



ION* Intelligence
of Nature™



What does
“Intelligence of Nature”
mean?

Our invisible communicators: The Microbiome

In her ancient and inherent wisdom, nature uses communication to connect us to what we need to thrive. One device of nature's innate ability to communicate is the microbiome.

A collection of bacteria, fungi, and even parasites that exists on and within each of us, the microbiome is what helps facilitate communication and connection between us and the natural world.

Human

1 species – 20,000 genes

Parasites

300,000 species – 2 billion genes

Bacteria

40,000 species – 2 million genes

Fungi

3,500,000 species – 125 trillion genes



We are hardly human...

You are mostly microbes with at least 10 times as many microbial cells as human cells. They are responsible for:


- digesting our food
- making our vitamins
- educating our immune system to keep pathogens out
- producing essential brain chemicals called neurotransmitters that control our mood.

Further, your microbiome is not set.

It is constantly changing and adapting to new environments with:

- the things you eat
- the places you go
- the air you breathe





How the microbiome speaks

A balanced microbiome communicates with the intestinal cells and prevents disease-causing bacteria from sticking to the gut lining.

It does this using a process called electron transfer, or redox signaling. You can think of redox molecules as the words the microbiome uses to communicate.

“redox”= reduction and oxidation

Redox reactions include:

- Photosynthesis
- Respiration
- Corrosion

In the gut, this signaling controls inflammatory response.





“All disease begins in the gut.” -
Hippocrates

A dysfunctional, unbalanced microbiome contributes to:

- inflammation
- digestive issues
- brain fog
- and too many diseases to name...

This is known as gut dysbiosis.





A diverse microbiome is key, but let's go deeper

For your microbiome to thrive, it needs a healthy space to live, and your gut lining is foundational.

- largest barrier system between you and the outside world
- two tennis courts worth of surface area from nose to rectum
- one cell layer thick
- houses 70-80% of your immune system
- held together by tight junctions (cellular seals)
- coated in a mucosal layer, where your microbiome lives





Tight junctions: intelligence at a cellular level

The importance of tight junctions cannot be overstated.

Tight junctions are protein seals that hold our cell membranes together.

Tight junctions:

- are intelligent gate keepers of the gut
- keep toxins and foreign particles out of the bloodstream
- allow nutrients to enter, and
- support the microbial “terrain” on which our microbiome lives



Tight Junction Function

Further, tight junction impacts:

- front line immune function / inflammatory response
- nutrient delivery
- mental wellbeing (neurotransmitter production)
- cellular hydration
- detoxification
- cellular metabolism and hormone production
- sleep quality



How does this all fit together?

— *tight junction integrity*

— *strong gut lining*

— *stable environment for microbes*

— *balanced microbiome*

— *inherent health*

A person wearing a hat and holding a long pole stands in a lush green field. In the background, there are rolling hills or mountains under a clear blue sky. The scene is captured in a cinematic style with soft lighting.

If nature is intelligent...

what is the problem?



We are working against ourselves

Over the last sixty years, several factors have played major roles in the decline of tight junction function, microbiome diversity and overall health:

- factory farming
- processed foods
- widespread antibiotic use

Today:

- leaky gut has become increasingly widespread
- two thirds of people in the U.S. suffer from some kind of recurring gut issue



Antibiotic exposure comes in many forms

Primary Exposure:

83% of Americans take at least 1 antibiotic prescription every year.

A single course of antibiotics can negatively impact composition of both oral and gut microbiome for at least a year.



Livestock: the secondhand smoke of the gut

Secondary Exposure:

Roughly 30 million pounds of antibiotics are used in our meat, dairy, and poultry industry per year.

This contributes to the development and spread of drug-resistant bacteria.





Pesticides and herbicides are in fact antibiotics

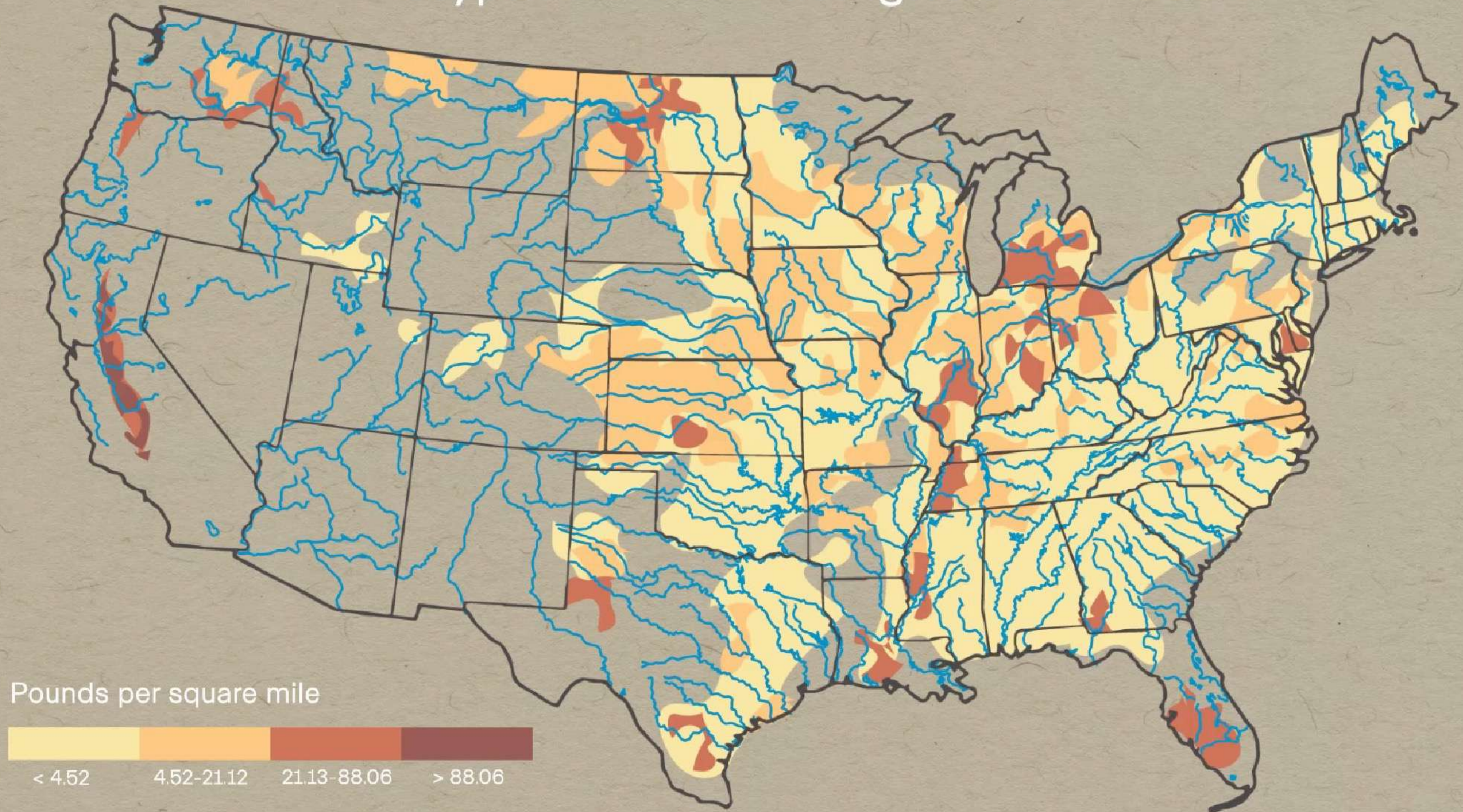
Perpetual Exposure:

Glyphosate (Roundup) is one of the most dangerous and prevalent antibiotics, and the most unavoidable.

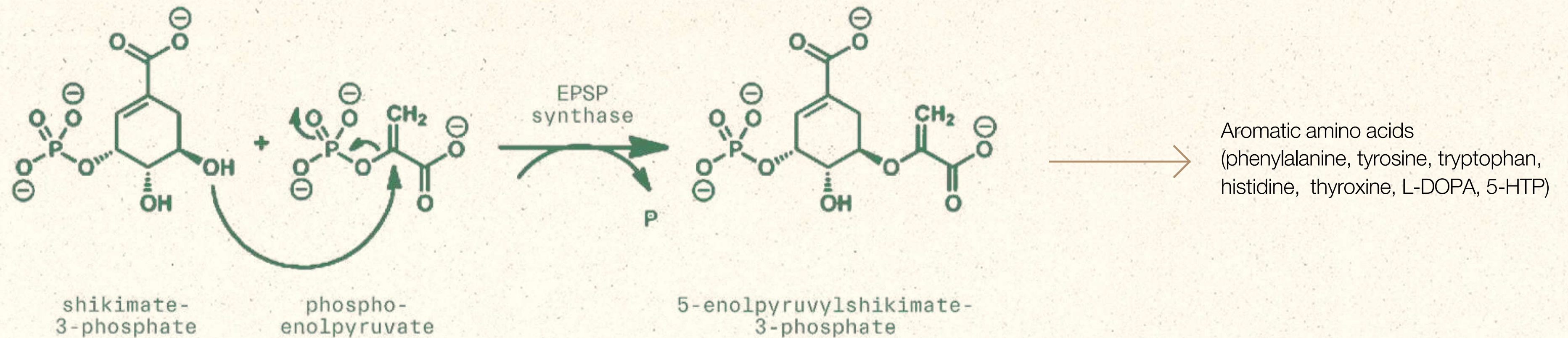
- 300 million pounds on U.S. soil every year
- 4.5 billion pounds worldwide every year
- Found in 75% of rain and air samples in much of the U.S.
- Found in urine, blood, and breast milk of feed animals and humans.
- 93% of Americans tested at 3 parts per billion (ppb) of glyphosate, well over the permitted levels for tap water in the E.U. (0.1 ppb)



Glyphosate use in Agriculture 1992



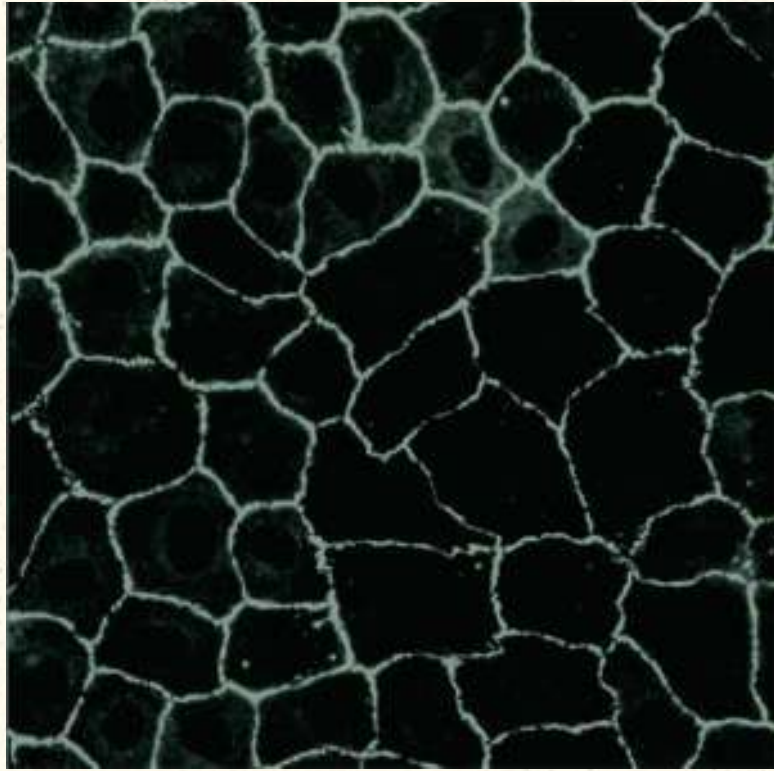
Glyphosate Prevents the Production of our Protein Building Blocks



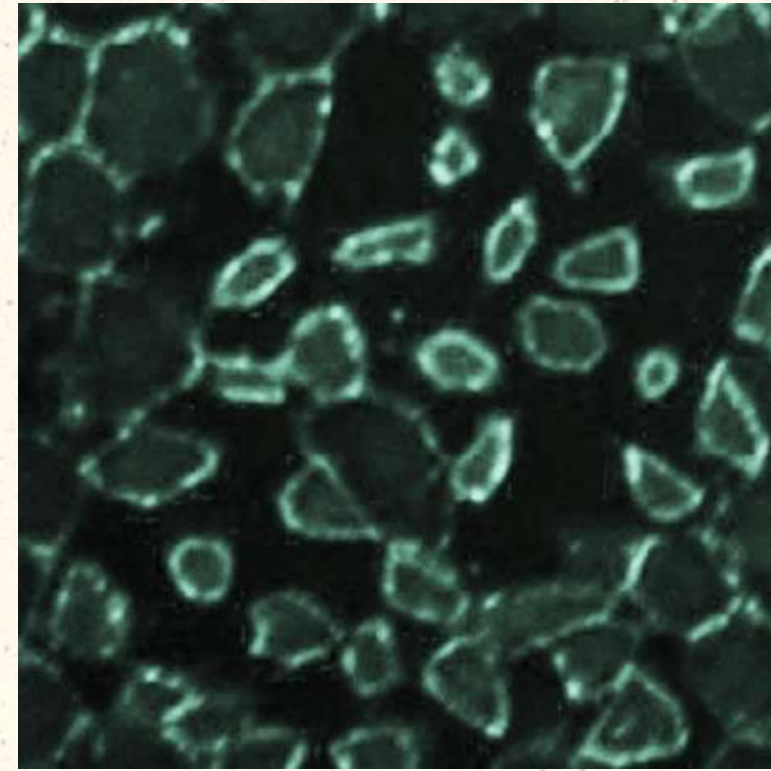
Glyphosate blocks the shikimate pathway which is:

- the metabolic pathway that exists in plants, fungi, and bacteria.
- the source of essential amino acids.

Your gut on glyphosate:

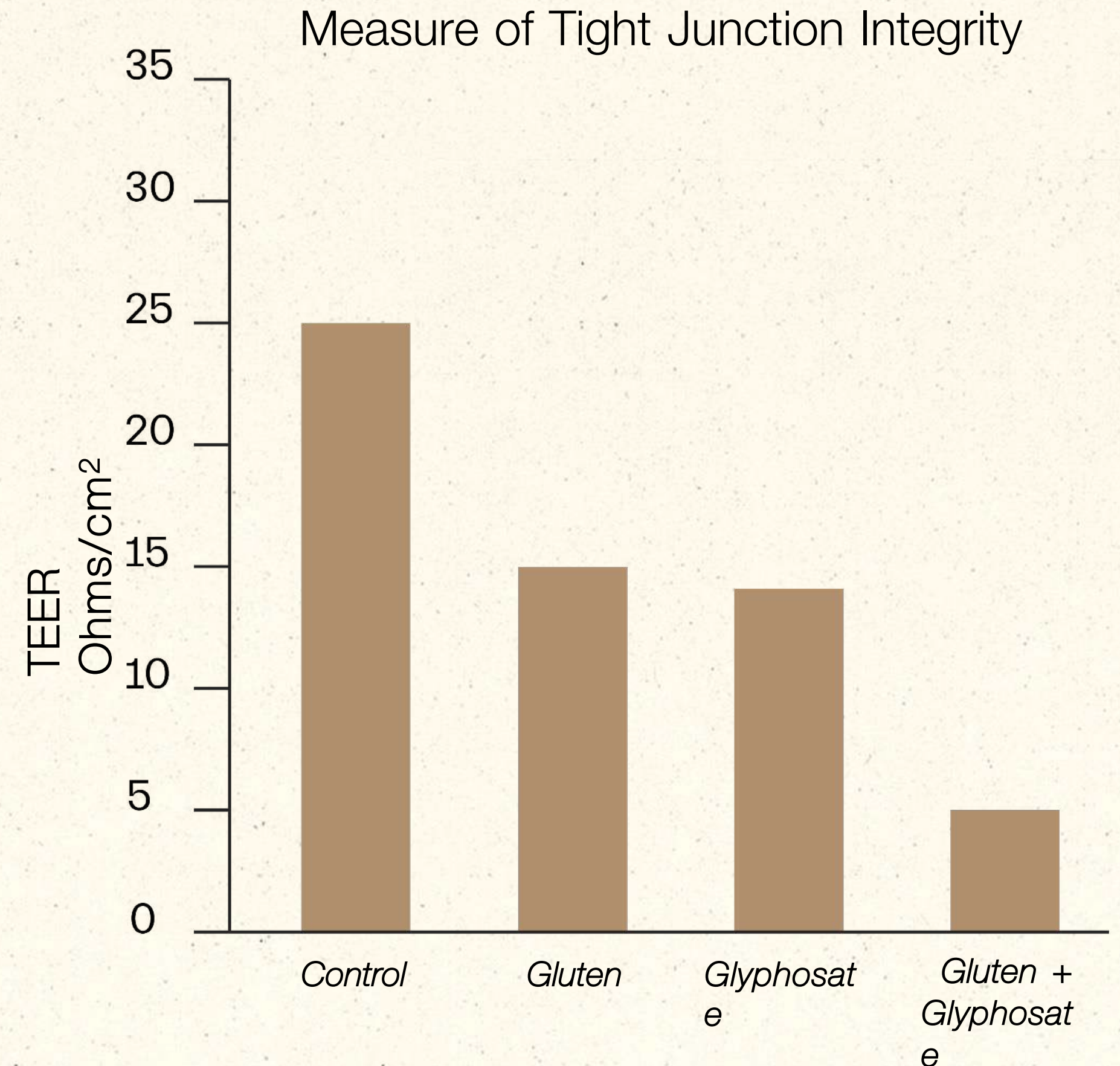


This is your gut membrane.

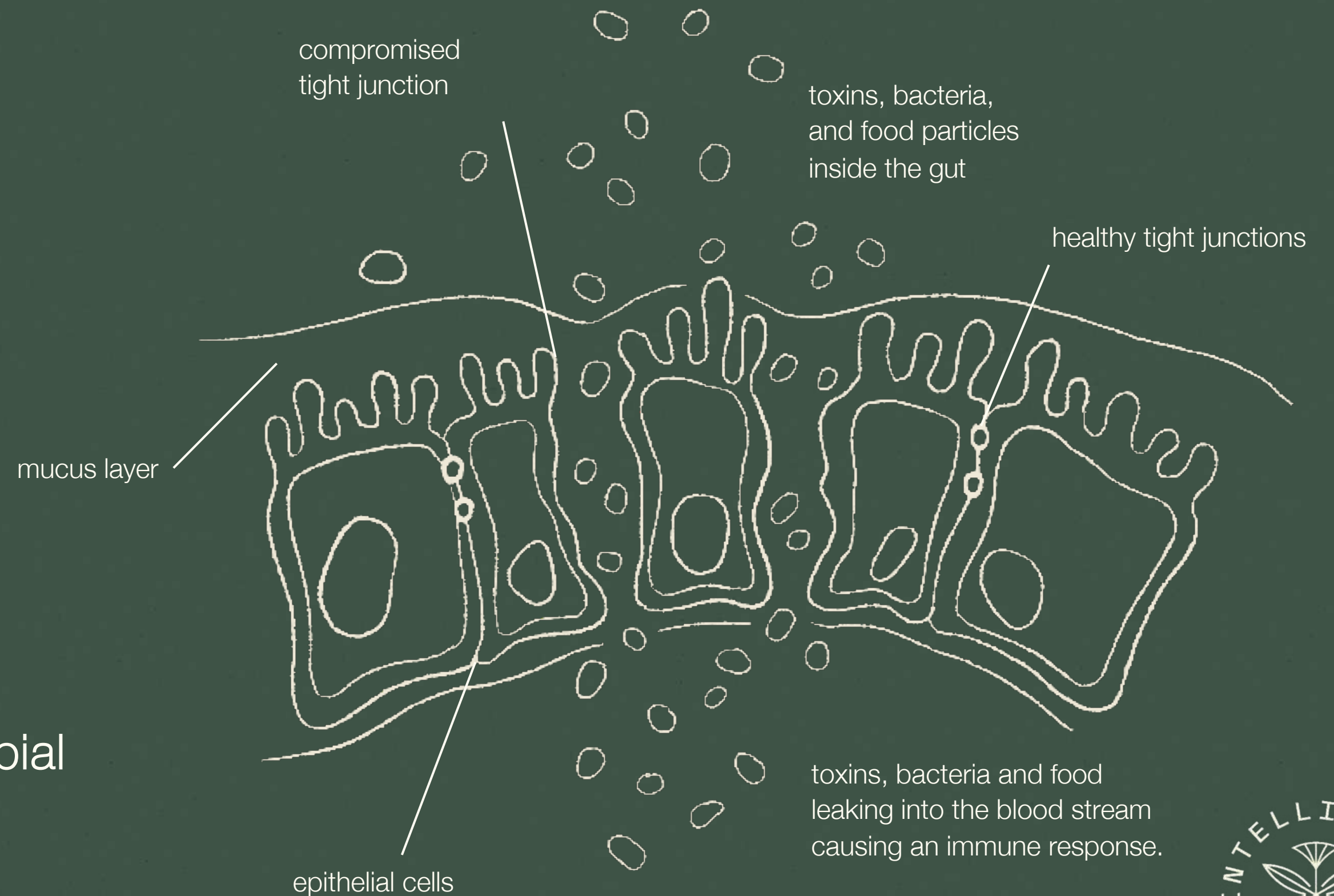


This is your gut membrane on glyphosate.

There is a growing body of well-developed science that demonstrates that the tight junction barrier in the gut can be degraded with exposure to glyphosate.



Communication Breakdown



With a breakdown in tight junction function comes a breakdown in microbial communication and ultimately a breakdown in health.





The
60-million-year-old

answer

ION* is the Intelligence of Nature

- Humic extract derived from ancient soil.
- Fulvate (bacterial metabolites + trace minerals) is the unique family of molecules in this humic extract.
- These fulvates are the molecular communication network of the microbiome (microbe to microbe and microbe to cell).



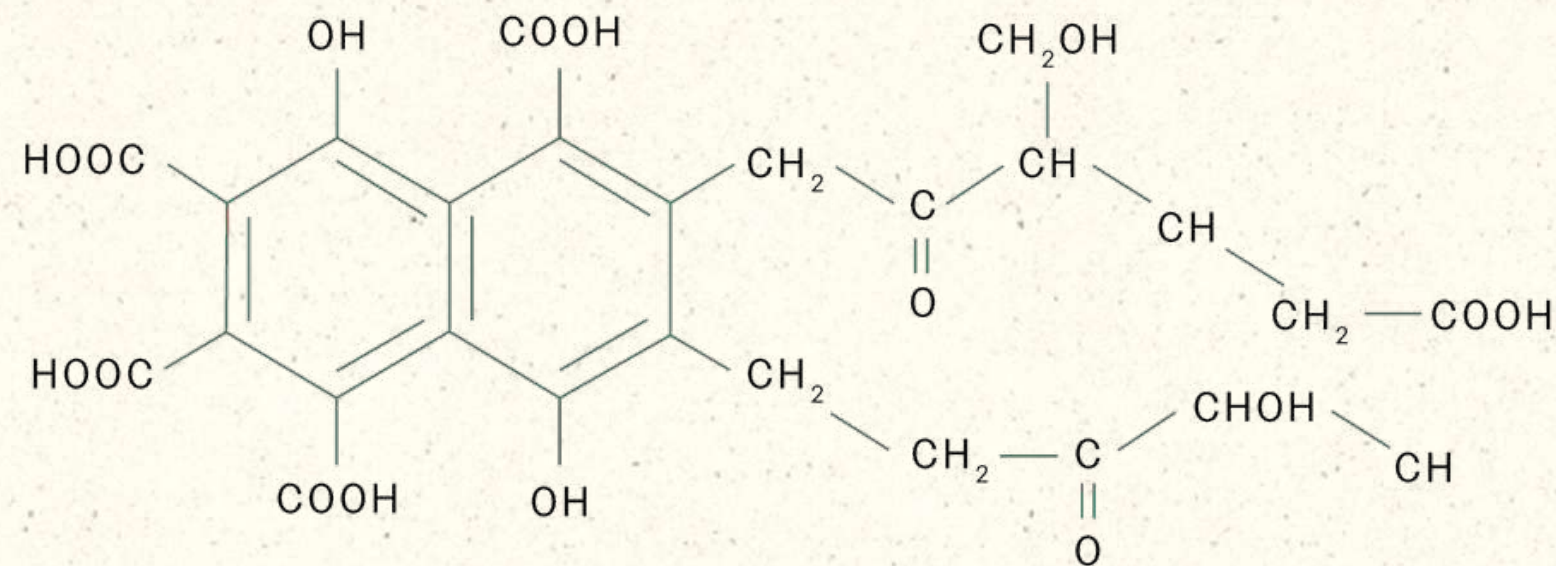
Fulvate vs. Fulvic Acid

Fulvate = bacterial metabolites + trace minerals in soil

- Not bacteria, but made by bacteria
- The active fraction of humic extract that facilitates human health
- Unique from fulvic acid, fulvate binds to metal ions instead of hydrogen, allowing for better electron transfer, aka redox signaling (cellular communication)

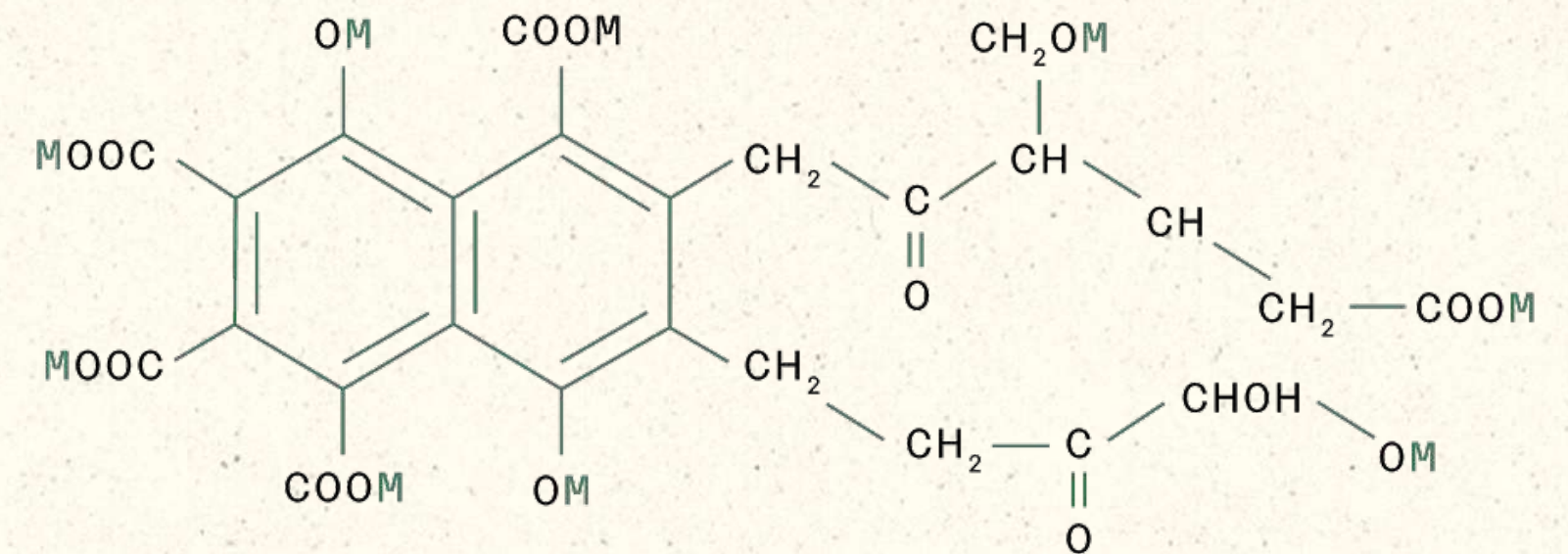


Fulvic Acid



Already bonded to hydrogen, limited communication potential

Fulvate



Able to bond to multiple ions, abundant communication potential

Properties of Fulvate Molecule

- Antioxidant

acts as an antioxidant by donating electrons to free radicals and by upregulating natural glutathione production in the body.

- Carrier

binds to essential nutrients and transports them into the cells that need them.

- Chelator

chelates to waste found within cells and removes them, providing a gentle cellular detox.

- Communicator

transmits messages via redox signaling, cell to cell, and cell to bacteria.

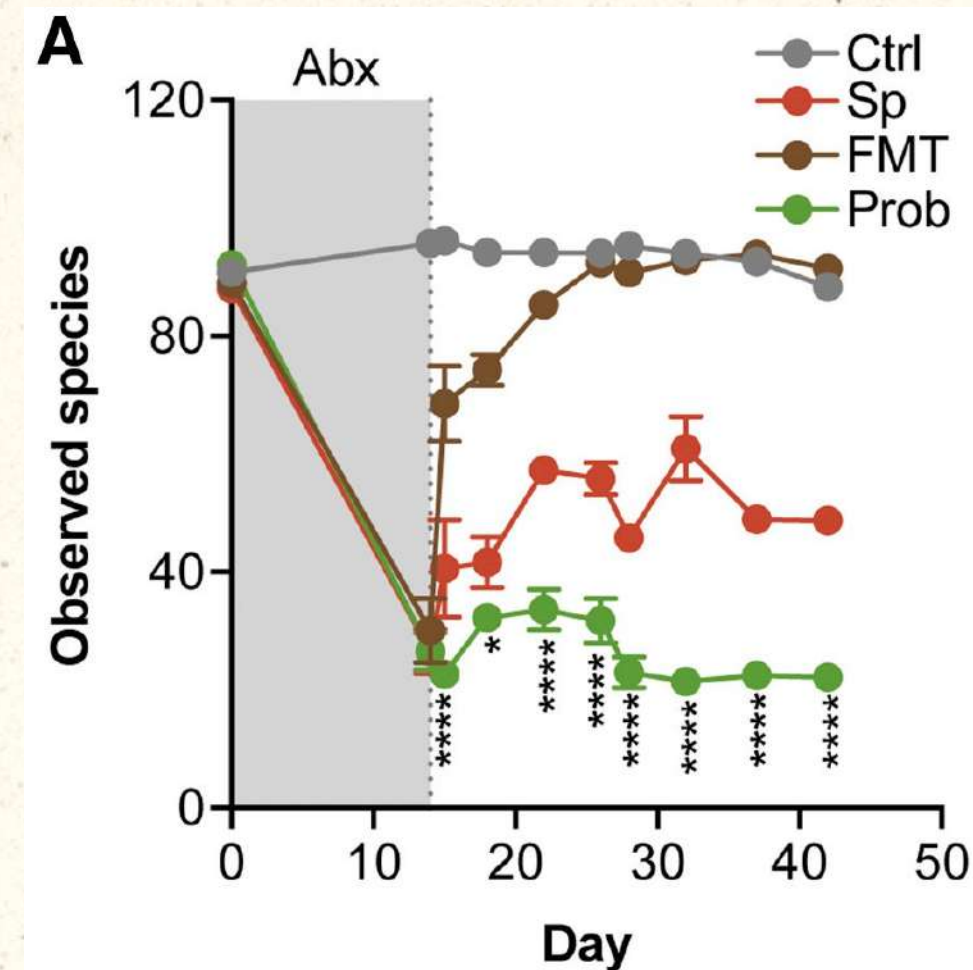
ION* Product Suite

Our innovative blend is present in our entire product suite.

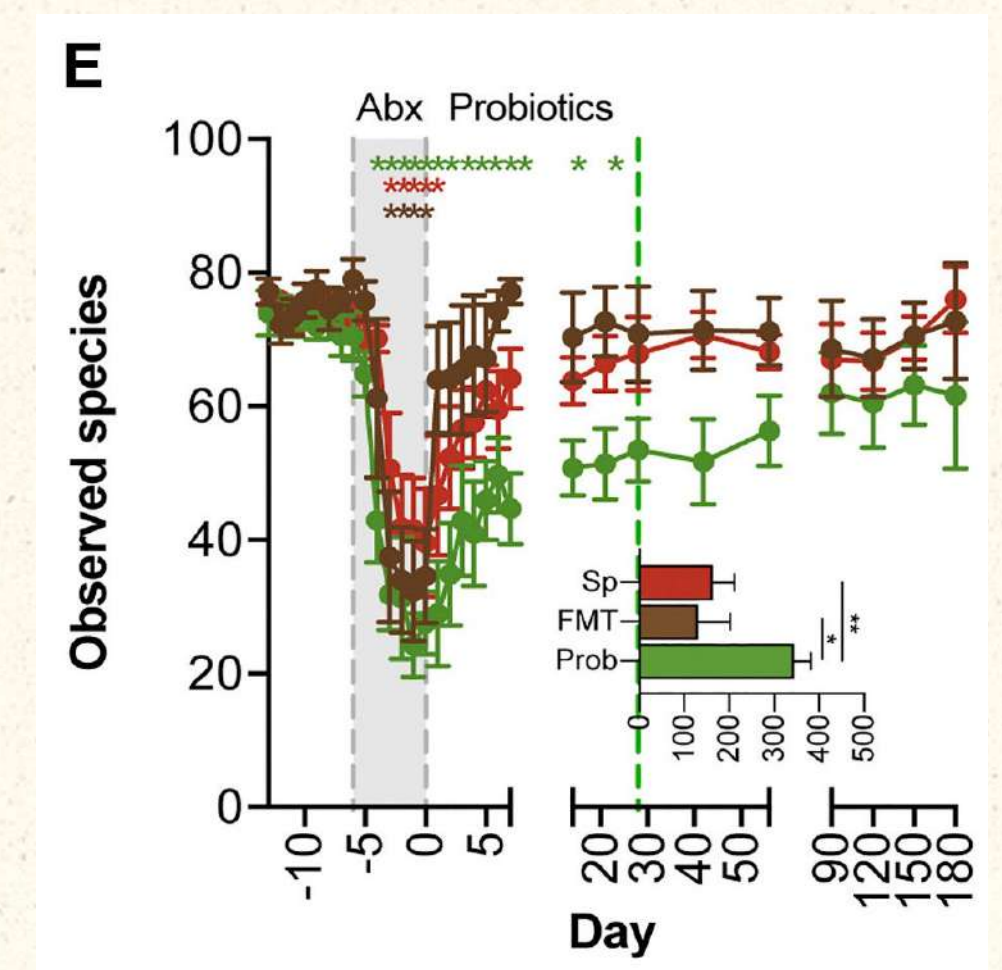


Why are probiotics falling short?

Two back-to-back papers published in the journal, Cell, in 2018, "Post-Antibiotic Gut Mucosal Microbiome Reconstitution is Impaired by Probiotics and Improved by Autologous FMT" showed that probiotic administration prevents post-antibiotic recovery of native microbiome for 6 months or more.



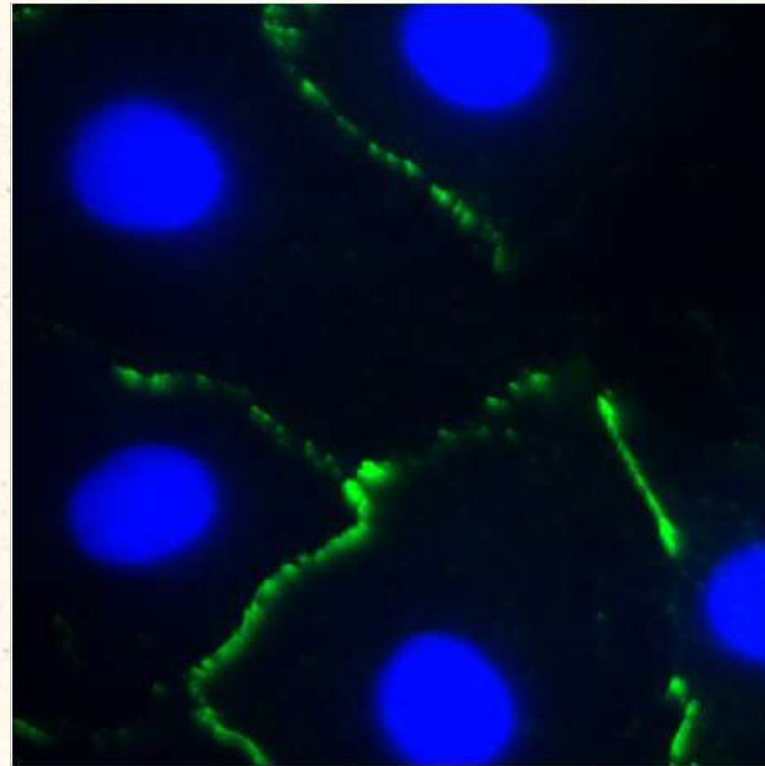
Mouse Stool



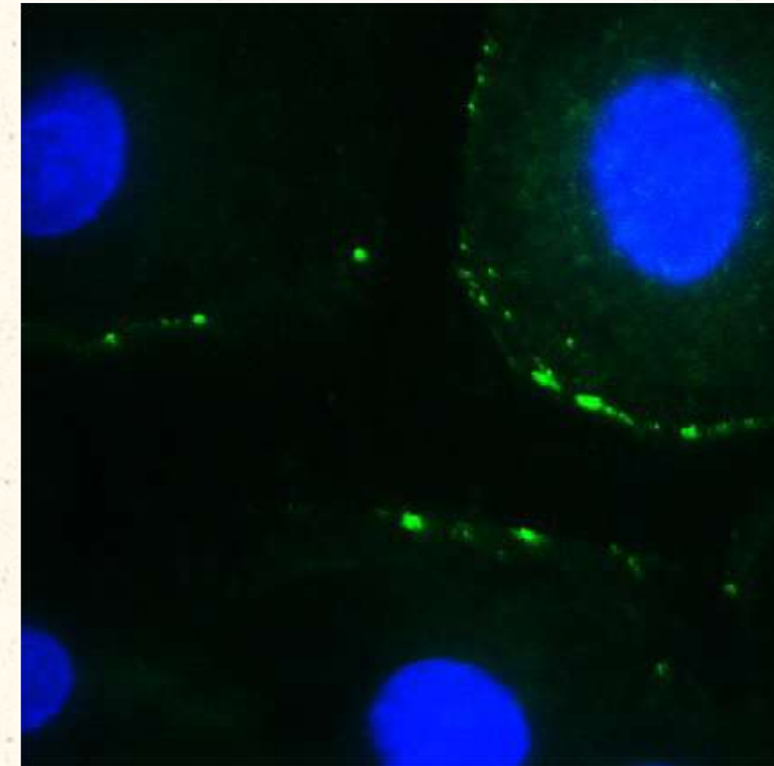
Human Stool

Our Science

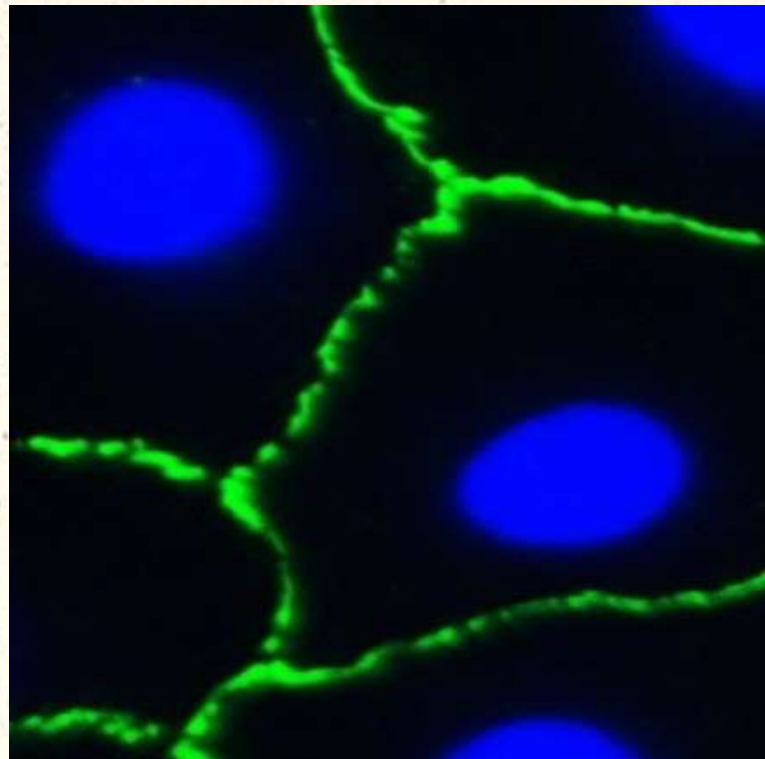




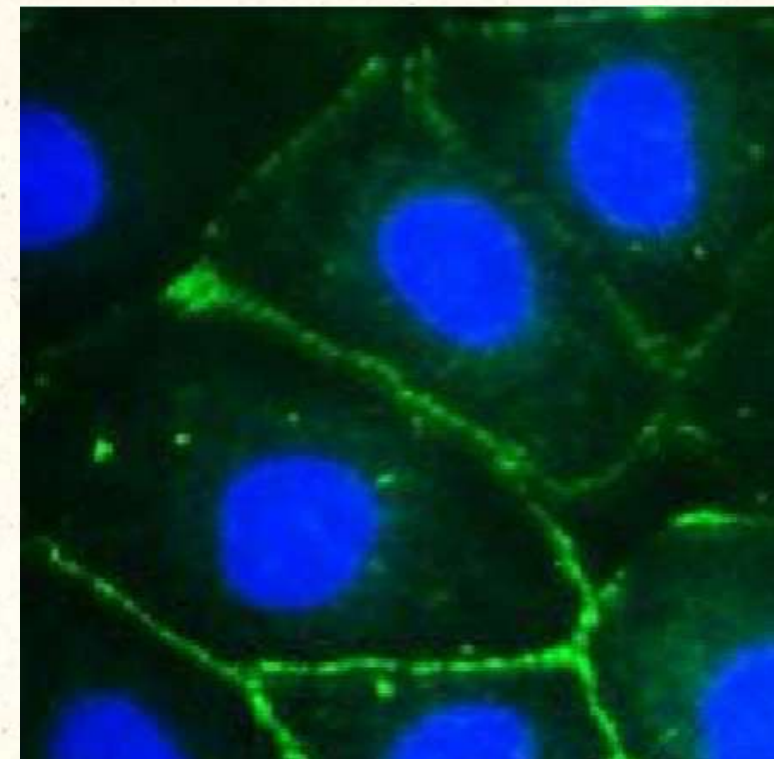
Control



Gliadin
(Gluten)



ION* Gut
Support

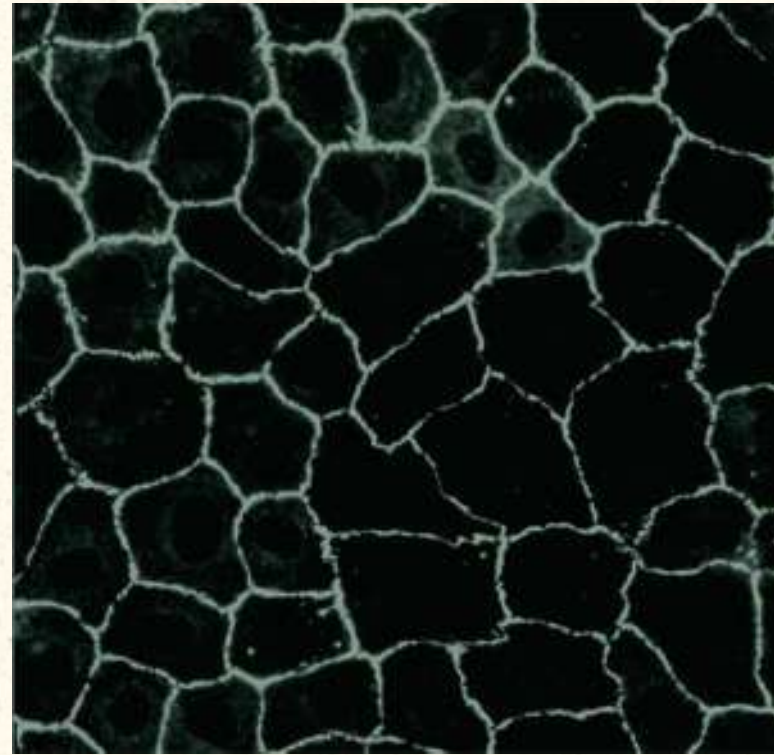


Gliadin (Gluten) + ION*
Gut Support

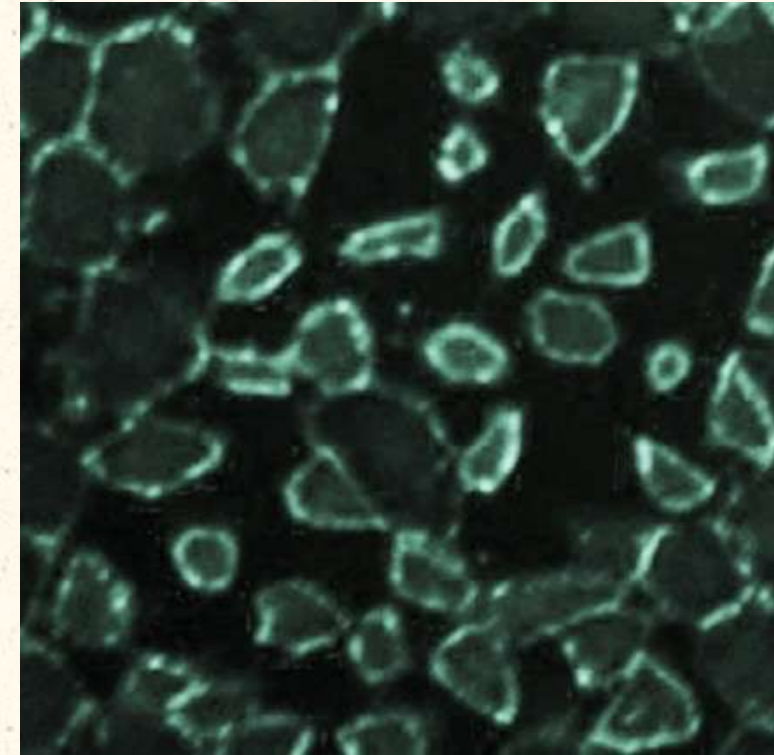
Journal of Nutrition + Food Sciences

Our first peer-reviewed journal
article

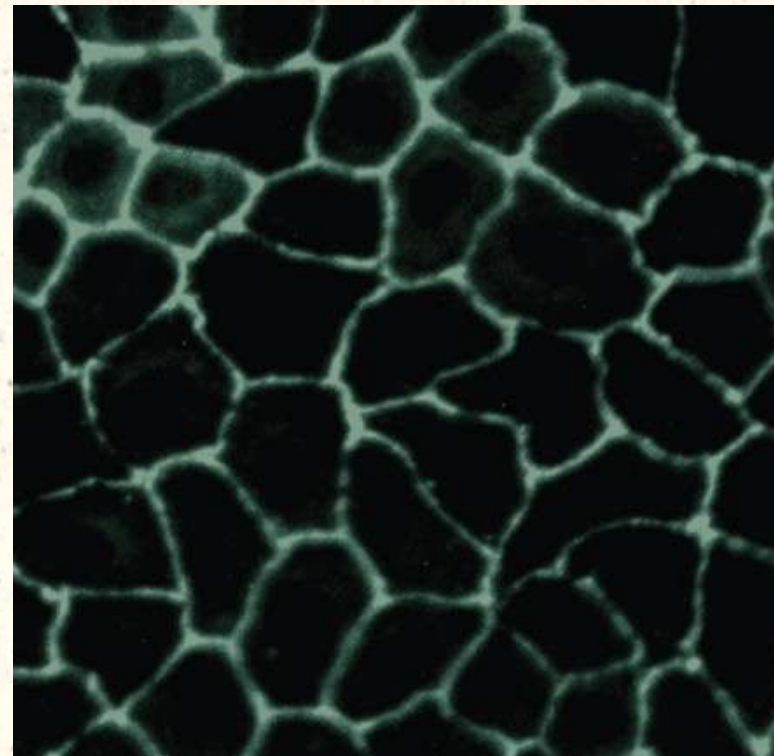
Protection Against Gluten-Mediated Tight
Junction Injury with a Novel
Lignite Extract Supplement



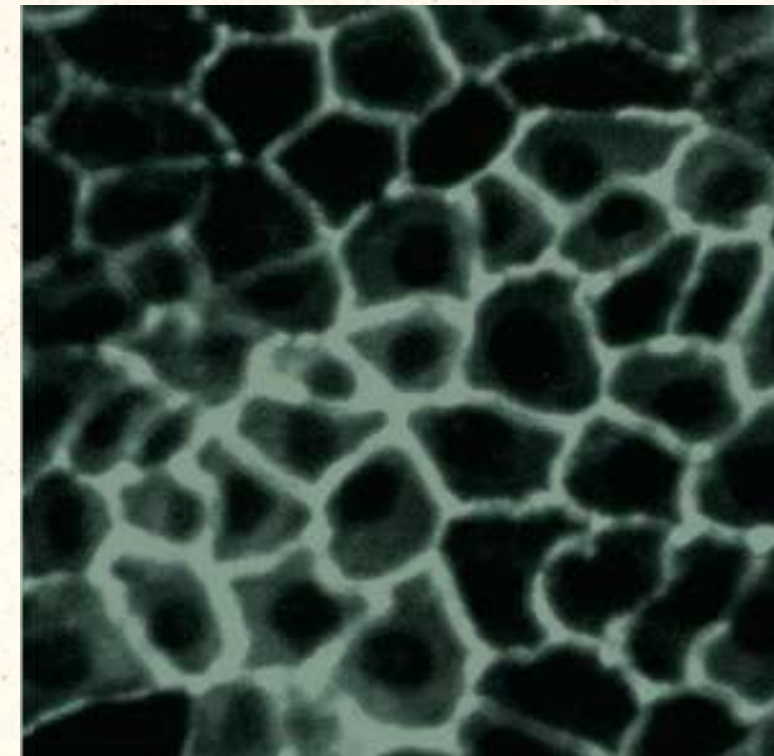
Normal gut lining



Gut lining compromised by glyphosate



Gut lining supported with ION*



Gut lining compromised by glyphosate supported with ION*

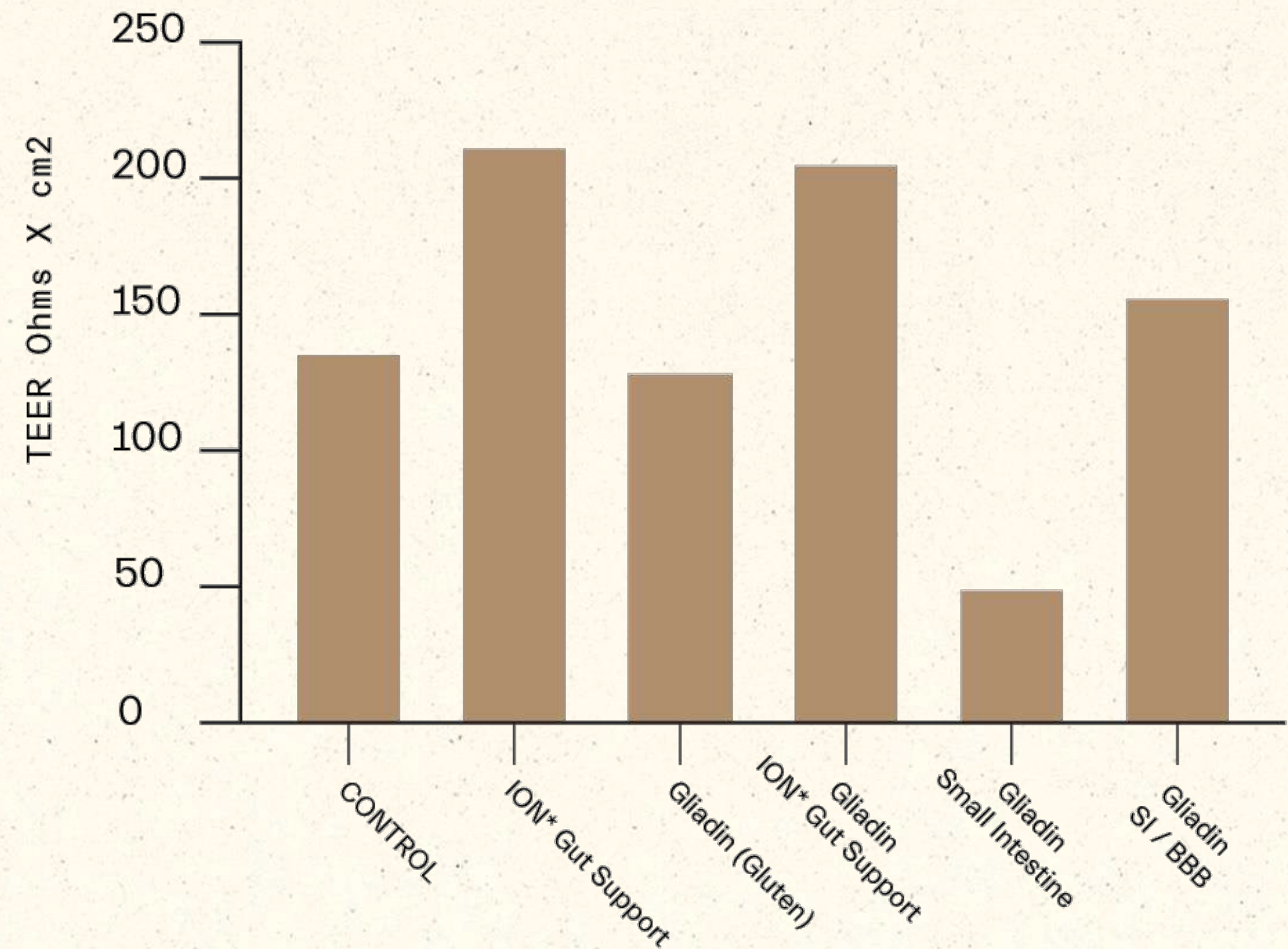
Journal of Clinical Nutrition + Dietetics

Our second peer-reviewed journal article

Protective Effects of Lignite Extract Supplement on Intestinal Barrier Function in Glyphosate-Mediated Tight Junction Injury

Blood-Brain Barrier Response to Terrahydrite and Intestinal Gluten Injury

Our white paper shows not only the connection between the microbiome and the gut and blood - brain barrier systems, but also demonstrates the improved effect that ION* has on the blood-brain barrier.





Human Clinical Trials

Our first clinical trial, “The Effects of ION* Gut Support Dietary Supplement on Markers of Intestinal Permeability and Immune System Function in Healthy Subjects”, validates the marked effect that ION* has on reducing:

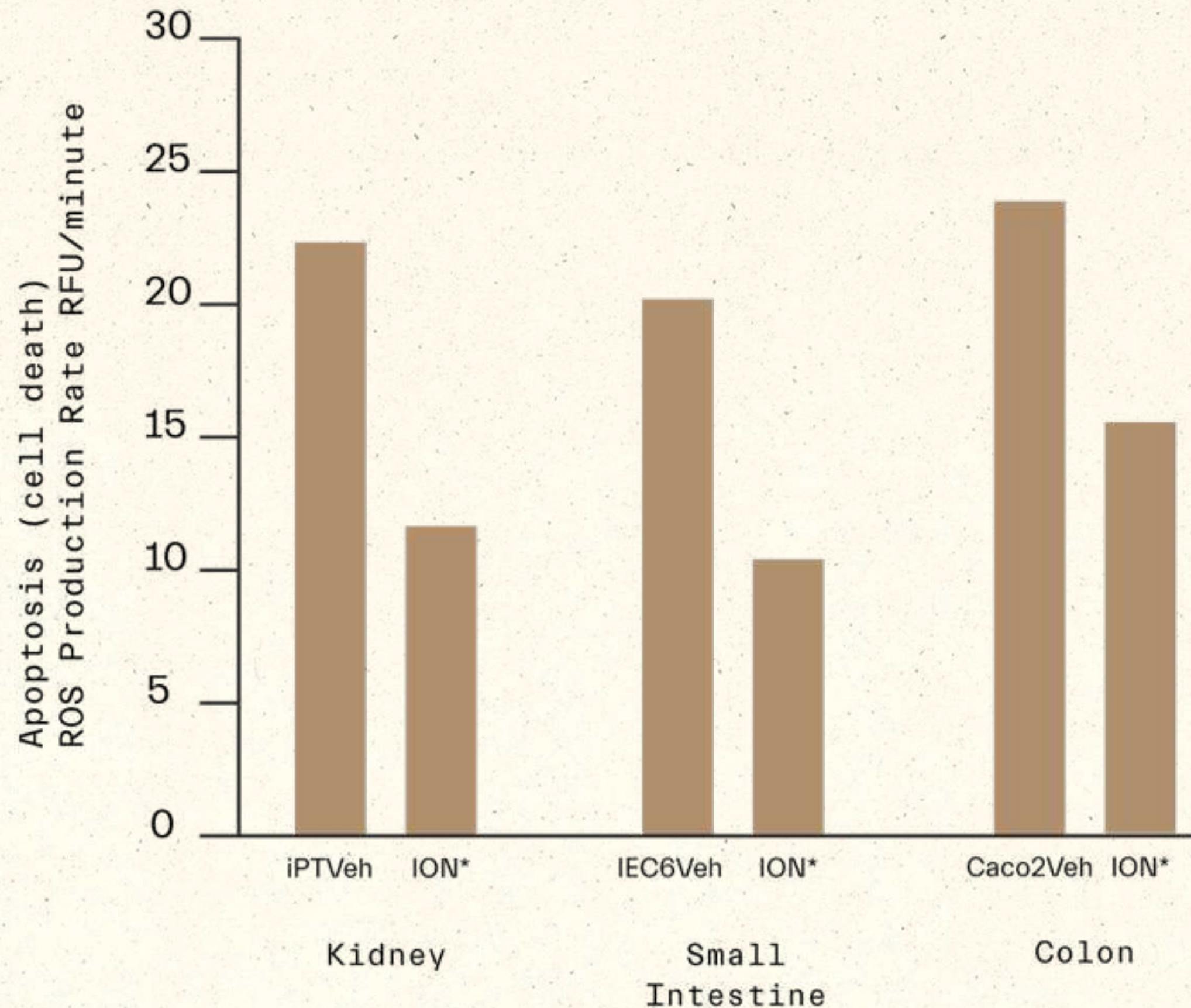
- zonulin by 12%
- IL-6 by 17%
- and glyphosate by 23% in adults over a two-week course.

Our second clinical trial, “Dietary Supplementation of Terrahydrite® Promotes Lysine Production in Healthy Subjects”, shows the ability of ION* to

- promote a 114% increase in the microbiome production of lysine
- playing an important role in protein production, epigenetic regulation, collagen production, immune system regulation, and a variety of cell processes.



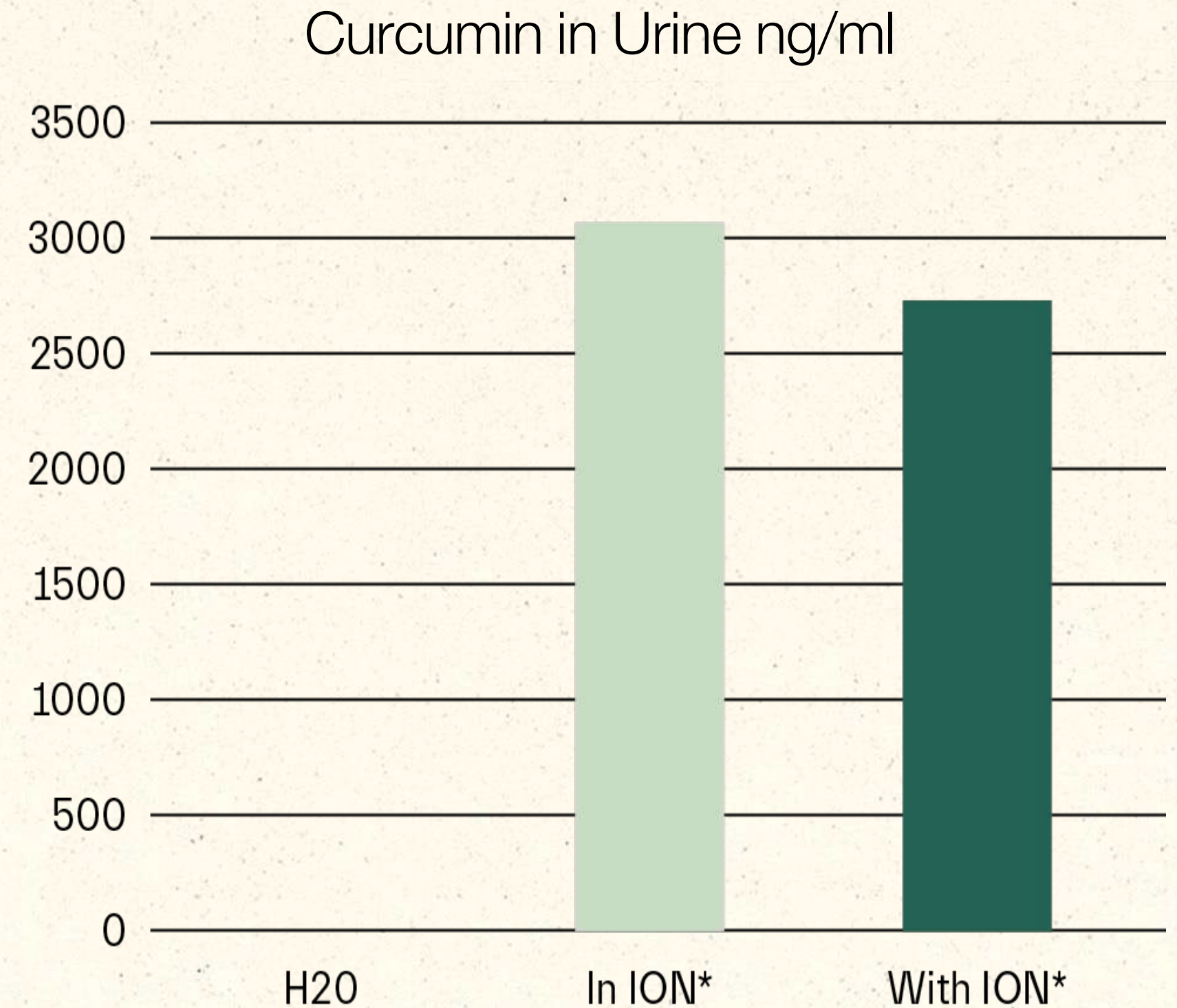
ION* Safety



ION* reduces the production of Reactive Oxygen Species (ROS) in proximal renal tubes (IPT), small intestine (IEC-6), and colon (Caco-2), epithelial cells. The reduction in ROS allows the immune system to maintain a healthy injury/acute response reservoir.

Nutrient Absorption Data

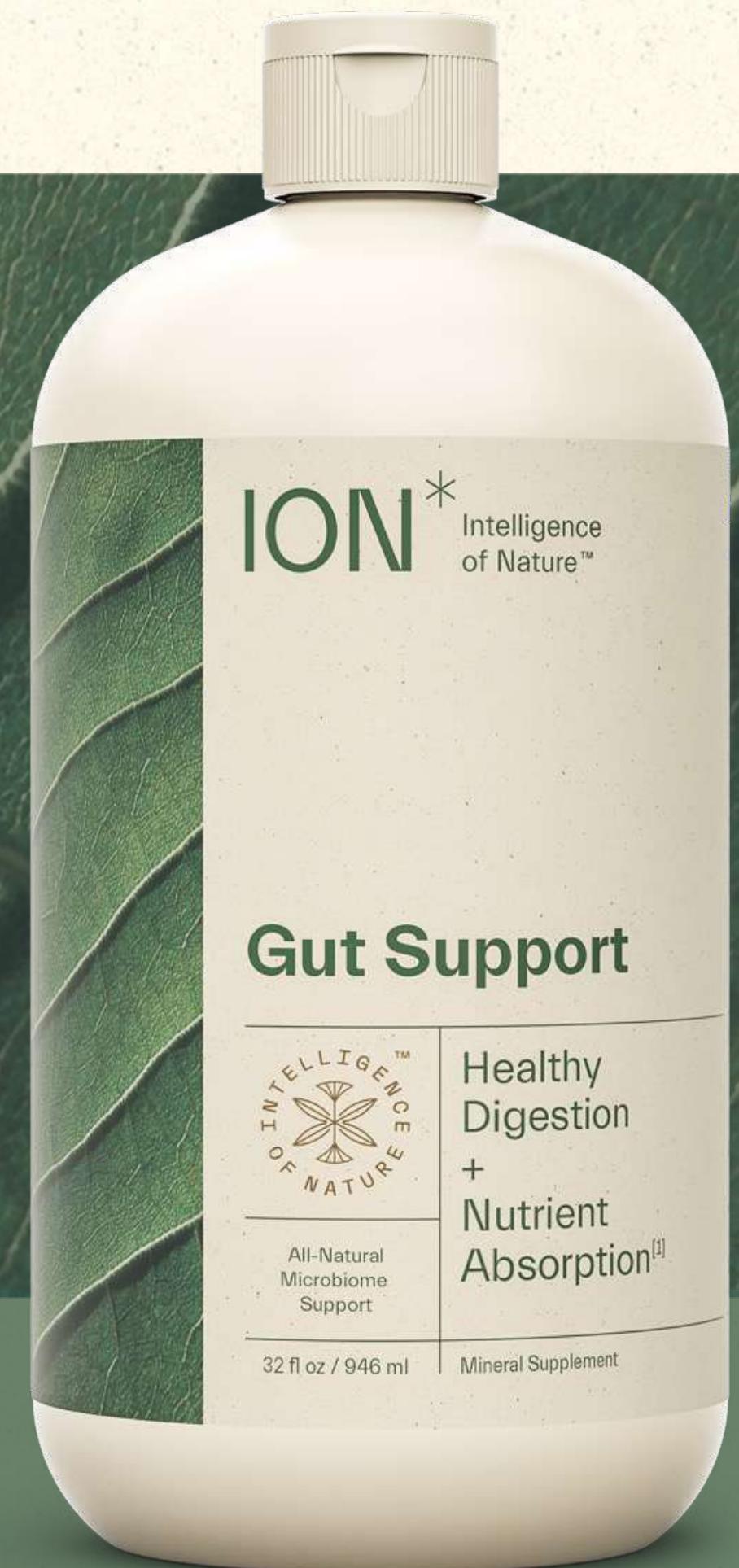
- Preliminary data (average of multiple experiments) highlighting the ability of ION* to help absorb curcumin, measured in urine four hours after ingestion.
- First bar shows curcumin taken with water
- Second bar shows curcumin fully dissolved in ION*
- Third bar shows curcumin taken with ION* but not dissolved



ION* Gut Support

ION* Gut Support benefits:

- *Digestive Support*
- *Immune Function*
- *Nutrient Absorption*
- *Gluten Defense*
- *Gut-Brain Health*



The best way to ION*

ION* is an easy-to-take, tasteless liquid supplement. Take ION* straight up, or add it to purified water, a smoothie, or your morning coffee, but most of all, *just remember to take it.*

Adults and Children over 4:

- 1 teaspoon 3x per day

Sensitive Adult Usage:

- Start with 1/8 teaspoon daily, increasing usage slowly, as tolerated, to get to recommended label usage.

Optimal gut support is achieved when taken 30 minutes prior to meals because of ION* Gut Support's protective effects against gluten and glyphosate, but you can take it immediately before, with, or after a meal, (or on an empty stomach) and still receive benefit.



ION* Gut Support for Pets

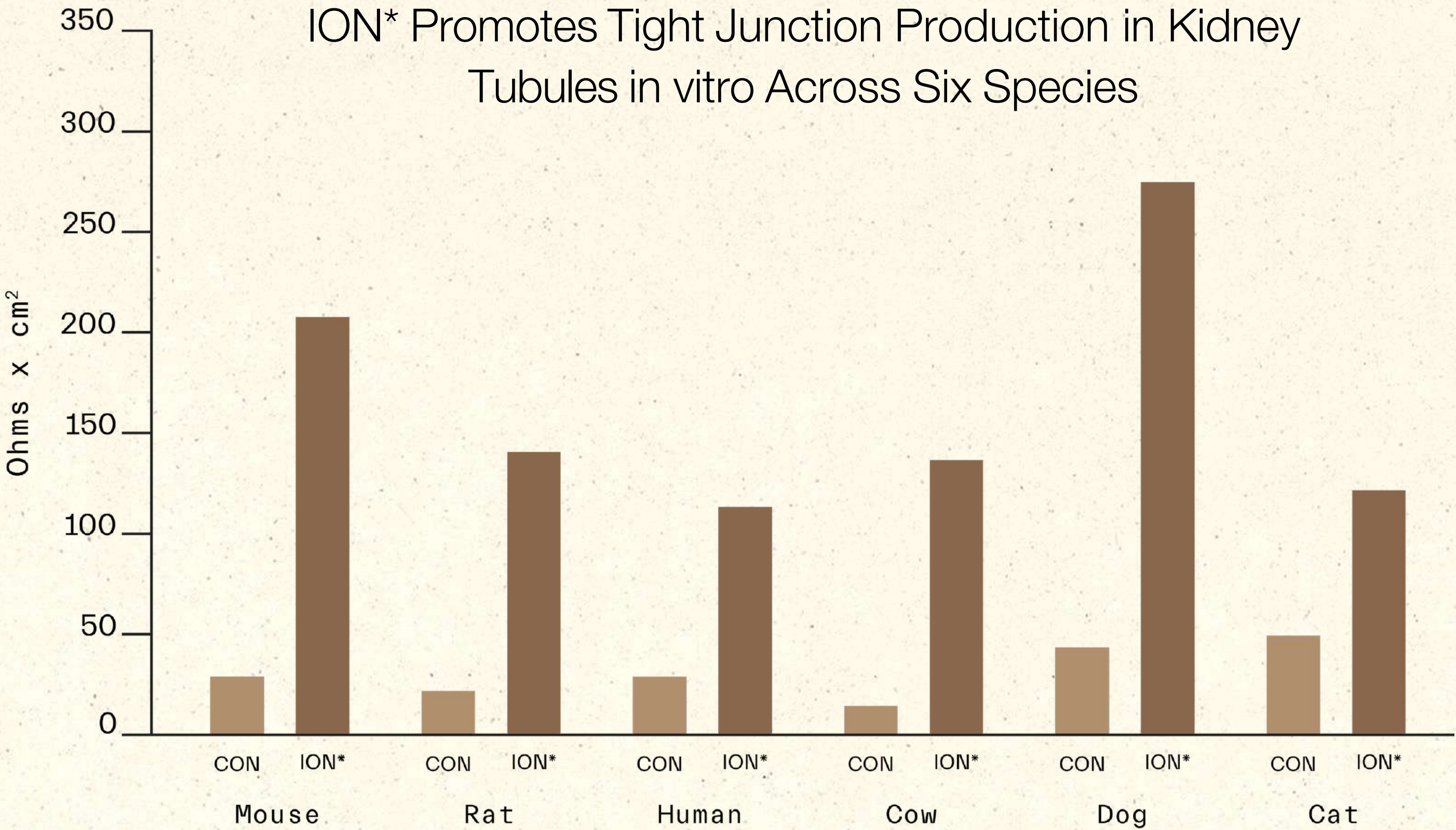
Silicon: known to support collagen production as well as skin, coat, and bone health.


ION* Gut Support For Pets benefits:

- *Digestion*
- *Kidney Function*
- *Immune Function*
- *Vitality*



ION* Gut Support For Pets Science





The microbiome doesn't stop
at your gut, so neither did we.

And while ION* Gut Support has always worked topically, it's
time we tailor to this unique terrain.

Sourced from nature, backed by science, and specialized for
your outermost barrier, meet ION* Skin Support.



ION* Skin Support

Silicon: known to support collagen production as well as skin, hair, and bone health.

Zinc Gluconate: anti-inflammatory and known to regulate immune response on the skin.

Copper Gluconate: proven to improve skin's firmness by promoting collagen + elastin production.

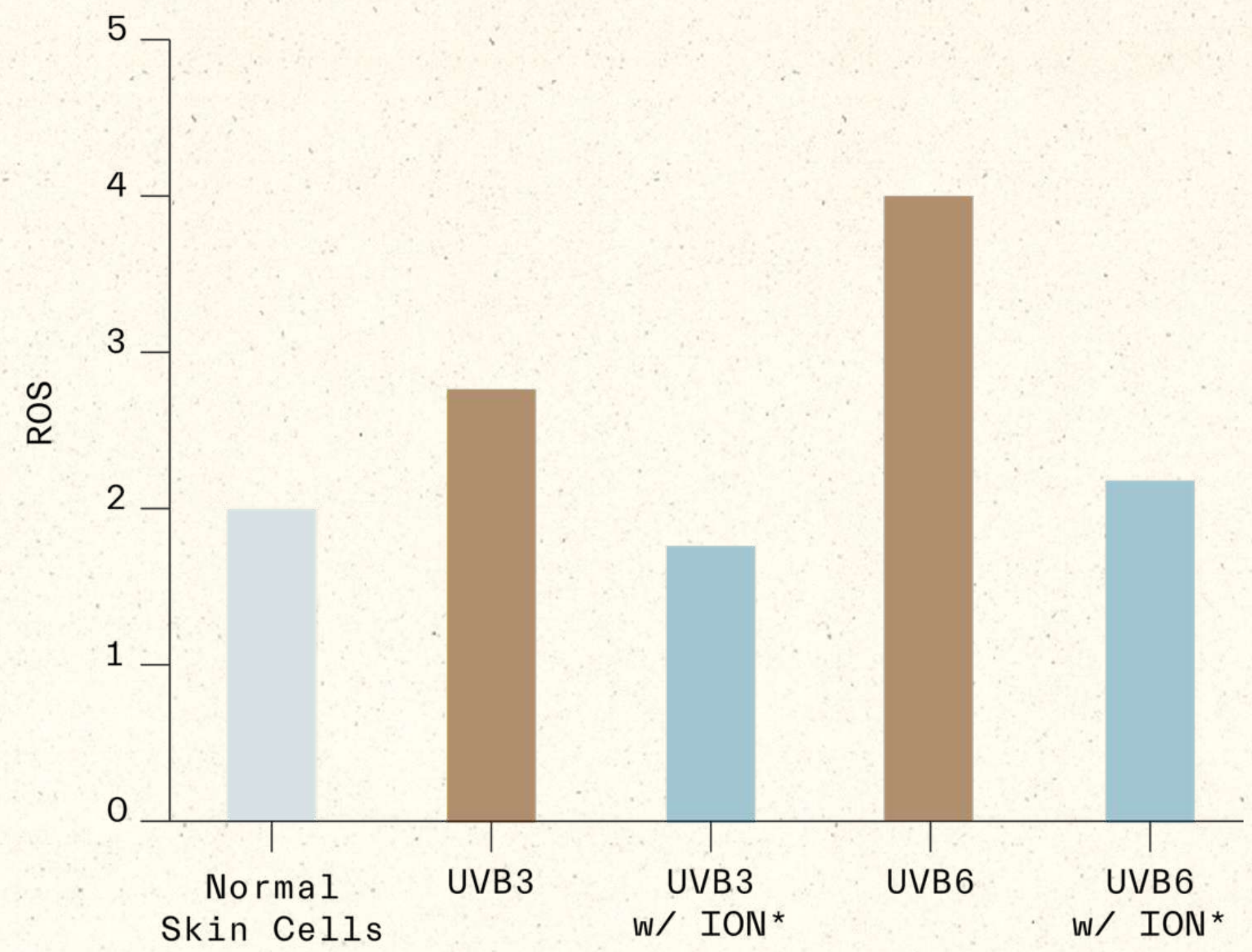
Magnesium Citrate: acts as a calming agent and fortifies the skin's natural moisture barrier.

ION* Skin Support benefits:

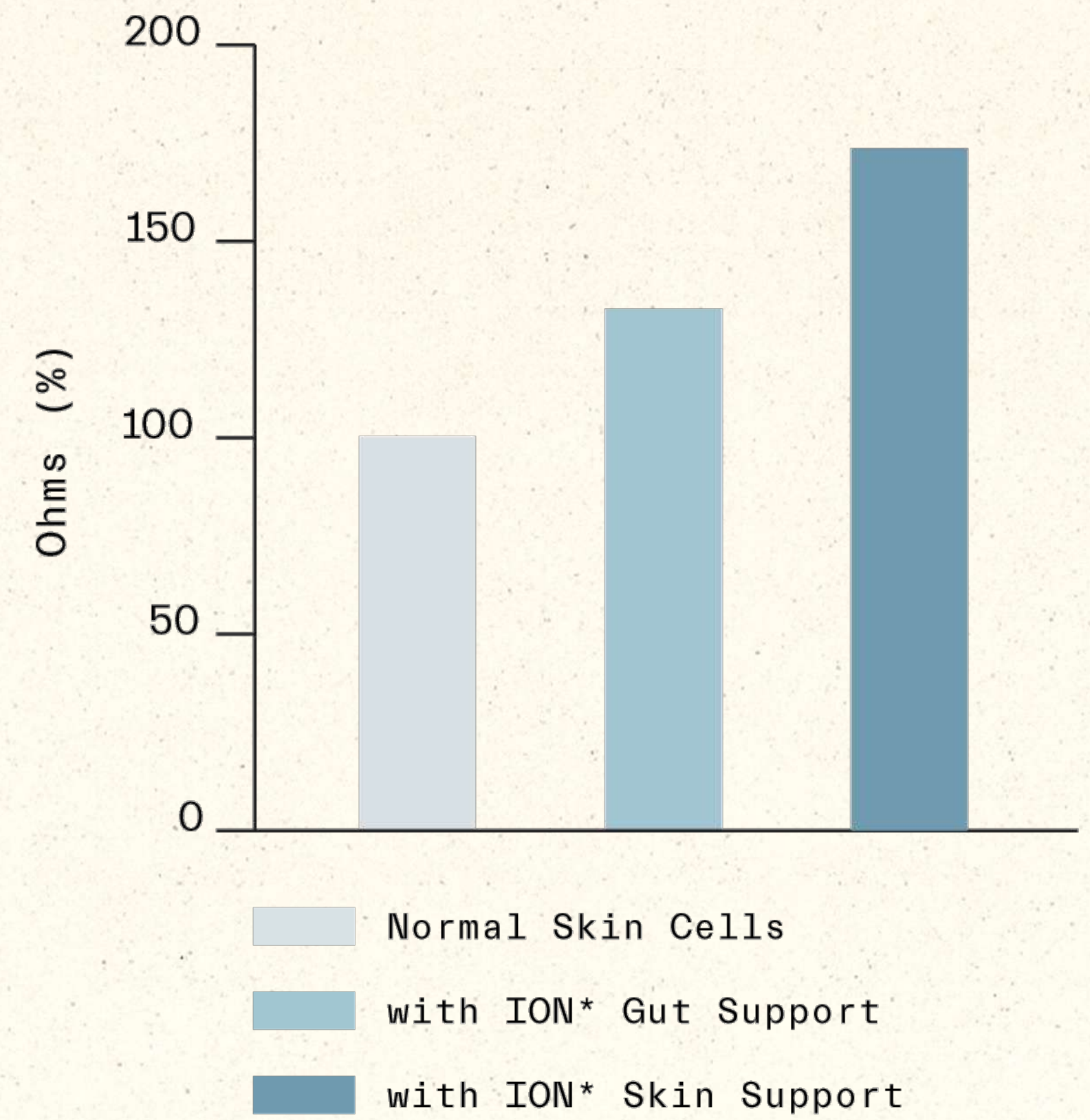
- *Protects Against Toxins*
- *Reduces Signs of Skin Damage*
- *Balances Complexion*



Stabilized ROS production with addition of ION* Skin Support



TEER increase in skin cells with addition of ION* Skin Support



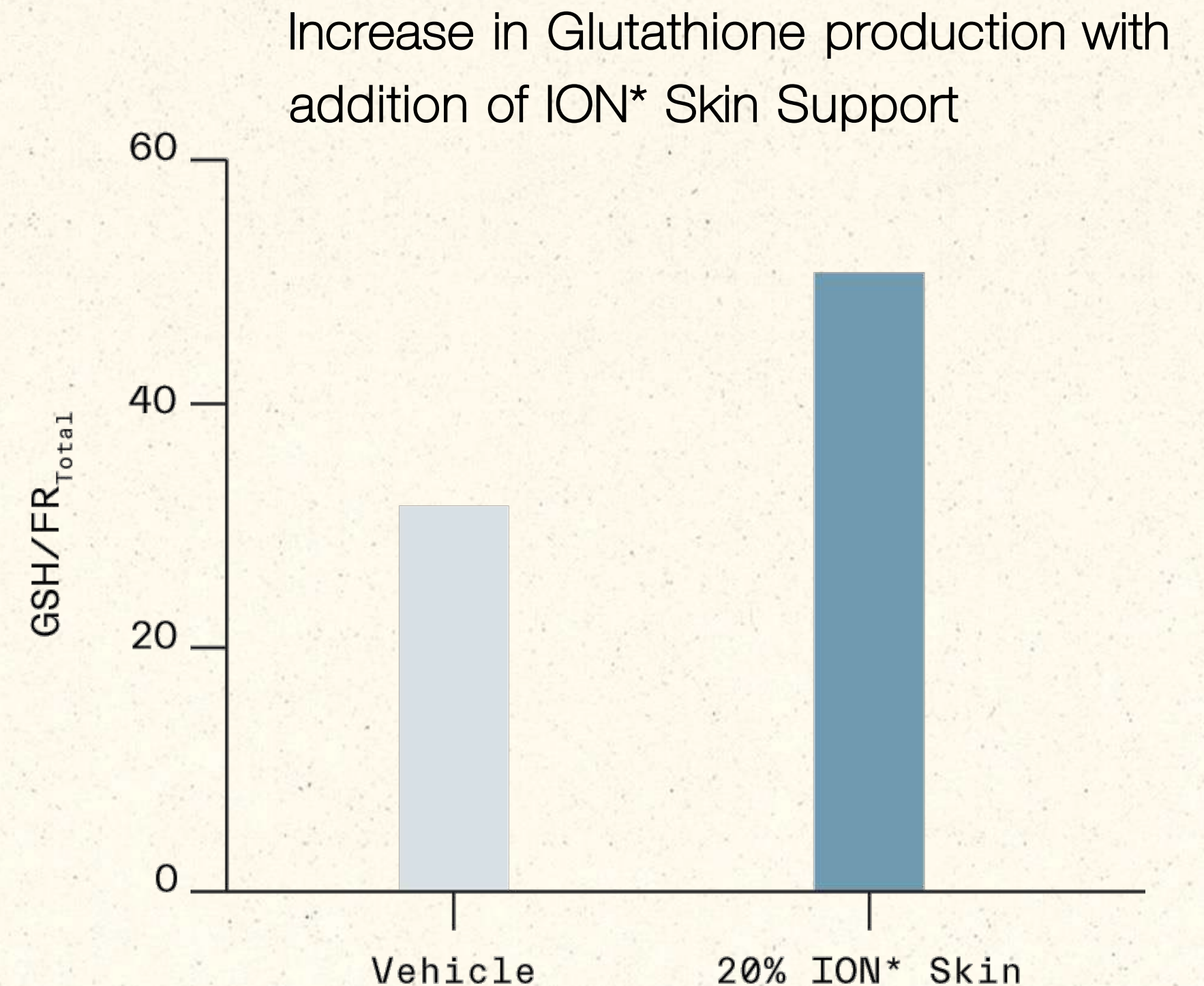
Beyond balance, antioxidants are key.

Glutathione is a powerful antioxidant made by your body and found in almost every cell.

It is critical to preventing damage and resultant disease caused by reactive oxygen species.

Glutathione helps to:

- Neutralize free radicals
- Boost immune function
- Detoxify the body



But we didn't stop with the microbiome...



Our mission is macro

Every time you purchase ION* products you are supporting a connected ecosystem working to regenerate human and planetary health.

Our founder and CEO, Zach Bush, MD, started Farmer's Footprint, a non-profit organization to unite, inspire, and accelerate the movement towards regenerative food systems as a means to restore human and planetary health. This work includes dedicated efforts to ban glyphosate and over 8,000 people have joined the Farmer's Footprint community to date.

Humanity's greatest challenges call for collaboration at every level. We are here to build relationships with people and organizations who share our vision to regenerate the planet's natural cycles of human health and ecology for generations to come.

**Farmer's
Footprint**

[Learn More](#)

Learn more about how our purpose-driven collective is working toward a regenerative and thriving future for both you and this beautiful Earth at farmersfootprint.us.

