Conscious Life presents
SLEEP
SUPER CONFERENCE

Activated probiotics

Guest: Rebecca Edwards

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[00:00:10] Kirsty Cullen

Welcome to the Sleep Super Conference. I'm Kirsty Cullen, CEO of the Optimum Health Clinic and we are a UK based clinic specializing in fatigue related illness.

For this interview though, I am joined by Rebecca Edwards. Delighted to introduce Rebecca as the Director of Education at Activated Probiotics. Rebecca is a qualified naturopath who practiced in London for over 10 years, in addition to over 18 years experience as a global educator in the complementary health field.

Latterly, Rebecca taught at Endeavor College of Natural Health in Melbourne before moving to her current role at activated Probiotics. And this role allows Rebecca to fulfill her passion for education and the sharing of cutting edge research. Today, Rebecca joins me to dive into the fascinating connections between sleep and the human microbiome. Rebecca, welcome.

Rebecca Edwards

Thank you, Kirsty. Thank you so much. It's lovely to be with you and your listeners.

Kirsty Cullen

Superb. And I know that we are both particularly excited to discuss this topic today because the gut is so relevant to sleep and it's perhaps not the first line of thought typically when we're thinking about sleep generally. So it'll be so interesting to dive into some of the connections.

Rebecca Edwards

Absolutely. Yeah. The gut is at the center of the human body and therefore it's at the center of everything that makes us work.

Kirsty Cullen

So let's begin by diving into that a little bit. So the microbiome heavily influences health globally. You know, it's really the foundation of health as we understand it as practitioners. Do you want to speak to that a little bit?

[00:01:53] Rebecca Edwards

Sure. Well, I suppose we should start by defining what the microbiome is. And it's such an interesting concept itself to really think that we are not alone in our lives. Humans essentially are walking communities of microbes. When we use the word microbiome, we're generally referring to the dense colonies of microorganisms which live on and within the lining of the intestinal tract most heavily in the large intestine.

And that's what we refer to as the microbiome. The microbiome is so much more than just all of these little germs who find us convenient to live on. They're absolutely essential to all of our metabolic processes. They control things from the rate at which we absorb nutrients to producing byproducts which have a direct influence on our sense of wellness and self. The microbiome is intricately related to so many factors that are really an extension of gastrointestinal health and sleep is one of those.

Kirsty Cullen

Superb. And the gut and brain effectively communicate with each other through a pathway known as the gut-brain axis. And perhaps you can explain a little more about that bidirectional communication and how it impacts directly on areas such as cognitive function and mood and emotional processing first and foremost.

Rebecca Edwards

Well, I love that you used the term bidirectional there because that's always the term that I love to use because it really is a two way conversation. So the contents of the gut microbiome can have a communication pathway with the central nervous system, including the brain. And the brain can also have an impact on the gut.

And your listeners will appreciate that the way you feel emotionally can impact your digestion. I mean, who hasn't had a stress tummy ache or a runny tummy due to anticipatory anxiety? So even that term butterflies in your tummy is really referring to the impact that your emotions can have on your digestive tract. But your digestive tract also impacts your mental wellness and emotional stability and your sleep.

And it does this through a variety of mechanisms. And really what we're looking at is what happens when your microbiome, that community of microbes, communicates with the central nervous system and to really help us understand how each direction is speaking to the other.

Kirsty Cullen

It's amazing to me. And I know there's, certainly within the field of chronic fatigue and fatigue related illness, I know that there are studies to show a reduction in anxiety in chronic fatigue patients who took Probiotics for two months. So there is this direct impact that can be achieved, isn't there?

Rebecca Edwards

There really is. And again, it comes back to this idea that, which can be uncomfortable for some people, the higher the number of different types of microbes we have in our microbiome, so the more diverse our microbiome is, the stronger the relationship is with different health outcomes.

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So in other words, a more diverse microbiome is very much associated with greater health outcomes. And that's the case in that study you just referenced, Kirsty, that with fatigue we see directly that patients who have a more diverse microbiome are less likely to experience symptoms of severe and chronic fatigue.

Kirsty Cullen

And on the topic of microbial diversity, we also know that that's linked in research to improvements in sleep directly. So research suggests that a change in the gut bacteria may actually underpin some of the certain sleep disorders that we see. Is that the case that you find?

Rebecca Edwards

Yeah, absolutely. And then it gets really interesting. It's almost like science fiction because every different strain of bacteria has a slightly different genome and therefore a slightly different way of metabolizing and will produce different metabolites or byproducts as it acts on fermentation pathways in your digestive tract.

And this is where we come back to that idea of a more diverse microbiome leads to greater health outcomes because when you have different types of bacteria, they're producing different substances. So just some of the substances that your gut microbiome can produce include various short chain fatty acids like butyrate. We know that butyrate can alter brain-derived neurotrophic factor expression and reduce depressive-like behavior.

We know that the microbiome can modulate the expression of GABA receptors in the hippocampus and amygdala and reduce anxiety-like behavior in that way. We also know that the gut microbiome can participate in neurotransmitter modulation through modulating serotonin signaling pathways in the brain. And again, where this is an interesting and fascinating conversation is we often hear people say things like oh, Probiotic supplementation, that helps people with symptoms of depression and anxiety because your gut microbiome produces serotonin.

And it's definitely true that serotonin is produced in the gut. But what's really interesting is that gastrointestinal serotonin, it can't actually cross into the brain. So the microbiome has a positive impact on neurotransmitters, not through producing serotonin, which the brain uses, but in other modulatory ways. And I just find that endlessly fascinating.

Kirsty Cullen

It really is. And I know that there's a great study, isn't there, in 2019 which you guys reference in relation to your work, which looked at specific strain Probiotics and the impact on sleep, looking for an association in improvement in sleep quality. Would you like to explain a little bit more about that particular research and the significance?

Rebecca Edwards

Absolutely. Now, you know, you're absolutely speaking to my heart here, Kirsty, because research is really what makes me get out of bed every day. There is so much for us yet to learn about the microbiome and its impact on mental health. And it's really exciting when we see good quality

research being published in peer reviewed medical journals such as this particular study from 2019, which was published in the journal Frontiers of Psychiatry.

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So this was a double-blind placebo controlled, randomized clinical trial which is the highest quality clinical trial that can be done. And what happened here was the researchers recruited volunteers to their study. They randomized them to receive either Probiotic or placebo. Nobody knew who was taking what until the end of the trial. They got them to complete this immense battery of psychological tests. They got them to do that before they started their intervention.

Then everybody went away and they took their capsule every day for three weeks. They didn't know if they were taking the placebo or the Probiotic. They completed the same psychological test after three weeks. Then they completed the same test again three weeks later. So they took their intervention for six weeks straight. Then they stopped taking their intervention whether it was placebo or Probiotic.

And after a three week washout period when no one was taking anything, they took the same tests again. And what's really interesting is what the researchers found happened to the quality of the trial participants' sleep while they were taking the Probiotics. First of all, the major things they were looking at in this study were around mental health and emotional stability.

So they were asking participants questions around their symptoms of depressed mood, anxiety, a really interesting one: feelings of anger, feelings of hostility, feelings of not having a sense of acceptance of self. I mean, it was so interesting the various things they were looking at. But when it came to sleep, there was a really strong correlation between sleep scores and the overall mental health scores.

What they found was that a poor sleep quality was related to higher anxiety, depression, tension, anger, fatigue and confusion. Conversely, those who had a good sleep quality reported what they called in the research as higher vigor, so higher energy and a greater sense of wellbeing. So you can't really separate sleep quality from good mental health and good emotional well being.

Kirsty Cullen

You really can't. It's interesting, I was speaking with Dr Schaffner this week, filming another session for the conference, and we discussed the link between depression prevalence and sleep disturbance. And so it makes sense, doesn't it, that the same strains of Probiotics may be beneficial for both areas.

Rebecca Edwards

Yeah, absolutely. And, you know, we all know what it feels like when you don't have a good night's sleep. I mean, do you feel that all is well with the world the next day? You absolutely don't. So it's no surprise that there is this really strong correlation between sleep quality and all the ways that we see the world through our eyes.

Kirsty Cullen

And I mean, beyond the biochemistry even, we know poor sleep is likely to contribute to a decrease in mental wellbeing. And of course, poor mental health can also result in insomnia and sleep disruption.

[00:11:35] Rebecca Edwards

Yeah, that bidirectional talk again.

Kirsty Cullen

Yeah, absolutely that and obviously, on top of that, we know that there are certain stages of sleep, aren't there, where it's really important for emotional processing as well. And if those stages of sleep are missed, then of course that's going to impact directly.

Rebecca Edwards

Yes, absolutely. And that's where it's not just about the number of hours that you're asleep. It really is about the quality of that sleep. Yes.

Kirsty Cullen

So back to fascinating research, Rebecca, as we love to do. There was another study, wasn't there, in 2020, where researchers drew the conclusion that sleep quality was positively associated with the level of microbial diversity in the gut. Can you tell us a little bit more about that study?

Rebecca Edwards

Yes, so, once again, that was a larger analysis looking at what people who had different types of sleep quality, who self-reported different types of sleep quality, what they actually had lurking or living inside them. And this is really interesting itself because the gut microbiome is actually really easy to study. It's slightly unsavory for a lot of people to think about, but it's actually really easy for us to sample what's going on in the gut microbiome.

And it's a noninvasive test. It's kind of the opposite of an invasive test, actually, where you're putting something into the body. When you're assessing someone's microbiome, you're examining what's coming out of their body. So your gut microbiome can be analyzed or read or examined by taking a fecal sample, which can then be examined via various different scientific methods to gain an understanding of exactly which microbes you have living in your gut.

Again, there are literally thousands of individual strains of bacteria which have been isolated from the human gut. And while we don't yet have this idea of one single optimum human microbiome, what we can see is that there are absolute trends when it comes to different health conditions.

And we see that, again, people with, for example, depression and anxiety, they have a really different ratio of Bacteroidetes to Firmicutes than people who don't report these mental health conditions, for example. So what the researchers found overarchingly in that microbiome and sleep study was, again, that those who self reported the highest quality of sleep were more likely to harbor a greatly increased number of microbes in their fecal samples.

Kirsty Cullen

Interesting. So with those commonalities and those deficiencies in mind, relative to specific health conditions, I wonder what's that telling us about the modern day diet. What's that telling us about what people are eating and how that's reflecting in deficiencies in the gut?

[00:14:26] Rebecca Edwards

Yeah, it's really interesting because I work for a Probiotic company and so what I get asked all the time is, which Probiotics are best for your microbiome? And it's really explaining that that's not exactly what Probiotics are doing. When you take a Probiotic supplement, those bacteria that you swallow, they're not growing inside you. They don't become part of your microbiome.

You don't increase the diversity of your microbiome by taking Probiotic supplements, although they can help in a different way. You do so by taking in a more diverse diet. And again, this is where it comes back to the individual genomic patterns or differences between different strains of bacteria. Different types of bacteria will feed on different dietary fibers found in all sorts of foods which have originated in plants.

So, that's fruit and vegetables and nuts and seeds and legumes and basically anything that has come from a plant will contain a variety of dietary fibers. Some we can see, some we can't. Some are soluble, some are insoluble. But they can all act as fuel sources for different types of bacteria. The more diverse your diet, so the higher the number of different plant foods that you take in, the more diverse your microbiome will be.

And, you know, this is where you and your colleagues, Kirtsy, become so important for your patients when you can talk to them about increasing the types of foods they have in their diet to support a more diverse microbiome. And this really comes back to your question: what is it about the modern diet that is contributing to a less diverse microbiome? Well, the biggest factor would be a, you know, a lack of diversity in eating.

And, you know, I remember in clinical practice, seeing patients who would eat the same thing every day. And that's fine from a nutritional standpoint in terms of vitamins and minerals and maybe macronutrients as well. I remember a patient I saw once who said, I have calculated the exact number of grams of protein. I need the exact number of grams of fats. I have constructed this diet to meet all of my RDIs for vitamins and minerals and I will just eat the same thing every day.

And so then it was a matter of explaining to him that you need diversity in your diet to build a more diverse microbiome which is just as associated with health outcomes as a deficiency in a vitamin or mineral can be.

Kirsty Cullen

Yeah, absolutely. And on the topic of food, there's a great little study around fermented milk, isn't there? And the impact on stress induced sleep disturbance. Do you want to just explain a little around that?

Rebecca Edwards

Yeah, it's really interesting that, you know, fermented foods have been part of the human diet forever. As long as there have been humans, there have been fermented foods. And milks are particularly easy to ferment because when we think about what milk is, milk is a food that a mother animal produces for her baby. And sure, part of what milk is, is nutritional. But the bigger part, the more exciting part, really, of what milk is, is this is how you build a baby's immune system.

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You know, whether we're talking about a baby human or a baby cow or a baby goat, the mother produces milk to nourish her baby. But also milk contains a vast number of what we call prebiotic substances. In milk, it's often different oligosaccharides which come into the digestive tract and act as fuel sources for very particular communities of bacteria which are then associated with immune system development.

So getting back to your question about this trial and the fermented milk products, milk is a fantastic fuel source for different types of bacteria. And so we very much see a correlation between the consumption of fermented products, including milks, and again, a more diverse microbiome.

And in this particular case, again, what the researchers found was that people who had a higher intake of fermented dairy products were less likely to present with, again, a variety of different mental health and sleep dysregulations. And really, what it's commenting on there, the overarching outcome of that trial, is the more diverse your microbiome, the less likely you are to be presenting with these symptoms.

Kirsty Cullen

And if those are the dietary elements, what are maybe some of the other lifestyle factors that might negatively impact on the gut and therefore jeopardize our sleep quality?

Rebecca Edwards

Well, this is a huge question and it's actually become a really interesting question in the context of the last couple of years in human life, actually, because when we talk about the human microbiome, something that keeps me awake at night is I actually spend a lot of time worrying about what we call the diminishing human microbiome. And what I mean by that is that with every generation born, we are seeing less diversity in the microbiome.

The reason this is happening over generations is because the way that you first begin to build your microbiome is from your mother. And your mother can only pass to her baby the microbiome that she herself possesses. Microbial transfer begins in utero. You know, the developing fetus begins to develop its own gastrointestinal microbiome as it grows inside its mother. More microbiome transfer occurs during birth.

And then there will be different microbes transferred, whether the baby is born vaginally or via a cesarean section. Further microbial transfer occurs during feeding. And again, we have different microbiome patterns seen in breastfed versus formula fed babies. But then we then move from this vertical microbiome transfer to what we describe as the horizontal transfer of the microbiome.

And the horizontal transfer is that we can actually increase the diversity of our microbiome through interacting with the community. This is where it becomes relevant to modern times. We know that children who regularly see their grandparents have a more diverse microbiome than children who don't because they're actually picking up some of their grandparents microbia.

We know that children who have older siblings have a more diverse microbiome than children who are the first in the family or who are older children. Children who go to childcare, go to nursery or daycare, they have a more diverse microbiome than children who don't. Children who have pets in the home, they have a more diverse microbiome than children who don't. Children who live, and

adults as well actually, communities, who live in agricultural areas or on farms, they have a much more diverse microbiome than people who live in the city.

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So everything that we do when we're interacting with the external community can influence the diversity of our microbiome. Now, think about what the majority of people in the Western world spent the last two and a half years doing sitting in their homes alone or just with their immediate family. This has not been good for maintaining and growing microbiome diversity, especially for young children.

So to get back to your question around lifestyle factors, et cetera, the biggest things that I would look at would be interactions with other people from different generations, interactions with animals, visiting the countryside, visiting farms. In fact, travel. Whenever we travel, we will pick up microbes from our external environment, from the foods we're eating, from different soils and different people.

So we really need to look at getting out and about, get out of your comfort zone, get your microbiome out of its comfort zone. And this is one of the ways that we can enhance microbial diversity superb.

Kirsty Cullen

So we're not beyond help at this point, there are things that we can fundamentally do?

Rebecca Edwards

Look, there's always something you can do. That's what I always love to say to my patients in clinical practice and my students when I'm lecturing. No matter how bad things are, there's always something you can do.

Kirsty Cullen

So with reference to clinical practice, what might that look like? What does focused therapeutic work around balancing the gut microbiota, what does it look like in practice?

Rebecca Edwards

Well, from a dietary therapy perspective, it's harking back to what we were discussing a few minutes earlier. It's very much looking at dietary diversity. So working with your healthcare professional to enhance the variety of plant foods that are coming into your diet, it's working with your healthcare professional to look at what you can do to enhance your microbes from a communities perspective as well.

I love to recommend things, like I said, going horse riding and going hiking in the countryside where you're being exposed to more microbes. Gardening, for example, I do know practitioners who really prescribe gardening for their patients because once again we see an observational study that has found that people who spend time gardening have a more diverse microbiome and are less likely to experience depression and other mental health conditions.

But then if we want to look at your question it was really about focused intervention. If we want to look at focused intervention, then I think it really comes down to what does the published evidence

tell us about very specific strains of live bacteria and what they've been found to do for microbial diversity, for sleep quality and for mental health?

[00:24:23] Kirsty Cullen

Exactly that. And obviously some of the studies we've referenced have highlighted specific strains. So obviously in your role you have this amazing potential to pull together some of those very specific strains into products that are meaningfully helpful actually.

Rebecca Edwards

Yeah, absolutely. And whenever I'm talking about Probiotics, the first thing I always want to say is that Probiotics are not just one thing. Probiotic is really a category, like the word medicine or the word herbal medicine. And just as we wouldn't say to someone, oh, you've got allergies or headaches or high blood pressure, do you know what you need? You need to take medication.

You know, the doctor would talk about which medications have been found to be of benefit for headaches or for high blood pressure. In the same way, I'm very wary about saying to people, oh, you have poor sleep quality, you have poor microbiome diversity. Do you know what you need? You need Probiotics. I would rather say, do you know what you need? You need very specific strains of Probiotics which have been put through these randomized, doubleblind controlled clinical trials and found to have a specific outcome relating to your poor sleep quality or mental health.

So what we love to do at Activated Probiotics is we're very, very actively engaged in supporting the furthering of high quality research into natural medicines, into Probiotics in particular. We actually have three clinical trials underway right now in conjunction with researchers at Australian universities who are interested in examining what very specific strains of Probiotics can do for particular health outcomes.

And actually one of those is on Biome lift. Biome Lift is a combination of four specific strains of Probiotic. And it's the combination which was trialed in that clinical trial I talked about earlier with the washout period and the mental health questionnaires. The researchers at La Trobe University here in Melbourne, who are world experts on the gut brain axis and very well versed in understanding that bidirectional channel of communication, they are looking at the impact that Biome Lift Probiotic can have in a clinically diagnosed subthreshold depression population.

So these are people who have symptoms of depression and the associated poor sleep and poor energy levels, et cetera. And they will be examining over the course of several weeks of intervention what impact Biome Lift can have on these people's symptoms and hopefully help to improve their quality of life.

Kirsty Cullen

Superb. So we're juxtaposing two loves of yours there, obviously the world of the microbiome, but also research and bringing them together in perfect unison, which as practitioners, we absolutely love. It's the pinnacle of clinical practice, isn't it?

Rebecca Edwards

Well, it really is, and it's something that, as a lecturer in natural medicine for nearly two decades, it's something that would always, to be honest, bother me a little bit when I would be, I always teach

from an evidence based perspective, what does the research tell us about the action of this particular herb or nutrient or food or diet or Probiotic?

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And it's something that I've always felt we've almost been letting our practitioners in our industry down a little bit, because our industry hasn't always presented supplements that have been put through high quality clinical trials as finished products. Very often we have a bit of research on this nutrient, a bit of research on that nutrient, and we put them together and say, here's a product for you to give your patients.

But I feel that we're really doing our practitioners a little bit of a disservice unless we're actually giving them products which have been put through clinical trials as finished products. And that just really enables them to have that extra confidence prescribing to their patients saying, you know what, this exact formulation has been trialed in people just like you and they've had great outcomes. So I'm really confident that we can get the outcome we need to have for you.

Kirsty Cullen

Superb. Absolutely superb. You touched on energy production there and I think it's important to acknowledge at this point that it's not just the topic of sleep itself that's key, is it? But, I mean, the cycle of energy production and circadian rhythms during the day, they lead up to nighttime rest and they may directly impact on sleep quality. So, I mean, we may have someone who is very adrenally activated and has high levels of cortisol at night and that will render it difficult to sleep.

Or alternatively, in clinic, we certainly see those with compromised mitochondrial function and that will impact on their energy provision and necessitate daytime napping. Both of those factors will ultimately impact on sleep quality. So I wonder, is there a role for the microbiome in modulating and supporting the function of both mitochondrial systems and adrenal systems?

Rebecca Edwards

Yeah, there certainly is. So, again, what the research shows us so far we've kind of touched on greater diversity, less likely to experience these things, more likely to report higher energy levels, et cetera. But when we really look at it from a biochemical perspective, what we can see is that so much of, particularly mitochondrial wellness comes back to the health of the intestinal epithelial barrier.

And essentially what we're talking about there is the innermost lining of the digestive tract. This is where the microbiome lives. And this is also where in the upper part of the small intestine, the transfer of nutrients takes place from the intestinal tract into the bloodstream. But these cells which occupy this epithelial environment, they are cells which have a very high requirement for nutrition from the patient's bloodstream.

And they are cells which have a high number of mitochondria, you know, the organelles which produce energy inside our cells. What we see that's fascinating is there is again a correlation between the health and the thickness and the blood supply to these epithelial cells and energy levels. And this is interesting. This actually comes back to the research that's been done on Biome Lift.

I mentioned that Biome Lift is a combination of four specific strains of Probiotic. Now, some of those strains which make up Biome Lift have been studied in histology studies. So, different tissue samples have been essentially bathed in these particular strains of Probiotics. And what the researchers found

is really interesting. They found that overall Lactobacillus fermentum - LF16, which is one of the individual strains in Biome Lift, was able to positively affect membrane integrity of these epithelial cells, both preventing and restoring proinflammatory damage.

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So what that tells us is that when patients take this particular strain of Probiotic, it helps to protect the membranes of these epithelial cells, helping to prevent them from being damaged by intestinal inflammation and other inflammatory pathways and keeping up that mitochondrial production of ATP, chemical energy.

They also found that there was reduced oxidation in intestinal cells, these epithelial cells, when patients took this combination of Probiotics and, really interestingly, there was increased cellular viability of these epithelial cells. They were receiving more nutrition from the patient's blood supply.

So we know that individual strains of Probiotic can essentially help to protect these cells which have this high mitochondrial, this production of energy and thus help, oh there's an airplane going over that's helpful for your recording, and does help with maintaining mitochondrial homeostasis and patients feeling healthy energy levels throughout the day.

Kirsty Cullen

It's fascinating and it's an example of why practitioner lead advice is super important because we can't just pick up any particular product off the shelf and hope for the best. Actually, it's really, really important, as you referenced earlier, to know the research behind those strains that we're looking to target.

Rebecca Edwards

Absolutely. And it's why I always say to people, don't self medicate with supplements, go and see someone who's an expert in this area who has access to all of this research who can understand your particular case and in the context of Probiotics, who can prescribe the exact strains needed for you, you know, as a total case, rather than just choosing something off the shelf in the health food store that may not actually contain the strains you need for your particular presentation.

Kirsty Cullen

Yeah, completely. I'm aware that a lot of the research that you focus on as a company is around the power of Probiotics for their immune modulating and antiinflammatory capacity. And of course, that's an area we focus on clinically at the Optimum Health Clinic in reference to fatigue related illness. It's a key player. Perhaps you can talk to us a little bit about the role of inflammation in sleep disruption and how that features.

Rebecca Edwards

Oh my goodness, that is a huge conversation. And it's something that I always love to say to patients and healthcare practitioners. If you think of your health as being like a bit of a fairy tale, who's the villain? The villain is always inflammation. Inflammation is always the underlying driver for every chronic health condition. So for your particular specialty, Kirsty, and your colleagues, for energy production and sleep quality, it's highly likely that all of the patients coming through your doors will exhibit, to some degree or another, underlying inflammatory processes.

[00:34:55]

And the word inflammation itself is really interesting because when you say the word inflammation, people picture in their mind a physical inflammation, like a swollen ankle or a hot red sore area of the body that you can see. But what we're talking about when we refer to underlying inflammation is something a little bit different.

It's the overproduction of particular cytokines or chemical messengers being released from the membranes of cells all throughout the body, recruiting immune cells to release more inflammatory cytokines to essentially create an immune response. And our body releases inflammation in response to infections, whether that's through viruses or bacterial infections, our body releases inflammatory cytokines in response to tissue damage, in response to a great number of external stimuli.

I think this then loops back to the conversation we were having earlier about how now in modern society, we are eating a less diverse diet, we're having less contact with nature, we're having less contact with other generations of family members and humans in general. We have this less diverse human microbiome and correspondingly, we have higher levels of these underlying inflammatory cytokines going on. Essentially every chronic condition is very likely to be fed or maintained by inflammation.

And so ultimately, what we as healthcare practitioners are always looking to do is help reduce inflammation in our patients. And so much of inflammation comes back to gut health. So, ultimately we can't really escape looking at inflammation and the effects that inflammation has on immune modulation. We can't separate that from the health of the gut lining, which itself can't be separated from the microbiome. So all good health begins and ends in the gut. It really is as simple as that.

Kirsty Cullen

Yeah. And again, it's that two way relationship, isn't it? Inflammatory pain can directly impact on sleep, but also sleep deprivation, as I understand it, can also increase inflammation.

Rebecca Edwards

Yeah, absolutely, 100%. And we really see patients become embedded in these vicious cycles where, as a practitioner, it's your job to cut into that vicious cycle and stop this endless perpetualization of symptom begetting symptom, et cetera. And really working on the gut is the ultimate way that a lot of practitioners will start to end that vicious cycle.

Kirsty Cullen

Yes, absolutely. And again, are there specific strain combinations that have been shown in research to have an anti inflammatory impact?

Rebecca Edwards

Yeah, absolutely. And in fact, the strains in Biome Lift are a great example of that. I'm often asked, a Probiotic for mental health, how does that work? And I always say there's a short answer and a long answer. The short answer is via the gut brain axis. The longer answer is, well, it's a bit more complicated. We've got a lot of things going on here. We've got these short chain fatty acid

metabolites. We've got neuroendocrine inflammation regulation. We've got increased microbial diversity.

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But ultimately, what it comes down to is the fact that Probiotics are overarchingly anti-inflammatory and immunomodulatory. And that is very likely to be the greatest way that Biome Lift helps to achieve these results in mental health and sleep is through reducing inflammation and modulating immune response.

Kirsty Cullen

Rebecca, thank you for sharing your brain with us. It is absolutely fascinating to hear how the research underpins the work that you do. And speaking of your work, if we want to direct people towards you to find out a little bit more about what you do, where should we send them?

Rebecca Edwards

They can come to the Activated Probiotics website, which is www.activatedprobiotics.com.au. Don't forget dot au, because we are an Australian company. If they use Facebook, they are very welcome, if they are practitioners, to come and join us in the Activated Probiotics Practitioner Network.

And we have three lovely Activated Probiotics team members in the UK and one in Ireland. You can find their contact details on the Activated Probiotics website. And they are just beautiful humans who are always happy to speak about our lovely microbial babies.

Kirsty Cullen

They certainly are. I can speak to that firsthand, having spent time listening to their amazing lectures. Rebecca, thank you again for your time. Really, really appreciate it and hope everyone listening really enjoyed it.

Rebecca Edwards

Thank you so much. I loved our conversation.