Why Magnesium Is So Important for Your Body

And what they discovered by testing the And what they discovered by testing the blood levels of magnesium on people blood levels of magnesium on people before and after Epsom salt soaks is before and after Epsom salt soaks is that you actually do absorb it through that you actually do absorb it through your skin. And the form that you absorb your skin. And the form that you absorb really easily is really easily is Welcome to my YouTube channel. I'm Dr. A Welcome to my YouTube channel. I'm Dr. A and I have been treating people with and I have been treating people with complex chronic illnesses for decades.

complex chronic illnesses for decades. I've also been involved in teaching and I've also been involved in teaching and research in the integrative medicine research in the integrative medicine space for 30 years at this point. So space for 30 years at this point. So today I want to discuss something that today I want to discuss something that we introduced in a little way and then I we introduced in a little way and then I had promised to circle back to and this had promised to circle back to and this is the one and it's about different is the one and it's about different forms of magnesium. So let's get into forms of magnesium. So let's get into it. The first thing is we hear about it it. The first thing is we hear about it all the time like one of the most all the time like one of the most commonly talked about nutrients as far commonly talked about nutrients as far as supplements and diet goes online and as supplements and diet goes online and you know all over the place. Why so you know all over the place. Why so important? Why people talk about it so important? Why people talk about it so much? Well, the first thing is is that much? Well, the first thing is is that magnesium is a co-actor. And what magnesium is a co-actor. And what co-actors do, they're sometimes called co-actors do, they're sometimes called co-enzymes, right? But a co-actor co-enzymes, right? But a co-actor actually goes along and it helps an actually goes along and it helps an enzyme to do whatever its process is at enzyme to do whatever its process is at the proper speed. And most enzymes use the proper speed. And most enzymes use two co-actors. One is an organic two co-actors. One is an organic co-actor, and that would be like a co-actor, and that would be like a vitamin usually. And then it has a vitamin usually. And then it has a paired co-actor that's inorganic, and paired co-actor that's inorganic, and that's a mineral. Magnesium turns out to that's a mineral. Magnesium turns out to be in hundreds of different enzyatic be in hundreds of different enzyatic activities. So magnesium from its activities. So magnesium from its perspective as an inorganic co-actor has perspective as an inorganic co-actor has hundreds of different enzymes it helps hundreds of different enzymes it helps out. So we use lots of magnesium every out. So we use lots of magnesium every day. The next reason magnesium is day. The next reason magnesium is important, which is what came up in the important, which is what came up in the other video that triggered the question, other video that triggered the question, is that magnesium, it turns out the is that magnesium, it turns out the level in the cell, which is where most level in the cell, which is where most magnesiums inside of our cells are magnesiums inside of our cells are supposed to be. The level in the cell supposed to be. The level in the cell has a direct relationship to the amount has a direct relationship to the amount of glutathione and the function of that of glutathione and the function of that glutathione. So, the lower the cellular glutathione. So, the lower the cellular magnesium, the lower the glutathione magnesium, the lower the glutathione amount and function. You go back to that amount and function. You go back to that other video if you want a little deeper other video if you want a little deeper dive on that. But glutathione is a core dive on that. But glutathione is a core antioxidant. It turns out that it's antioxidant. It turns out that it's really supported by magnesium as well.

really supported by magnesium as well. The other thing is because of its The other thing is because of its effects on enzymes, its effects on effects on enzymes, its effects on glutathione, its effects on glutathione, its effects on neuromuscular transmission, what we call neuromuscular transmission, what we call excitable tissues. There's always a excitable tissues. There's always a movement of sodium and potassium and movement of sodium and potassium and calcium and magnesium. Magnesium is calcium and magnesium. Magnesium is super important on all of those fronts.

super important on all of those fronts. So we see magnesium affecting our So we see magnesium affecting our digestion, our sleep quality, our brain digestion, our sleep quality, our brain health, how every organ in our body

health, how every organ in our body functions, how our muscles work, etc. So functions, how our muscles work, etc.

What a Mineral Chelate Actually Means

So it's a huge player in the body. Now in it's a huge player in the body. Now in order to talk about these different order to talk about these different forms of magnesium, I just want to forms of magnesium, I just want to define one term and that is what you define one term and that is what you often see as a mineral chilate. Now the often see as a mineral chilate. Now the term keelate we think of chelating you term keelate we think of chelating you know heavy metals or something that know heavy metals or something that keelate keels claw and so keelate means keelate keels claw and so keelate means to grab onto well in addition to heavy to grab onto well in addition to heavy metals you often have stabilizing of metals you often have stabilizing of minerals the good minerals for our body minerals the good minerals for our body as a mineral keilate. So that's why you as a mineral keilate. So that's why you don't normally see the ionic version of don't normally see the ionic version of magnesium you see magnesium and a second magnesium you see magnesium and a second word the second word is the chilate.

word the second word is the chilate. Here's what's important. The good Here's what's important. The good chilates should be able to go to your chilates should be able to go to your digestive tract, hit the stomach where digestive tract, hit the stomach where the acid is and then you disassociate the acid is and then you disassociate the ion, in this case magnesium from the the ion, in this case magnesium from the other chilate part. And so when we're other chilate part. And so when we're talking about it, we're going to see talking about it, we're going to see that we have direct effects of that that we have direct effects of that ionization, taking the magnesium off and ionization, taking the magnesium off and then that chilate doing other things.

then that chilate doing other things. And then we have indirect effects where And then we have indirect effects where maybe that chilate is better absorbed, maybe that chilate is better absorbed, maybe it helps me with certain organ maybe it helps me with certain organ functions etc. So when we talk about functions etc.

Magnesium Chloride and IV Magnesium Uses

So when we talk about magnesium and fill in the blank, the magnesium and fill in the blank, the next word is that chilate and in many next word is that chilate and in many cases that goes and does something cases that goes and does something different or new. Now these don't go in different or new. Now these don't go in any particular order. Just want to go any particular order. Just want to go through them. The first one is magnesium through them. The first one is magnesium chloride. Now, we use magnesium chloride chloride. Now, we use magnesium chloride a great deal in intravenous nutritional a great deal in intravenous nutritional medicine. So, IV nutrients. If you're in medicine. So, IV nutrients. If you're in the hospital, you might get it in say a the hospital, you might get it in say a TPN formula, total parental nutrition TPN formula, total parental nutrition through a central line. You might get a through a central line. You might get a PPN formula, peripheral parental PPN formula, peripheral parental nutrition, but you might also go to a nutrition, but you might also go to a doctor, especially integrative medicine doctor, especially integrative medicine type doctors, and they might give you an type doctors, and they might give you an intravenous infusion to help you with intravenous infusion to help you with energy or some other thing. And there's energy or some other thing. And there's two main kinds of magnesium in there and two main kinds of magnesium in there and magnesium chloride is one of them. Now, magnesium chloride is one of them. Now, it's been said in other videos I did a it's been said in other videos I did a number of years doing research that was number of years doing research that was funded by the National Institute of funded by the National Institute of Health in people with cancer. And one of Health in people with cancer. And one of the subress research projects we had was the subress research projects we had was trying to give highdose vitamin C with trying to give highdose vitamin C with the correct minerals so that the vitamin the correct minerals so that the vitamin C worked well, but it also kept the C worked well, but it also kept the electrolytes, the mineral levels as electrolytes, the mineral levels as level as possible. Turned out that if we level as possible. Turned out that if we used chloride chilates, magnesium used chloride chilates, magnesium chloride for example, that worked better chloride for example, that worked better afterwards. So the chlorides are good afterwards. So the chlorides are good especially in the introvenous form. Now especially in the introvenous form. Now you might take a magnesium chloride you might take a magnesium chloride orally. The reason it can absorb orally. The reason it can absorb reasonably well is that the chloride, so

reasonably well is that the chloride, so the magnesium and the cl the chloride the magnesium and the cl the chloride are going to break apart in the acid of are going to break apart in the acid of the stomach. Now, just as a side note, the stomach. Now, just as a side note, if you don't have enough stomach acid, if you don't have enough stomach acid, you're not going to absorb most of your you're not going to absorb most of your minerals very well cuz this thing has to minerals very well cuz this thing has to happen there, right? But mag chloride as happen there, right?

Magnesium Citrate for Absorption and Constipation

But mag chloride as an oral supplement is much less commonly an oral supplement is much less commonly seen. It's more in the parental or the seen. It's more in the parental or the IV world. Then there's magnesium IV world. Then there's magnesium citrate. So that is like a citric acid citrate. So that is like a citric acid bound to the magnesium. Again, comes bound to the magnesium. Again, comes apart usually in the acid of the apart usually in the acid of the stomach. Magnesium citrate can be a stomach. Magnesium citrate can be a reasonably absorbed magnesium, but reasonably absorbed magnesium, but here's a commonality we're going to see here's a commonality we're going to see with some of the forms. Sometimes with some of the forms. Sometimes magnesium is used as an osmotic agent to magnesium is used as an osmotic agent to help you with constipation, right?

help you with constipation, right? What's that mean? If it's an osmotic What's that mean? If it's an osmotic agent, that means it's going to pull agent, that means it's going to pull water in to especially the colon and water in to especially the colon and hydrate the feces so that you're you hydrate the feces so that you're you have an easier time having a bowel have an easier time having a bowel movement. Decreases your constipation.

movement. Decreases your constipation. The citrate form is sometimes used for The citrate form is sometimes used for this. And so here's what you also have this. And so here's what you also have to think. If I take magnesium at a to think. If I take magnesium at a normal dose, high dose will always give normal dose, high dose will always give you diarrhea, but a normal dose and it you diarrhea, but a normal dose and it gives me real loose bowel, that means gives me real loose bowel, that means I'm not digesting that and absorbing it I'm not digesting that and absorbing it very well. Because if it gives you loose very well. Because if it gives you loose stools, it means that magnesium some got stools, it means that magnesium some got absorbed, but the rest went down to your absorbed, but the rest went down to your colon and is pulling water in. So that colon and is pulling water in. So that is another sign. Some people are very is another sign. Some people are very intolerant of certain types of magnesium intolerant of certain types of magnesium because they get loose stools. And what because they get loose stools. And what we know is either they don't have enough we know is either they don't have enough stomach acid or it's just the wrong form stomach acid or it's just the wrong form for them. So mag citrate for some people for them. So mag citrate for some people works great for physiologic reasons works great for physiologic reasons because they absorb it well. For other because they absorb it well.

Magnesium Aspartate and Malate for Pain and Muscles

For other people they get looser stools and then people they get looser stools and then it would be used more in the case of it would be used more in the case of constipation. Then there's magnesium constipation. Then there's magnesium aspartate. Magnesium aspartate and a lot aspartate. Magnesium aspartate and a lot of times you'll see this combined with of times you'll see this combined with potassium magnesium aspartate aspartic potassium magnesium aspartate aspartic acid. That one comes off a little easier acid. That one comes off a little easier than citrate. So the magnesium will than citrate. So the magnesium will usually absorb better with the magnesium usually absorb better with the magnesium aspartate. So for a lot of people, aspartate. So for a lot of people, especially where they're using it for, especially where they're using it for, you know, crampy muscles, tight muscles, you know, crampy muscles, tight muscles, maybe cardiac dysriythmias, other things maybe cardiac dysriythmias, other things where you might need magnesium, where you might need magnesium, magnesium aspartate is often one of the magnesium aspartate is often one of the go-tos there. Magnesium malate, that's go-tos there. Magnesium malate, that's malic acid. So magnesium and malic acid malic acid. So magnesium and malic acid together. This is often used for people together. This is often used for people with chronic pain and that can be for a with chronic pain and that can be for a couple reasons. One reason is it does couple reasons. One reason is it

does disassociate well. So it absorbs the disassociate well. So it absorbs the magnesium good and the higher your magnesium good and the higher your magnesium levels go the slower some of magnesium levels go the slower some of your pain receptors work. So that's one your pain receptors work. So that's one reason magalate might help you with reason magalate might help you with pain. The other reason is remember the pain. The other reason is remember the chilate comes apart in the digestive chilate comes apart in the digestive system and so the malic acid doesn't system and so the malic acid doesn't just go flying away. Amalic acid helps just go flying away. Amalic acid helps your body to detoxify particular things.

your body to detoxify particular things. One of the things which is in One of the things which is in groundwater and we're always exposed to groundwater and we're always exposed to it and we hope it just sort of moves it and we hope it just sort of moves through the body but that can cause through the body but that can cause chronic pain and other stuff that malic chronic pain and other stuff that malic acid does is to help your body remove acid does is to help your body remove aluminum by helping it be excreted aluminum by helping it be excreted through the urine. So in people with through the urine. So in people with high aluminum and they've uh researched high aluminum and they've uh researched this in the nephrology world the kidney this in the nephrology world the kidney doctors because when they're doing doctors because when they're doing dialysis there's a lot of fluid involved dialysis there's a lot of fluid involved and a lot of times aluminum levels go up and a lot of times aluminum levels go up and so malic acid is often used as a way and so malic acid is often used as a way to decrease aluminum storage in the to decrease aluminum storage in the body. Aluminum storage is one of the body. Aluminum storage is one of the many things that can cause a lot of pain many things that can cause a lot of pain but also a lot of dysfunction in the but also a lot of dysfunction in the body. Then there is one of my favorites, body.

Magnesium Glycinate and Threonate for Sleep and Brain

Then there is one of my favorites, magnesium glycinate and magnesium magnesium glycinate and magnesium glycinate disassociates very very glycinate disassociates very very quickly. So the glycine and the quickly. So the glycine and the magnesium fall apart real quickly in the magnesium fall apart real quickly in the stomach normally. So the magnesium goes stomach normally. So the magnesium goes and does good magnesium stuff. But now I and does good magnesium stuff. But now I have glycine. Now glycine in the have glycine. Now glycine in the peripheral nervous system and in the peripheral nervous system and in the central nervous system has an effect central nervous system has an effect where it calms down the nervous system where it calms down the nervous system by opening chloride channels. So we by opening chloride channels. So we talked about chloride earlier. We think talked about chloride earlier. We think of the movement of sodium, potassium, of the movement of sodium, potassium, calcium, magnesium as excitatory calcium, magnesium as excitatory activity and that's true. And when they activity and that's true. And when they cross the membranes in the brain or the cross the membranes in the brain or the nerves peripherally or the muscles or nerves peripherally or the muscles or wherever, they cause excitatory wherever, they cause excitatory activity. But what's the emergency break activity. But what's the emergency break for all that? Well, it's chloride for all that? Well, it's chloride channels opening up. So if I open a channels opening up. So if I open a chloride channel, I calm things down.

chloride channel, I calm things down. So, magnesium glycinate, in addition to So, magnesium glycinate, in addition to being highly absorbed, can be very good being highly absorbed, can be very good to help people sleep, calm down, help to help people sleep, calm down, help muscle cramping, muscle twitching, muscle cramping, muscle twitching, things of that nature, because you're things of that nature, because you're getting the magnesium, but you're also getting the magnesium, but you're also getting the glycine with it. And there's getting the glycine with it. And there's ones that that we see more and more now ones that that we see more and more now because it gets a lot of play on the because it gets a lot of play on the internet, and that's magnesium 3N8 or internet, and that's magnesium 3N8 or magnesium L3N8. And the 3 and8 basically magnesium L3N8. And the 3 and8 basically again the magnesium comes off the 3 and8 again the magnesium comes off the 3 and8 coast and it it it has an affinity for coast and it it it has an affinity for the nervous system. We use this a lot the nervous system. We use this a lot with people. It's kind of like the with people. It's kind of like the glycinate story. It will help sort of glycinate story. It will help sort of modulate in the nervous system. But modulate in the nervous system. But magnesium 3n8 also can help with a magnesium 3n8 also can help with a neurinflammatory picture such as neurinflammatory picture such as neurological autoimmunity healing neurological autoimmunity healing nervous system after an infection like nervous system after an infection like long covid. We see this a lot. Magnesium long covid. We see this a lot.

Magnesium 3NA. Then there's magnesium torate which 3NA. Then there's magnesium torate which is torine and magnesium and they is torine and magnesium and they generally fall apart pretty well. But generally fall apart pretty well. But torine actually is one of those things torine actually is one of those things that helps the minerals at the cell that helps the minerals at the cell membrane. So we give people torine membrane. So we give people torine because it's a gatekeeper. In because it's a gatekeeper. In biochemistry they call it an osmolyte biochemistry they call it an osmolyte but basically what it means is without but basically what it means is without torine at your nervous system membranes, torine at your nervous system membranes, your cell membranes etc. What's going to your cell membranes etc. What's going to happen is the movement of the sodium and happen is the movement of the sodium and potassium and calcium magnesium back and potassium and calcium magnesium back and forth to create action potential nervous forth to create action potential nervous system activity and stuff without enough system activity and stuff without enough torine those don't move as fluidly. So torine those don't move as fluidly. So torine is the osmolate that helps with torine is the osmolate that helps with the transfer at the different channels.

the transfer at the different channels. So if you give magnesium toate you're So if you give magnesium toate you're giving the torine and the mag together giving the torine and the mag together and that can be very helpful as well.

and that can be very helpful as well. Then there's a real workhorse called Then there's a real workhorse called magnesium sulfate. Now going back to the magnesium sulfate. Now going back to the intravenous use, we use magnesium intravenous use, we use magnesium sulfate and IVs a lot. And people will sulfate and IVs a lot. And people will often ask me because I'll do trainings often ask me because I'll do trainings about these different minerals and IVs about these different minerals and IVs and stuff, why does your formula for and stuff, why does your formula for pain control have magnesium sulfate, but pain control have magnesium sulfate, but your formula for highdose vitamin C has your formula for highdose vitamin C has magnesium chloride? Well, the reason is magnesium chloride? Well, the reason is is that in the highdose vitamin C, I is that in the highdose vitamin C, I want the chloride salts to disassociate want the chloride salts to disassociate and I want to use the chloride to help and I want to use the chloride to help balance the electrolyte activity. In a balance the electrolyte activity. In a pain formula, I want the magnesium to be pain formula, I want the magnesium to be available very quickly without a available very quickly without a chloride because then it's going to have chloride because then it's going to have a quicker effect because there's no a quicker effect because there's no chloride tagging along with it than the chloride tagging along with it than the chloride salt would. So mag sulfate is chloride salt would.

Magnesium Sulfate, Oxide, and Epsom Salt Baths

So mag sulfate is more immediately helpful in the more immediately helpful in the intravenous form for calming muscles, intravenous form for calming muscles, disriythmias, a number of other things disriythmias, a number of other things that go on. Now you might say, well that that go on. Now you might say, well that sounds almost magical. How else is sounds almost magical. How else is magnesium sulfate used? Well, you can magnesium sulfate used? Well, you can take it orally. It can cause some take it orally. It can cause some stomach upset and diarrhea. But starting stomach upset and diarrhea. But starting in 1917, there have been publications in 1917, there have been publications about magnesium sulfate used in a about magnesium sulfate used in a different way. And there are different way. And there are publications up to a couple years ago, publications up to a couple years ago, probably this year, using magnesium probably this year, using magnesium sulfate transdermally. And most of you sulfate transdermally. And most of you have heard of Epsom salts or magnesium have heard of Epsom salts or magnesium baths. That's what they started baths. That's what they started publishing research on because it's been publishing research on because it's been sort of a folk medicine forever. And sort of a folk medicine forever. And what they discovered by testing the what they discovered by testing the blood levels of magnesium on people blood levels of magnesium on people before and after Epsom salt soaks is before and after Epsom salt soaks is that you actually do absorb it through that you actually do absorb it through your skin. And the form that you absorb your skin. And the form that you absorb really easily is magnesium sulfate. So a really easily is magnesium sulfate. So a lot of times you'll see Epsom salts, lot of times you'll see Epsom salts, there'll be other forms of magnesium, there'll be other forms of magnesium, but there'll be magnesium sulfate in but there'll be magnesium sulfate in there. So again, works really well.

there. So again, works really well. That's why those soaks, the Epsom salts That's why those soaks, the Epsom salts baths or Epsom salt foot soaks will work baths or Epsom salt foot soaks will work for neuromuscular

hyperactivity, help for neuromuscular hyperactivity, help calm your muscles down, etc. Then calm your muscles down, etc. Then there's magnesium oxide. There is a there's magnesium oxide. There is a prescription. It's really an prescription. It's really an over-the-counter supplement, but a lot over-the-counter supplement, but a lot of times a doctor will write for mag ox, of times a doctor will write for mag ox, which is magnesium oxide. What are they which is magnesium oxide. What are they using that for? They're not using it for using that for? They're not using it for the magnesium. They're using it as the magnesium. They're using it as something to help you go to the something to help you go to the bathroom, something for your bathroom, something for your constipation. And that's because the constipation. And that's because the magnesium oxide stays together very well magnesium oxide stays together very well and it just pulls water into the small and it just pulls water into the small intestine or large intestine. And so if intestine or large intestine. And so if you take magnesium oxide, you're not you take magnesium oxide, you're not going to get a ton of mag into your going to get a ton of mag into your bloodstream, but you are going to go to bloodstream, but you are going to go to the bathroom. So that's why that's used the bathroom. So that's why that's used at remember it's osmotic agent. One that at remember it's osmotic agent. One that we sometimes use, it's it's not as we sometimes use, it's it's not as common in supplements, but you'll find common in supplements, but you'll find magnesium lactate, and this can be magnesium lactate, and this can be helpful for people who have digestive helpful for people who have digestive upset. So not as much the diarrhea upset. So not as much the diarrhea thing, but there are some people who thing, but there are some people who take oral magnesium, and they'll just take oral magnesium, and they'll just get stomach aches and things like that.

get stomach aches and things like that. So, magnesium lactate is often used with So, magnesium lactate is often used with those folks. Now, another thing that those folks. Now, another thing that goes on with people is they'll say, goes on with people is they'll say, "Well, I can take, let's say, 100 "Well, I can take, let's say, 100 milligrams of magnesium glycinate twice milligrams of magnesium glycinate twice a day, don't get any loose stools, no a day, don't get any loose stools, no problem. But I've tried to take 200 problem. But I've tried to take 200 milligrams twice a day. I get loose milligrams twice a day. I get loose stools." Or they say, "Gee, I took stools." Or they say, "Gee, I took magnesium oxide and I really, you know, magnesium oxide and I really, you know, I was going to the bathroom all the I was going to the bathroom all the time." And then they go and they get time." And then they go and they get maybe an intravenous magnesium. And they maybe an intravenous magnesium. And they say, "Well, won't that magnesium give me say, "Well, won't that magnesium give me diarrhea?" And the answer is no. And the diarrhea?" And the answer is no. And the reason is that the reason magnesium reason is that the reason magnesium loosens your stool or makes your bowels loosens your stool or makes your bowels work more is when I take it orally, it work more is when I take it orally, it pulls water into the GI tract. If you pulls water into the GI tract. If you get magnesium intravenously or get magnesium intravenously or transdermally like an Epsom salt soak, transdermally like an Epsom salt soak, most of that magnesium, all of it with most of that magnesium, all of it with an IV is going to go in your an IV is going to go in your bloodstream. It's not going to have bloodstream. It's not going to have anything to do with your GI tract. So we anything to do with your GI tract. So we can give people higher doses of can give people higher doses of magnesium introvenously than they would magnesium introvenously than they would ever tolerate orally. So the things you ever tolerate orally. So the things you want to keep in mind is every form of want to keep in mind is every form of magnesium has a different target. I magnesium has a different target. I haven't mentioned them all because haven't mentioned them all because there's a zillion of them. The next there's a zillion of them. The next thing is is that the name tells you thing is is that the name tells you what's riding along with the magnesium, what's riding along with the magnesium, what the chilate is. So magnesium oxide, what the chilate is. So magnesium oxide, it's literally oxide. Magnesium citrate it's literally oxide. Magnesium citrate citric acid magnesium glycinates glycine citric acid magnesium glycinates glycine tells you what that is. You can easily tells you what that is. You can easily now with the internet look up each one now with the internet look up each one and you may have some that you tolerate and you may have some that you tolerate better than others. All right, I'm Dr.

better than others. All right, I'm Dr. A. It's been great talking to you. I'm A. It's been great talking to you. I'm glad I was able to answer this question glad I was able to answer this question in more detail. We got a lot of comments in more detail. We got a lot of comments on it. We're going to link below a video on it. We're going to link below a video that was real popular about glutathione.

that was real popular about glutathione. We get into magnesium in that, but it We get into magnesium in that, but it kind of gets to that connection a little kind of gets to that connection a little bit more. So, I'll see you guys on the bit

more. So, I'll see you guys on the