-Inflammatory Supplements

- Turmeric
- Frankincense (Boswellia)
- Ginger
- Rosemary
- Cat's Claw
- Green Tea (EGCG)
- Thyme
- Sage
- Cayenne Pepper (capsascium)
- White Willow
- Resveratrol
- Pycnogenol



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# Anti-Inflammation vs Diseases

- Small bits of data say they work on these same pathways as traditional medicines
- Reduce these markers of inflammation - lots of data to support that!
- But...
  - Is there clinically relevant improvement of the severity of the disease?
  - Is there a reduction of life-threatening events?
- The same should be asked of prescription options!
- Are we wasting our time? Are we exposing ourselves to risk?



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# The Shortcuts Never Work

- Long term use of medications and supplements are shortcuts
- No amount of ginger tea will overcome...
  - A high saturated fat diet
  - Excess body fat
  - Poor sleep
  - Not eating any fruits and vegetables
- Don't let them sell you shortcuts
- Know that there is work to be done
- Know that the work is simple, but not easy
- **I will happily support anyone in doing the real work of wellness.**
- I'll be your cheerleader!



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## Neal's Recommendation On Anti-Inflammatory Supplements

- **Short term** use of ones that actually do something - turmeric, boswellia
- Avoid aspirin-like compounds (White willow bark)
  - Aspirin = blood thinner
- DON'T supplement resveratrol and pycnogenol, other less active anti-inflammatory supplements. Waste of \$\$\$.
- Instead, incorporate these compounds into your diet via their food sources
  - Ginger, Turmeric, Cayenne, Sage, Green Tea
- In moderate amounts as part of a varied diet
- Delicious, good tasting, foods we don't normally get exposed to



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“I have a problem following  
rules and want to be  
different.”



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# The Anti-Inflammatory Road Map



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# Manage Or Eliminate Risk Factors Contributing To Inflammation

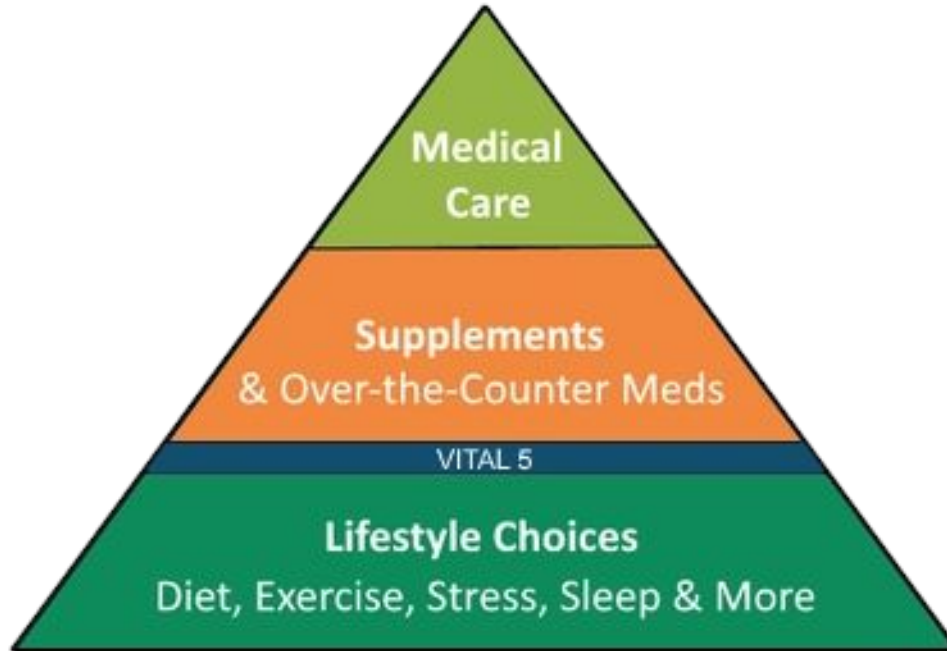
- Diet
- Exercise
- Stress management
- Sleep
- Environmental control & quality
- Take fewer, better supplements on a short term basis
- Manage diseases and risks with traditional medicines where appropriate

**What does this sound like?**



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# The Wellness Pyramid



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# The Vital 5 For Inflammation

- Omega-3 Supplementation: Yes!
  - EPA + DHA at 3000mg total
- Probiotics: Yes!
- Calcium & Bone Support: Technically, yes!
  - Vitamin D below normal may affect inflammation
- Proteins: Yes!
  - Collagen for the win!
- Micronutrients: Yes!
  - Throw away the multivitamin, take whole food greens and antioxidant supplements!



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## BONUS: CBD For Inflammation?

- Maybe?
- Pain vs inflammation
- More research needs to be done around which cannabinoids impact which inflammatory components and what that means for chronic inflammation

## Concluding Thoughts

- Your goal should not be NO inflammation. You should be hyper-focused on managing risk factors that contribute to chronic inflammation.
- Supplementation with compounds with “anti-inflammatory” benefits should be limited to short term only. These compounds are best incorporated to your nutrition plan as healthy foods.
- We are a complex mesh of intersecting networks. We are very dynamic and complicated. There is no “correct” answer, but instead multiple, proven strategies that work in synergy to help you live your best life.

# We'll Help You Anti-Your-Inflammatories

- If you have any vitamin, multivitamin, or wellness related questions, please don't hesitate to reach out to me
- 845-521-7455
- [neal@woodstockvitamins.com](mailto:neal@woodstockvitamins.com)
- [www.woodstockvitamins.com](http://www.woodstockvitamins.com)  
and click the chat link



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# Supplement Recommendations

- Alaskan Omega 900
- Collagen Peptides
- Vitamin D
- Nutriplex Whole Food
- Nutriplex Super Greens
- Vital Greens & Reds

[woodstockvitamins.com/flameoff](https://woodstockvitamins.com/flameoff)

CODE: **FLAMEOFF15**



# Join Us Again!



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