Harvard Removes Toxic MUC1 Proteins From Kidney Cells + Your Genes Aren't Your Destiny Transcript

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Introduction to MUC1 Kidney Disease

Did you know that scientists have discovered a way to actually remove toxic proteins that are trapped inside kidney cells, causing progressive kidney disease and even more exciting, there are naturally approaches we can use right now to support these same cellular pathways.

While we wait for this breakthrough treatment to become available, I want to share something fascinating that I learned from one of my patients who's participating in this cutting edge research at Howard.

She has a rare genetic kidney disease called Munk One. And the science behind what's happening in her cells and what researchers are doing about it is absolutely revolutionary.

This is doctor talks. Real talk from real doctors. Only issues that matter to you most. Let me start by explaining what makes this particularly type of kidney disease so unique.

Most kidney diseases that we see are caused by external factors like diabetes, high blood pressure, infections, toxins. But one, also known as mucin one kidney disease is caused by a tiny genetic mutation, usually just a single letter insertion in the DNA code.

This small chain causes what scientists call a frameshift mutation, which basically scrambles the instructions for making a critical protective protein in kidney cells.

Normally, the muck one protein acts like a protective shield on the surface of kidney tubule cells. It prevents toxins from damaging the cells and helps regulate inflammation.

How the Genetic Mutation Damages Kidney Cells

But when there is this genetic mutation, instead of producing the normal protective protein, the cells make a toxic, altered version that gets trapped inside the cell.

Here's where it gets really interesting from a cellular biology perspective. This defective protein doesn't just sit harmlessly in the cell. It gets stuck in the cellular shipping system, specifically in the pathway between two important structures called the endoplasmic reticulum and the Golgi apparatus.

Think of it like packages getting jammed in the conveyor belt system at a shipping warehouse. As these toxic proteins accumulate in the vesicles, they create enormous stress on the cell.

The cell recognizes something is wrong and activates its emergency response system. But when this stress continues chronically, it eventually leads to the death of kidney tubular cells.

That's what causes the progressive kidney failure in patients with this condition. Now, before I tell you about the exciting breakthrough treatment, I want to talk about something that gives me tremendous hope.

As a functional medicine physician, and that's the science of epigenetics. This is where the story becomes incredibly empowering, especially for anyone dealing with genetic conditions.

Epigenetics is the study of how your lifestyle environment, and experiences can actually influence which genes get turned on or off in your body. While we can't change the DNA sequence we inherited, like the one mutation, we absolutely can influence how that genetic information is expressed.

This has been extensively studied over the past two decades, and the research is remarkable. Think of your DNA as a piano with 88 keys. The keys themselves don't change, but which keys get played?

How loudly and in what combination creates completely different music? That's essentially what epigenetics does.

Epigenetics and Why Genes Are Not Destiny

It determines which genetic programs are activated and to what degree. Studies have shown that identical twins who have exactly the same DNA can have completely different health outcomes based on their lifestyle choices, stress levels, diet, environmental exposures, and other factors.

The epigenetic modification that accumulates over time can actually be more influential than the original genetic code, and determining disease progression for kidney disease like Mk1 kidney disease.

This means that while we can't eliminate the underlying genetic mutation, we can significantly influence how aggressively the disease progresses through epigenetic modifications.

Research has identified specific lifestyle interventions that can activate protective gene pathways while silencing inflammatory and fibrotic gene programs.

This is why I'm so excited about combining cutting edge medical research with functional medicine approaches. Let me tell you about that breakthrough treatment first, and then I will explain how we can support these same pathways naturally through epigenetic modifications.

The researchers at Harvard that my patient is working with have discovered a compound called build 47 Ed seal that can actually remove these toxic proteins from patient cells.

In their lab studies, this compound showed remarkable specificity. It could clear out the defective proteins without damaging anything else in the cell.

They have tested it in specifically engineered mice with the same mutation that human patients have. And when they give these mice the compound, they kidney tissues were completely cleared of the toxic protein.

Even more impressive, they created miniature human kidney tissues from the stem cells of actual patients and saw the same amazing results when treated with this compound.

The way it works is fascinating. The compound binds to a cellular transport receptor called DMZ nine, which releases that chopped toxic protein so they can move forward in the cellular pathway until they reach this cell's recycling center, which is called the lysosome, where they get broken down and removed.

Now, I need to be clear about something important. This compound bid for 780 is still in pre-clinical research. It's not available as a treatment yet and will need to go through extensive safety testing and clinical trials before it could become approved therapy.

But the fact that it's showing such promising results in human kidney tissue derived from actual patients gives us tremendous hope for the future.

Breakthrough Research to Clear Toxic Proteins

So what does this mean for patients right now? This is where the power of epigenetics becomes so important. While we are waiting for this targeted therapy to potentially become available, there's actually a lot we can do from a functional medicine perspective to influence the same cellular pathways through epigenetic modifications.

The problem in muck one kidney disease happens in several stages. First, there is a buildup of toxic protein causing cellular stress, then problems with the cellular trafficking system, then issues with the cell's ability to clear

out damaged proteins, and finally chronic inflammation and tissue damage.

Extensive epigenetic research has shown us specific interventions that can be influenced each of these stages for the cellular stress component. We can use targeted nutrients and lifestyle modifications that epigenetic lee upregulate the genes responsible for cellular protein folding systems, things like magnesium.

Saying B vitamins are co-factors for the enzymes that help fold proteins properly, but they also influence the expression of genes that produce these protective enzymes.

Compounds like human and green tea polyphenols have been shown in epigenetic studies to upregulate heat shock protein genes. This cell's natural protective system for supporting the cellular trafficking system.

We focus on interventions that epigenetic V enhance the brain health and transport function. Omega three fatty acids don't just improve membrane fluidity, they actually influence the expression of genes involved in membrane synthesis and vesicle transport.

This is backed by extensive research showing how these nutrients can modify gene expression patterns. Within weeks of starting supplementation. One of the most powerful epigenetic interventions we can use is enhancing this cell's natural protein clearance system, something called a dogfish.

Natural Ways to Support Cellular Cleanup Pathways

This is the process by which cell to break down and recycle damaged proteins and cellular components. Research has identified multiple lifestyle interventions that genetically upregulate autophagy genes.

Intermittent fasting, for example, has been shown in numerous studies to activate genetic programs that enhance cellular cleanup and protein clearance.

Specific exercises trigger epigenetic changes that boost the expression of genes involved in autophagy and cellular repair. Certain nutrients like Spey, Medine, and berberine have been shown to epigenetic influences.

Same pathway that build 4780 compound targets just two different mechanisms. For my patients, we have implemented comprehensive functional medicine protocols specifically designed to create favorable epigenetic modifications.

We focus on reducing any additional cellular stress by minimizing toxic exposures, because environmental toxins can actually silence protective genes while activating inflammatory gene programs.

We optimize nutrition not just for basic health, but specifically to support the expression of genes involved in protein folding, cellular energy production, and natural detoxification pathway.

The results have been encouraging. We see kidney function stabilize and more importantly, energy levels improve significantly. Sleep quality improves and brain fog largely results.

What's particularly exciting is that when we measure certain biomarkers, we can actually see evidence of these favorable epigenetic changes. That means reduced inflammatory markers, improved antioxidant status, better cellular energy markers.

Of course, everyone's body is different, and what work for one person might not be the right solution for another. This is where personalized epigenetic medicine becomes crucial.

What I find so exciting about this area of research is how it shows us that even the genetic conditions we have tremendous power to influence our health outcomes.

The field of epigenetics has fundamentally changed how we think about genetic disease. Why we can't change the

underlying genetic mutation. We can absolutely influence how that mutation expresses itself and how much damage it causes over time through targeted lifestyle intervention.

The key insight from decades of epigenetic research is understanding that our genes are not our destiny. Every choice we make, what we eat, how we move, how we manage stress, what we are exposed to environmentally, even our sleep patterns and social connections.

All of these factors influence which genes gets activated and which ones get silenced.

Functional Medicine Approach for Kidney Health

For kidney diseases, specifically, researchers have identified epigenetic modifications that can slow progression, reduce inflammation, enhance cellular repair, and even debate regenerative pathways in kidney tissues.

This means that even patients with genetic forms of kidney disease have significant influence over their health trajectory. This is where personalized functional medicine becomes so important.

Every patient will have different epigenetic factors influencing their condition. Different toxic exposures that might be silencing protective genes, different nutritional needs based on genetic variations in metabolism, different stress factors that could be activating inflammatory gene programs, different sleep disruptions affecting repair gene expression.

For example, some patients benefit more from focusing on gut health because their microbiome composition is epigenetic, influencing inflammatory pathways that affects kidney function.

Others need more intensive support for genetic variants that affects how they process. So the nutrients which changes how we approach their supplementation strategy to optimize gene expression.

This is why I always recommend that patients work with their physicians, who understand both the convention medical aspect of their condition and the epigenetic factors that can be modified through functional medicine approaches.

Having a both perspective allows for the most comprehensive and effective care. So if you are dealing with any type of kidney disease, whether it's genetic, like Mark one kidney disease, or more common types related to diabetes or high blood pressure, I encourage you to consider the epigenetic perspective.

Your kidney cells are working incredibly hard every day, and supporting the optimal expression of their protective and repair genes can make a significant difference in how you feel and how well your kidneys function over time.

At the Kidney Institute, we specialize in this type of comprehensive, epigenetic informed approach. We combine the latest understanding of kidney disease mechanisms with targeted functional medicine protocols designed to create favorable epigenetic modifications and support optimal kidney cell function.

Every patient gets a personalized assessment looking at their unique genetic factors, environmental exposures, nutritional status, stress patterns, and inflammatory markers.

To create a protocol specifically designed to optimize their gene expression patterns. Even though I'm sharing this information with you, I'm not your doctor and I don't know your specific situation.

Hope for the Future and Closing Remarks

If you are interested in exploring how these epigenetic approaches might help your kidney health, I encourage you to book a consultation where we can dive deep into your individual case and create a personalized plan.

What gives me the most hope about the future of kidney disease treatment is seeing how targeted therapies like

big four seven, eight zero and comprehensive epigenetic approaches can work together.

We are moving toward an era of. We will have both precise treatments that address specific genetic or molecular causes of disease, and scientifically backed strategies that optimize the body's natural healing capacity to favorable gene expression.

The research on epigenetics and kidney disease is advancing rapidly, with new studies constantly showing us movies that lifestyle interventions can influence disease progression at the genetic level.

In the meantime, there so much we can do right now to support kidney health and create favorable epigenetic modifications using evidence based functional medicine approaches.

If you would like to learn more about our epigenetic informed approach to kidney health, or explore whether our comprehensive protocols might be helpful for your situation, visit our website at Doctor business.com and schedule a consultation.

We also have educational resources there about supporting kidney function, a two targeted lifestyle interventions that you might find helpful. Remember, your inherited DNA sequence is fixed.

The expression of those genes is remarkably flexible and responsive to your choices. There is tremendous hope in both the cutting edge research that's happening and the epigenetic tools we have available right now to support your kidney health and overall vitality by now.

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