

Sawbones 239: CBD Oil

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Intro (Clint McElroy): *Sawbones* is a show about medical history, and nothing the hosts say should be taken as medical advice or opinion. It's for fun. Can't you just have fun for an hour, and not try to diagnose your mystery boil? We think you've earned it. Just sit back, relax, and enjoy a moment of distraction from that weird growth. You're worth it.

[theme music, "Medicines" by The Taxpayers, plays]

Justin: Hello, everybody, and welcome to *Sawbones*, a marital tour of misguided medicine. I'm your cohost, Justin McElroy.

Sydnee: And I'm Sydnee McElroy.

Justin: It's been, like, three weeks, Syd...

Sydnee: I know.

Justin: ...since we've been—recorded in this fashion. I mean, we missed a week last week. The week before that, we recorded across from each other. Just kind of strange.

Sydnee: Yeah.

Justin: I mean, across the states, I should say.

Sydnee: That's true. That was unusual.

Justin: That was unusual. Hey, Syd, have you ever recorded an episode of *Sawbones* before?

Sydnee: Um... what?

Justin: [whispering] Just answer.

Sydnee: Yes?

Justin: Hey, Syd, have you ever—[stammers] I'll just ask you again. Hey, Syd, have you ever recorded an episode of *Sawbones* before?

Sydnee: Yes.

Justin: Hey, Syd, have you ever recorded an episode of *Sawbones* before on weed?

Sydnee: Oh, no.

Justin: [laughs]

Sydnee: That really—is that gonna be the...

Justin: [laughs]

Sydnee: Can we not?

Justin: Jon Stewart, *Half Baked*. Amazing. Amazing performances. This has been great performances from PBS, starring Jon Stewart as the one guy from *Half Baked* who asks if you've done everything on weed.

Sydnee: We've already done a whole episode on medical marijuana, so you may be confusing some of our listeners.

Justin: Uh, well, it's because I'm on weed, Syd.

Sydnee: You're not.

Justin: I'm on... a lot of weed.

Sydnee: No.

Justin: And so I'm a little mixed-up and a little loopy...

Sydnee: No.

Justin: A bit cuckoo in the head, just saying.

Sydnee: Do you gotta share what you—so Justin is prone to self-experimentation. He likes to try new things.

Justin: [singing] You wanna try new things, 'cause it might help your anxiety. [normally] That's what Daniel Tiger says.

Sydnee: [laughs] So what have you been—what have you been dabbling in?

Justin: So the thing that I have been sort of messing around with is CBD oil, which stands for "Cannabis, Buds, Do it" oil.

Sydnee: No. No. Cannabidiol. Nope.

Justin: And uh, we were at the health food store, and I guess this should've been a tip-off, 'cause we were at this new health food store in Huntington, and we were making fun of, like, all kinds of whack stuff that was in there that we'd seen on *Sawbones*—that we'd covered on *Sawbones*, like, "This is whack, this is made up, this is stupid, this is whack," and then it was—as we were checking out, I got something... at the counter. What is it that I... had to get? It was like...

Sydnee: Charlie wanted something.

Justin: Charlie wanted something.

Sydnee: I don't remember.

Justin: She saw something pink there. And so I was buying it, and then I saw CBD oil at the counter, and I've heard that that was, like, good for anxiety, so I was like—for some reason, I forgot that everything else in the store was made up, and thought, like, "Maybe this'll do it," so I bought this dropper of CBD oil.

And as I said, "Can I have some CBD oil, please?"

And he had this whole display, and he was like, "Uh, which one?"

And I was like, "Um... I actually don't..."

Sydnee: Nope.

Justin: "...have any..."

Sydnee: The one everybody likes? The really popular one? [laughs]

Justin: "I've put no thought into this. What's the—" They just opened, Syd. They don't even know what the popular one is!

Sydnee: It's true.

Justin: So I just, like, got one at random that was peppermint, and looked like regular. I thought I was playing with some pretty strong forces, and I didn't want to get into, like, the deep stuff. 'Cause it was weed, and I was afraid that I was...

Sydnee: Was there one that was called The Deep Stuff?

Justin: No, it was called the—I think there was a maximum strength, if memory serves, and I did not wanna get into that.

Sydnee: The Deep Stuff, The Dank Stuff, The Double—The Double-Strength Stuff.

Justin: The dank, good herb.

Sydnee: [laughs]

Justin: The good stuff.

Sydnee: Can I have the Double Stuff?

Justin: I thought I was gonna get arrested, so I was trying to be quick. And also, I didn't talk about it—actually, I was afraid I was gonna get arrested by the wife-doctor-police...

Sydnee: Yeah.

Justin: ... because you didn't know that I was buying it.

Sydnee: I didn't.

Justin: I was afraid you'd make fun of me.

Sydnee: I didn't. I was looking at the—I was like, "Well, this is—it's unfortunate that we have this store that has so many fake products in it," but then they also had some good vegan foods for when my sister comes into town, [laughs] so I was perusing...

Justin: You were perusing those while I was getting hooked on—hooked on weed.

Sydnee: [laughs]

Justin: Hooked on the good, dank stuff.

Sydnee: Justin, do you know what you bought?

Justin: I—okay, kidding aside...

Sydnee: Do you know what it is?

Justin: 'Cause I'm not that much of a dunce. As I understand it, it is a... oil that is made as a byproduct of cannabis that in and of itself has no psychotropic...

Sydnee: Yes.

Justin: ... uh, qualities.

Sydnee: That is correct. It is one of—there are like 113 cannabinoids in hemp, in marijuana, and it's one of them. And it's not THC. THC is what makes you high. And cannabidiol does not, though. It's not—have you thought you've been high on it? That's a great question.

Justin: No. No.

Sydnee: Let's ask—let's start with that.

Justin: No.

Sydnee: Did you think—were you thinking you were high?

Justin: No.

Sydnee: 'Cause you're not.

Justin: Uh, no, I don't think I—I didn't think I was high.

Sydnee: Okay. Alright. Well, we've eliminated—

Justin: Once again, we were having a little bit of fun...

Sydnee: Alright. Well, just making sure.

Justin: ... for the show. Um, no, I mean, you let me know when you're ready for me to talk about my experience with it.

Sydnee: Do you want me to go through the evidence first, or do you want to talk about your experiences—

Justin: It might be easier for me. Actually, you know what? It might be better for me if I talk about, sort of, my perspective on it.

Sydnee: Yes.

Justin: Because I feel like I might be too embarrassed after you tell me.

Sydnee: Okay.

Justin: Um, I did a cursory—

Sydnee: It's not as bad as you think, but go ahead.

Justin: I did a cursory google, and what I did find was, I think I found, like, a study—I thought I found a study that it was helpful with anxiety. And then I saw a lot of anecdotal evidence.

Sydnee: Mm-hm.

Justin: Which, I know, I know, I'm not saying that I was—that's like, be-all, end-all, but I saw a lot of anecdotal evidence from people who were like, whatever, and the thing that I do believe about, like, cannabis and hemp and anything, like, that is an offshoot of that, along with a lot of things, there's, one, not gonna be a ton of research done into it, 'cause there's not a lot of money in it, and two, there's gonna be—all research is gonna be sort of hampered, even in this case, by the connection with marijuana. And I think that—

Sydnee: Yeah.

Justin: I've even seen some states that are, like, making it illegal.

Sydnee: Yes.

Justin: And I don't know why you would do that if there wasn't something to it, but—anyway. I've been kind of experimenting, like I said. Uh, kind of doing the standard dose, whatever they say to do on the bottle. I drop, like, 15 drops out of an eyedropper under my tongue of this peppermint-flavored oil. And I would say...

Sydnee: Is it, like, once a day?

Justin: Once a day.

Sydnee: Mm-hm.

Justin: And I would say that it is not extremely pronounced, but—and again, it may be placebo, but I do feel like I have a slight mellowing of my mood when I have taken it, and I forgot it when we went on our book tour, and I felt like I was a little more stressed out. And it was a very stressful, kind of whirlwind travel experience, so that could be stressful, and then after that, we were on vacation, which was... [sighs] well, it was less stressful than the book tour was. So there's obviously some mitigating factors there.

But that has been my experience with it. It is not so pronounced where, like, if I haven't taken it in the morning—and I've been doing it, I think, like, three weeks or so, and it's not so like if I haven't taken it in the morning, I suddenly am like, "Oh, my God, I'm freaking out, why?" So it's like—that has not been my experience.

But I think there is a—it feels like there is a slight difference, and I may be wrong.

Sydnee: Do you think there is enough where that if—that it would, like, keep you from seeking out prescription drugs now? Like, if you were thinking, "I might need a medication for my anxiety because it's not well-controlled," that it has enough of an effect that you would no longer seek out a medication because you are—

Justin: I mean, only if—only if—and this is, we've been talking a lot about this lately, I feel like. The difference of—like, your different perspectives on science. But uh, if and only if my anxiety was very well-controlled by the real or placebo effect that this oil was having, if it was doing the job...

Sydnee: Uh-huh.

Justin: ... where I didn't feel like I needed to seek out more... probably more stuff, I probably wouldn't. I have used, like—I mean, I still have my medication that I have taken for it.

Sydnee: Okay.

Justin: So I would—if it was, you know, severe enough. Like, you know—

Sydnee: So you're taking the pragmatist approach.

Justin: Yes. I take the pragm—

Sydnee: If it works, it works.

Justin: If it works, it works.

Sydnee: Okay.

Justin: But I'm not saying that it does work. Like, I'm taking the Justin approach.

Sydnee: Okay.

Justin: It seems to have worked a little bit, it may be placebo effect, I'm not lying to myself.

Sydnee: So let—I don't think you're lying to yourself.

Justin: That's right.

Sydnee: Let me start with that. But I think that—we've done a whole episode—

Justin: I'm very easy to fool, so I would know if I was lying to myself.

Sydnee: No. No. We've done a whole episode on medical marijuana, and I think a lot of the points that we made on that episode are gonna be repeated in this context. Um, so cannabidiol was discovered at first in 1940, and it was originally thought to be inactive. It was just, "Here's another component of marijuana."

Justin: "Look what we found. Weird, huh?"

Sydnee: "We found a lot of these. They're not the THC one. They don't matter." That was the original thought.

As you said, it does not have a psychotropic effect. You don't get high from it. Which is why it's kind of odd – you're right, a lot of states have banned any derivative of hemp.

Justin: Mm-hm.

Sydnee: So...

Justin: Right. They don't want to get into the research, and do the research, so...

Sydnee: Well, it's—which is odd in the sense that if it truly is just the cannabidiol, it is not a drug...

Justin: Right.

Sydnee: It's not psychoactive, so I'm not sure of the purpose. But I'd say it's more related to the fact that this is not well-regulated, you don't know what you're getting.

Justin: Yes.

Sydnee: I don't know—it would be—this episode would be even better if I could say, at the end of it, that I took your bottle to a lab, and had it analyzed, to see if there actually is CBD in it – if so, how much – and some actually have been found to contain THC, but I'm getting ahead of myself.

Justin: Well, I was gonna say that that's probably easier. It probably would be no great shakes to be like—to slip some THC in there, and just kind of... use that as a distribution system, I guess.

Sydnee: Or to not have it have CBD at all.

Justin: Oh, really?

Sydnee: Yes.

Justin: Huh. Interesting.

Sydnee: So it's been proposed as a medication for anxiety. It's also been investigated for pain, for multiple sclerosis, for cancer, for epilepsy, which we're gonna get into, which is very interesting. And there are some now, like, FDA-approved uses for it.

Justin: Mm!

Sydnee: So very, very recently. If we'd done this episode six months ago, I wouldn't be able to say that.

Justin: Oh, interesting. Okay.

Sydnee: So when we get into, like, the history—there's not a lot of history of CBD, because that's independent from the history of marijuana. And we've done a whole episode on that, so I don't want to belabor the point, but marijuana compounds, whether they contain THC or not, have been used as medications for thousands of years. Right? We accept that, that that—like, it dates back to um, an ancient Sumerian text from 2900 BCE that people were using marijuana.

Its introduction in the West is probably from the early 1800s. That's when when we started seeing, like, marijuana use for various purposes in the West. And you could go into, like, the different strains of marijuana that were used – was there more THC in those, was there more CBD – 'cause that's a lot of the talk now. You can breed it so that there's higher proportions of CBD to THC, you know what I mean?

Justin: Right.

Sydnee: But it's been used for a very long time for things like pain and appetite stimulation and nausea. And even in the 1840s, you started seeing it mentioned as something for um, like, anxiety and other psychiatric disorders, and also for seizures and that kind of thing.

It was part of the US pharmacopeia, like the accepted list of medications, to treat everything from psychiatric things like depression to insomnia to

tetanus to muscle spasm to all kinds of different things. And that was all the way up until the Pure Food and Drug act of 1906.

And that's when you start to see the decline of the use of marijuana. And at that point, it was being prescribed for many different things, but that started to regulate it, and then finally in 1970, it was made a Schedule 1 narcotic in the United States. And at that point, of course—

Justin: No more fun.

Sydnee: Schedule 1 drugs are drugs that, supposedly, have no medical—accepted medical uses.

Justin: Yeah.

Sydnee: So if something is a Schedule 1, that prevents us from using it as a medication. What it also does is prevent us from, you know, doing experiments with it on people.

Justin: Kinda weird, isn't it? 'Cause it's like, "It doesn't have any, but if it does, we will never find out." It's kinda... silly.

Sydnee: In order to put something as a Schedule 1, it really should mean—I mean, it really should be something that we *know* doesn't.

Justin: It's mislabeled.

Sydnee: It's mislabeled. And we talked about that in the medical marijuana episode. I really feel like CBD and medical marijuana in general, marijuana, has no business as a Schedule 1—I mean, it's listed as the same as heroin or cocaine. I mean, it's not the same thing, and I think we all know that. Whatever your feelings are on recreational use of marijuana, I think we can all agree that it's misscheduled.

Justin: You just said that on a podcast. Now you're gonna have to resign as surgeon general.

Sydnee: [laughs]

Justin: President Bartlet don't let you, 'cause you do a good job.

Sydnee: That was a great episode. No, I am not gonna get into the recreational use of marijuana, 'cause I think there are a lot of—I mean, that's a lot more—that's not medicine, and I'm a doctor.

Justin: I get into it on my show, *Weed Zone*.

Sydnee: [laughs]

Justin: Where I talk about all the recreational times I've had on marijuana.

Sydnee: You can talk about it as much as you want.

Justin: Okay.

Sydnee: But I'm just gonna get into the medical stuff.

Justin: I'm actually out of stories.

Sydnee: Oh. I will leave it a mystery whether I am pro or con, although most people could probably figure that out.

Much has been made of the medical potential of marijuana. And this was usually linked to THC, but we have, over time, begun to engineer strains of, like I said, marijuana that have more CBD, and so we're investigating the potential of just the CBD.

Because the thought is, maybe you're somebody who has any one of the disorders I've named, and you are interested in marijuana, 'cause other conventional therapies haven't worked for you, but you don't wanna get high.

Justin: Right.

Sydnee: You don't like the feeling of being high. You're not interested in the psychotropic effects. But if there are some sort of medicinal properties,

you are interested in that, and then CBD comes in. Um, because there has been some evidence that, perhaps, CBD alone could help with certain things.

Justin: Could be helpful.

Sydnee: Right?

Justin: Right.

Sydnee: Um, products that contain CBD can range from actual strains of marijuana that just have more CBD, but it's still marijuana, so you're still going to get all the psychoactive effects, right, to things that are like, 1:1, like compounds that are 1:1 THC and CBD, to pure CBD oil product.

Justin: Okay.

Sydnee: Which is—which should not make you high. Um, "How does it work?" is a big question. So we've removed the THC, so you're not just getting high. And that was the thought for a lot of people, right? Like, does marijuana just help with pain or anxiety or whatever 'cause you're high?

Justin: Right.

Sydnee: And so now you don't care? Well, obviously not, if CBD helps, 'cause CBD doesn't get you high. So how would that work? There are certain receptors in your brain that are actually, like, we've labeled them as cannabinoid accept—or, receptors. CB1, CB2, different receptors.

Justin: And would those even be in there if we weren't supposed to be doing marijuana?

Sydnee: [laughs]

Justin: Think about it. Why would we—

Sydnee: Certainly—

Justin: Why would the Lord, in all His infinite wisdom, have put receptors in there for weed...

Sydnee: Uh-huh.

Justin: ... if we're not supposed to do weed?

Sydnee: Certainly, other things could bind—

Justin: Hmm. That makes you think, doesn't it?

Sydnee: And do bind to these receptors.

Justin: Hmm.

Sydnee: But also this.

Justin: Stumped.

Sydnee: Uh, at the centrally-located CB1 receptors. Uh, the way that CBD works is to delay the breakdown of something called anandamide. And that is a substance that acts at these receptors to, like, calm your brain.

Justin: Okay.

Sydnee: It calms down neuronal activity in your brain. It can also help to reduce pain and inflammation, and as a result of it calming that, or as a result of delaying the breakdown of this substance that calms your brain, then you have a longer calming effect. Does that make sense?

Justin: Mm-hm!

Sydnee: This is similar to how, sort of how, like, an SSRI, a selective serotonin reuptake inhibitor...

Justin: Mm-hm.

Sydnee: ... that's like Prozac or another antidepressant, it's similar to the way they work on serotonin. They keep the serotonin around longer. Think about it that way. This keeps the anandamide around longer. The CBD is indirectly keeping this calming effect in your brain longer.

Justin: Okay.

Sydnee: That's one way we think it works. It also acts on CB2 receptors, which help to reduce pain and inflammation—

Justin: To help you enjoy the movie *CB2*, starring Chris Rock.

Sydnee: I—what movie is that?

Justin: *CB2*—no, sorry, *CB4*. We're not there yet.

Sydnee: Oh, no. I don't know about those receptors.

And in addition, high amounts of CBD have been found—

Justin: I have a lot of *CB4* receptors. Let me just put it that way.

Sydnee: Do you?

Justin: It's a good flick.

Sydnee: [laughs] In addition, high amounts of CBD have been found to bind to serotonin receptors.

Justin: Mm-hm.

Sydnee: And we know that serotonin is the—that is how we have chosen to address a lot of anxiety and depression through medications already, right?

Justin: Yes.

Sydnee: So, we have a lot more literature on CBD in, like, the last 10 years. So a lot of the stuff—a lot of our *Sawbones* episodes are old stuff.

Justin: Mm-hm.

Sydnee: Well, the history is kind of being written on CBD right now. We're in the midst of...

Justin: This is the—history has its eye on our CBD research.

Sydnee: [laughs] Well, it's true. We had, you know, some thoughts that maybe it would help with, like I've said, anxiety, depression, with sleep, with nausea. At the 2015 International Cannabinoid Research Society um, 25th annual symposium...

Justin: Mm-hm.

Sydnee: ... they reported that the use of CBD can be beneficial for a whole bunch of different things. Kidney fibrosis, inflammation, metabolic syndrome, overweight and obesity, anorexia, osteoarthritis, all kinds of musculoskeletal conditions. And again, this is all, like, preliminary evidence that people are suggesting. Some of this is in vitro, some of this is in vivo. And that's kind of where I would start to get a little – I don't want to say suspicious, I'm not skeptical of it, I'm just not as excited, maybe, as some people are.

A lot of this is in vitro, which means we are watching the way CBD interacts with different parts of your body under a microscope. Like, in a lab.

Justin: Mm-hm.

Sydnee: Here's how it bound to these receptors. But what does that mean clinically? What will that do in a human, in a living, breathing human body? What will it do?

Justin: I—I—are you asking me, or is it rhetorical, 'cause I don't...

Sydnee: You don't know.

Justin: I don't know.

Sydnee: Yeah, well, they don't, either.

Justin: Oh, okay, good.

Sydnee: And that's the problem.

Justin: Oh, okay. Good. [relieved noise] Pshew. Imagine my relief.

Sydnee: That's the thing; like, an in vitro study is great, that's the first step, but until you put it in humans, you can't draw conclusions. You can say that things look compelling, there's a correlation, this is interesting, this deserves further research, absolutely, but so far, clinical data that actually proves this stuff is still lacking. We just haven't done it yet. So—and I'm gonna say this a lot in this episode, so that I try to avoid a lot of angry emails. I'm just saying, we need more research.

Justin: Right.

Sydnee: I'm not saying that the answer is no, but I'm not saying the answer is yes, either, for a lot of these claims.

Justin: But you're not saying it's no!

Sydnee: I'm not saying it's no.

Justin: But... you're not saying it's yes.

Sydnee: But the—the excitement about the possibility of CBD, I think, has far outstripped the evidence for its efficacy at this point.

Justin: Right. It got—let's say—I think it's fair to say that CBD has gotten a pretty good bump from its cousin, THC...

Sydnee: Yes.

Justin: [laughs] ... in the—in, like, building buzz.

Sydnee: It's riding the coattails...

Justin: Yeah.

Sydnee: ... of THC. And there are products that contain CBD all over the US, not just oils like you bought, but there are like, energy drinks and energy bars and coffee that also has CBD, and tea made out of CBD. I mean, like, there's all kinds of different ways to consume CBD, and the problem with that is, right now, nobody's quite sure how to regulate this stuff, and so you don't know what you're getting.

Some of them might not actually contain any at all, and even if they do, the bioavailability, which means the amount that you can actually absorb after you eat it, after you take it into your mouth, is only like, depending on the preparation, somewhere from 13 to 19 percent. Ideally. It can be quite—it can be much less, in some preparations.

So if you're only getting that much, is there enough in your energy drink to even do anything?

Justin: I don't know.

Sydnee: Maybe not. A study from the Netherlands collected homemade and store-bought CBD products, and then just analyzed them to see what was in them, and they found that they didn't consistently contain any CBD, nor did the amounts present coincide with what was printed on the label, though—which what they said was supposed to be present in them.

And what's even more concerning is that there were reports last year in Utah of a CBD oil or of an oil compound that was being marketed as CBD that was actually a synthetic cannabinoid. And we have talked about the dangers of synthetic marijuana on the show before. And it was resulting in seizures and hallucinations and a lot of patients were being hospitalized, because the stuff they were getting wasn't CBD at all.

Justin: Okay.

Sydnee: So this is why, I think, some of this excitement is dangerous, is because there are all these products to, you know, to try to make money off of this excitement, but...

Justin: It kind of reminds me of vaping, a little bit?

Sydnee: Yeah.

Justin: Like, this thing popped up, and it's kind of a miracle, and everybody, let's all just get, like, waist-deep in it...

Sydnee: Yes.

Justin: ... without really knowing. And because, like, one, there's a lot of positive feedback, and two, we don't know what it does.

Sydnee: Yes.

Justin: It could—we have no idea.

Sydnee: No. We don't know what it does, and again, as I've mentioned, we are federally prohibited from doing a lot of studies to find out more.

Justin: So what does it work for?

Sydnee: Well, I'm gonna tell you what it does work for, but first, Justin, let's go to the billing department.

Justin: Let's go.

[theme music, "Medicines" by The Taxpayers, plays]

Justin: Everybody's always talking about MeUndies, the fun, comfortable undies that feel as good as they look. They got this micromodal fabric, and it's real soft, and you probably can't tell, but I'm wearing them now.

Sydnee: I am, too!

Justin: I'm always wearing them.

Sydnee: Me too. They're the only underwear I own now.

Justin: They're the onl—I've finally completed the comfort singularity and replaced all my undies with MeUndies. They're delightful.

Sydnee: I really like the ones we got recently with the jellyfish that...

Justin: Those are great.

Sydnee: ... have blacklight-active... yeah.

Justin: Those are really neat.

Sydnee: It's really cool.

Justin: And they just got a brand-new membership: you can level up your top drawer. That's here with MeUndies new each month. If you're a member, you get access to exclusive prints that nobody else can get, and they get special member pricing on every product MeUndies makes. You can switch styles, or skip any month you want.

So to get 15 percent off your first pair, free shipping, and 100 percent satisfaction guarantee, go to MeUndies.com/Sawbones. That's MeUndies.com/Sawbones.

Uh, we have a new sponsor this week, and I am very excited.

Sydnee: Ooh, exciting!

Justin: Yes. Because I have actually found them independently quite a while ago, and it's called Eero, E-E-R-O. And uh, basically, whatever your WiFi needs, Eero has the power to seamlessly blanket your home in fast, relatable—not relatable. "Hmm, I really get you, WiFi!" No. Reliable.

Sydnee: [laughs]

Justin: [laughs] I see where this WiFi is coming from. It is relatable.

Sydnee: It says, like, a blanket. Like a warm, soft blanket of internet.

Justin: It's a warm blanket of internet that—it's sort of like—shoot, I'm not gonna describe this exactly right, but you put the Eero units throughout your home, and it sort of like, just blasts WiFi everywhere. Just coats your home in a thick blanket of WiFi.

Sydnee: A web of WiFi.

Justin: Yeah. And with the addition of a thread radio – which sounds made up, but I'm sure it's real – Eero can connect to low-power devices such as locks, doorbells, and more. It's really easy to set up, just—you pop 'em in, and you hook it up with the app, and it's all good.

And you are gonna have a much better, I think, WiFi experience, especially if you live in a house where it's not always convenient to get the—your router's supposed to be centrally located, and you're not supposed to have, like – whatever – thick walls in between, and it's difficult.

Sydnee: Mm-hm.

Justin: But I think Eero really makes it all a lot easier. And it's very reliable, makes the WiFi a lot easier to get at, and everybody wants a little bit more. WiFi, that is.

For free shipping overnight to the US or Canada, visit Eero.com, that's E-E-R-O dot com, select the overnight shipping and checkout, and then use promo code "Sawbones" to make it free. That's free overnight shipping! That's pretty good! That's for somebody that wants his Eero now, they want to improve their WiFi.

So go check that out. Go to Eero.com, and then use the code "Sawbones" to get free, uh, overnight shipping!

Alright, Syd!

Sydnee: Alright.

Justin: I'm ready.

Sydnee: You want me to tell you what it's good for?

Justin: Justify my—my preconceived notions.

Sydnee: Well, I'm not gonna justify it, but I'm gonna tell you some things that are interesting. There are at least some studies that have suggested that perhaps it can be helpful for some of the pain that can be related to multiple sclerosis. At least they believe that in Canada and Sweden, where a medication, Sativex, which also contains THC, is prescribed for this reason.

Justin: Mm-hm.

Sydnee: So there is at least enough evidence that they're willing to prescribe it. Notably, in the US, and this is probably where most people have heard of it recently, epilepsy. So as of June, the FDA approved a CBD—a CBD-based drug for epilepsy. That's kind of huge.

Justin: Is that saying that it's like—does that say it works?

Sydnee: I mean, if the—yeah, I mean, the FDA believes it.

Justin: Syd, the FDA is part of the federal government in 2018. I do not think it's a buck-wild question for me to ask, "Does that mean it works?"

Sydnee: [laughs] Uh, okay. Do you want me to get into, like, politics and the FDA?

Justin: Not really, actually.

Sydnee: I mean, like, yes, the FDA—the FDA is a government organization, and there's lobbying, and then if you want to get into the power of the pharmaceutical industry, and their ability to lobby drugs and get them through faster, that maybe there are not—there's not great studies for.

I mean, like, yes, obviously, all this exists. I'm not gonna sit here and say, "If the FDA believes in it, it must definitely work." But there's gotta be at least—they have standards. There has to be some evidence.

Justin: Okay.

Sydnee: That it does something.

Justin: Okay. Fair enough.

Sydnee: It can't be totally fake and make it through the FDA.

Justin: Theoretically, it works.

Sydnee: [laughs]

Justin: Theoretically, it's helpful, correct?

Sydnee: Yes.

Justin: Fair? Okay.

Sydnee: Theoretically, yes. And this was big news. So this new medication, Epidiolex, is what it's called.

Justin: Epidiolex.

Sydnee: It's CBD, and it has been approved for, specifically, two syndromes, two epilepsy syndromes – Lennox-Gastaut and Dravet syndrome, which are—and it's important to know that they're proved for these syndromes, these are usually diagnosed in children. I mean, they're always diagnosed in children, I should say.

They're pediatric epilepsy syndromes that are very refractory to treatment. These are traditionally very difficult disorders to treat. Patients who have these syndromes may suffer from 50 or more seizures a day. So these are what we kind of consider intractable epilepsy syndromes. And so this isn't

being used as, like, a drug of first choice among everyone who's ever had a seizure.

They're using it for patients who have probably tried and failed many, many other medications, and maybe that ketogenic diet we talked about on our keto episode. So—but that is an FDA-approved usage now, so there are at least some studies that were compelling enough that the FDA said, "Okay, let's give it a go for this."

Justin: Okay.

Sydnee: And as far as anxiety, there was a meta-analysis in 2016, which is a big study of studies, like a compilation of a bunch of studies.

Justin: Sounds like the best you can do, really.

Sydnee: Which showed that—some animal studies suggest it might help with anxiety.

Justin: I'm an animal.

Sydnee: And in humans, I've found case reports, I've found very small trials, some of them were indeed double-blind trials, like specifically there were some things for like, give a speech, something you could control very easily, like you have to give a speech in public, and you either do it with CBD or without CBD, and there was like a placebo that had corn oil in it, or something.

Anyway, I found studies that were small, but did show, some of them, some statistically significant results.

Justin: I know I shouldn't get yucked out by that, but like, [laughing] it really yucks me out, this idea of like, "Ah, I got a big speech coming up. Glad I just ate a whole syringe of corn oil. Anyway, time to blow 'em all away!"

Sydnee: [laughs]

Justin: “I got amped up with my not-at-all-baffling preshow ritual, and I’m ready to go.”

Sydnee: And everything else, we’re not really sure yet. All the other things that it’s claimed to be good for, we don’t know. It’s hard when you’re t—

Justin: Eh, okay, Dr. McElroy, I’m gonna need you to, like, couch that anxiety efficacy a little bit more. A metastudy of animals, that’s fine, I need you to be, like, judgy about it.

Sydnee: I think that—

Justin: What does that mean to you? ‘Cause people are gonna go off, and they’re gonna be like, “I gotta get CBD oil. Dr. McElroy said it totally worked for anxiety.”

Sydnee: I would say what I say about a lot of things, and this isn’t just a pretty line, this is what I truly believe: if you have untreated psychiatric disease, I would seek help from a professional. I wouldn’t self-treat. I would go ask for help from a—from a psychiatrist or a family doctor or a psychologist or a therapist or a counselor.

Justin: None of them will have the guts to give me the CBD oil I crave.

Sydnee: [laughs] I would go talk to somebody.

Justin: ‘Cause they don’t wanna be—[laughs] they don’t wanna be put out of business.

Sydnee: I would go seek help. I think that, yes, it is important – and I’m not saying that that’s the only thing to do – and this is true not just for things like anxiety and depression. This is true for hypertension or diabetes. It’s true for everything. You’ve gotta find your own coping skills and mechanisms for managing your disease yourself. Absolutely.

Which is why, like, we’ve talked before about things like yoga or meditation or, you know, some of the different techniques you’ve learned to help you cope with your anxiety that I think are very important, and so I accept—

Justin: I don't always have the time for those. Sometimes I just wanna squirt some oil in my mouth and get on with my day, doc.

Sydnee: I accept that CBD could be part of that for some people, but the problem – and I guess this depends on—Justin, you and I have been talking a lot about if you are a pragmatist or an empiricist. I guess it depends on if it matters to you if something really works and can be proven in a lab to work, or if it seems to work, and so that's good enough for you. Success is that it appears to work, and you don't need to know the truth. I guess that's what matters.

So far, I will tell you this: it does not—if it is in fact CBD, which you can't guarantee if you're buying a supplement, what you're taking might not be CBD.

Justin: Uh, okay. The guy behind the counter said...

Sydnee: What you're taking may contain zero CBD.

Justin: Okay.

Sydnee: So if we theorize that what you're taking, and anybody else is getting, is actually CBD, it's probably a low-risk thing to do.

Justin: Yes.

Sydnee: I found a study, actually, that specifically said that. Like, they were trying it out for Crohn's disease to see if it would help with Crohn's, and it said, "No, it doesn't help, but it didn't harm anyone." [laughs] It seemed to be a safe, but not-effective thing.

Justin: Safe, ineffective treatment for Crohn's.

Sydnee: [laughs] Yeah. There are side effects to it. You can have some stomach upset, you can have some sedation, and especially if it also is found to contain some THC, but you can be drowsy. But generally speaking, the

side effects are fairly minimal, so it's usually tolerated really well. It's fairly safe to try most of the time.

But again, I can't tell you what you're taking. Like, I can't tell you what you're getting, if you're buying it from a supplement place. And this is concerning, because it is marketed to at-risk population. Kids! Kids with these intractable epilepsy syndromes are being marketed this product that is not well-controlled, and may work... some. For some people.

Justin: You can also vape it. [laughs]

Sydnee: Yes.

Justin: Which, to me, speaking of... a little bit of trouble there.

Sydnee: I didn't get into that. Yeah, you can consume it in oil, you can inhale it, there are different preparations of cannabidiol that are available. It's being marketed to the elderly for things like Parkinson's or dementia or Alzheimer's, and then all of the complex, fatal diseases always—like, anything that's new, I feel like... it's proposed for things like cancer. You know? Things that can be terminal. Things like multiple sclerosis. People who feel like—may feel like, at some point, that they're out of options, and so they are more likely to be desperate and turn to these things. And that always makes, I think, any of us a little skeptical, a little suspicious.

The regulation is a big problem, because it's conflicting federal and state laws, right?

Justin: Right.

Sydnee: Marijuana is a schedule 1 drug.

Justin: Oh.

Sydnee: But there are states where it's legal.

Justin: Right, yeah.

Sydnee: So this gets into really murky, like, legal waters, as to who is in charge of this, who's gonna make sure that what you're buying is what you think it is. The federal government says it's so legal, so what the heck? The FDA just approved a CBD.

Justin: Right.

Sydnee: So—also, is it a food supplement or is it a medicine?

Justin: I don't know.

Sydnee: If you're buying it over the counter and it's a food supplement, then it can be safe until proven otherwise. If it's a medicine, we go the opposite route: it's unsafe until we can prove otherwise. So this really matters. And you just don't know what you're getting when you buy it over the counter.

I should know—we kind of talked about this for Lennox-Gastaut, and like, the use of it for epilepsy syndromes. The study that—I got into, like, the study that the FDA used to approve this, and I would not say that it was a slam dunk for efficacy. I would not say that it was, like, the miracle drug.

Justin: Why is that?

Sydnee: There were a couple things. One, it was absolutely funded by the drug company – which, I mean, to be fair, most of the big, giant, double-blind studies that prove a medication can work are, so that's—I mean, full disclosure, it is. But they made the only available CBD preparation so far for this. The only FDA-regulated CBD thing. So they are providing a drug in a market where there is no competition.

Justin: Right.

Sydnee: When you make an orphan drug, or a drug for an orphan disease, so something that there's nothing else for...

Justin: Mm-hm.

Sydnee: ... you can keep it on patent longer.

Justin: Mmm.

Sydnee: It's more lucrative.

Justin: Mm.

Sydnee: I'm just—I'm not saying that that means it doesn't work; I'm just saying, these are things you should always—you deserve to know the whole story, I think. And when you get into the politics of the FDA, this stuff comes into play.

And it's important to note, too, in that same study, 23 percent of the patients that received CBD had side effects significant enough that they dropped out of it.

Justin: Oh, really?

Sydnee: And I don't mean that anything bad necessarily happened to them, like I don't mean to say it's dangerous, but it at least made them uncomfortable enough...

Justin: What strength were they using? Do you know? Like, was it a strong—strong dose?

Sydnee: You know, I'd have to look at the... they think it was probably not the dose alone; it was in the study, nobody was using it as monotherapy. Nobody was using it as a single agent. They were using it in combination with other epilepsy drugs.

And that's one of the ways they think it might work, actually, I was gonna get into that – is that it prevents the breakdown of other—it works on certain enzymes that break down other epileptic drugs, and so by preventing the breakdown of these anti-epileptic drugs, it actually lets them last in your system longer. Which might, one, make them more effective, but two, make you drowsier.

Justin: Mm.

Sydnee: And so that's why a lot of people dropped out, is 'cause kids who were on the medication were really drowsy, and so they took them out of the study.

Some of the results, while they looked very promising, didn't actually ever reach statistical significance. Which means even though it trended towards working, you couldn't actually say, scientifically speaking, that the differences weren't just from chance.

Justin: Mm.

Sydnee: Do you know what I'm saying?

Justin: Yeah, I know what you mean.

Sydnee: So there is a follow-up study to this to try to, kind of, refine—'cause that's what you always do. If you have a study that suggests something, you wanna do more studies to try to see if it's true, to reproduce the results, that kind of thing.

And this one was a little concerning to me, 'cause there was a mention that there were certain patients that were hand-picked and referred by one neurologist who was very convinced that CBD was the best way to go, and so he was finding patients whose parents were gonna go, like, move to Colorado and get CBD oil no matter what, and so he was putting them in this study instead.

So you're taking people who already believe CBD works, and then giving them CBD, and asking them if it works.

Justin: It could kind of bias your sample size.

Sydnee: It does. It does. There's a—and in—I mean, these are—this isn't a random sample. These are selected specifically.

Justin: Right, by people who... believe in it.

Sydnee: Yeah. And they're seeing high placebo response in these studies.

Justin: Uh, from people who think they've got the real stuff, and they—because they believe in them?

Sydnee: Because they already were going to use CBD, even before they got into the study.

Justin: Mm.

Sydnee: So they believe—they've bought the hype. They believed it worked even before we saw whether or not it—

Justin: Oh, so they bought the oil, so they might as well.

Sydnee: [laughs] Um, the other thing—and I was reading some neurologists critiquing this, and I think that's the thing you need to know, is doctors—I don't have a horse in this race. I don't make money off CBD, and I don't make money off anti-epileptic drugs, so I'm not in either camp. And a lot of neurologists, their responses, I thought, were very um—it was kind of moderate. Like, well, if this is a medication that works, great. If it doesn't work, let's not use it. We've got to take the emotion out of it. All this passion for it really has no place in science. You just—you study it. Let's study it, and see if it works.

And we have some evidence that says, "You know what? This might actually be helpful for patients with these very severe, chronic, can be very debilitating, you know, epileptic disorders, so let's try it, but let's not get carried away," you know? And I think that's what we would say about literally any other medication, right?

There might be better ways to target these receptors. We found them. We know CBD works. Maybe there's something we can make that works even better. Why are we settling for this, if it works a little?

Justin: Yeah.

Sydnee: You know, just because it's marijuana and that makes us excited?

Justin: [laughs]

Sydnee: And we think the government doesn't want us to have it?

Justin: And it's buzzy.

Sydnee: Yeah. I mean, that's something to ask about. And it's also, you know, it's important to remember that a lot of these—a lot of the people who are using this medication are desperate. They're desperate for anything.

Justin: Right.

Sydnee: And so that's gonna—that might change the results a little bit. Which, I guess, it doesn't matter if the patient is doing better from the perspective of the caregiver, it doesn't matter whether it's true or not—I don't know. You know.

Justin: Uh-huh.

Sydnee: This is not a cure-all. It might help some patients; it won't help all of them. There are some who might be harmed by it. Again, I think minimally harmed, but might be harmed. This is true of every medicine. CBD is not unique. I could've just said that about literally any medicine I have prescribed ever, in my career. But that just means that it—it doesn't make it something special, and I think that's probably, like, the end of this conversation.

The point is, there is no place for zealotry in science. It either works or it doesn't. And if it works, we should use it, and if it doesn't, we shouldn't. We should be able to study it, and again, I return to, if marijuana was not a schedule 1 drug, we would know a lot more about what it does and doesn't do. And we wouldn't have to have—when you try to research CBD, you have to sort through just pages and pages of people who are advocates for it without any evidence.

Justin: Right. Right. Right.

Sydnee: When you said “anecdotal evidence,” I was thinking about the idea of that term – why is anecdote ever evidence? It’s anecdote.

Justin: Yeah, it is sort of like a paradoxical... thing, like, it can’t—yeah.

Sydnee: Yeah. To my mind, evidence is evidence, and if this stuff works, we should make it available. It should be regulated so you get what you think you’re getting, so that we know what’s in that dropper that you’re using is in fact CBD.

Justin: That is troubling, for sure. No matter where you stand on it, you should want this to be, you know, whatever—you should always wanna know that you’re getting what you think you’re getting.

Sydnee: We should have endless room for evidence within the world of science. We should always be willing to explore and search and if marijuana and CBD specifically have these great therapeutic possibilities, then let’s study them, let’s figure out what they are, and let’s find a safe, effective way to give them to people. If they don’t, though, then we—I think you gotta give it up and move on. And I think that’s where we’re running into a wall, is that, you know, I found people who were advocating its use to cure cancer.

Justin: Yeah, see, you lose me.

Sydnee: Exactly. You’ve lost me, too, because if you’re telling me there’s some great studies that suggest maybe for epilepsy and for anxiety and I saw some things for PTSD and for insomnia, and again, for maybe pain and for nausea. I think all that stuff merits further study. Let’s do some good studies, and see if it worked or not. But once you start making claims that it is the miracle cure-all that will fix all of your problems...

Justin: Well, we all know how that shakes out.

Sydnee: ... you’re standing with every other charlatan in history who’s just been trying to make money off of the desperate.

Justin: Folks, that's gonna do it for us this week on *Sawbones*. We got some affiliate links on our website where you can order CBD oil, let us get a cut of the profits and...

Sydnee: [laughs] No, don't say that!

Justin: Well, it's a side biz I've been looking into.

Sydnee: No, we don't. I don't condone them.

Justin: We got a lot of great flavors. Vape it, don't vape it, it's up to you. Everything we have can be vaped and not vaped, simultaneously.

Sydnee: [laughs]

Justin: Um, thank you to The Taxpayers for the use of their song "Medicines" as the intro and outro of our program. We got a book coming out in October, October 9th specifically. We've actually had the first uh, we call it an advance reader copy of that book, and it is so neat, and we're so excited about it. Sydnee's sister, Teylor Smirl, did the illustrations, and they're beautiful, and you can preorder that right now.

It is such a big help. Preorders are huge, because they're counted in the first week book sales, and that is a huge determining factor as to whether or not you get to make more books. So please, please take a moment and preorder, go to bit.ly/TheSawbonesBook and preorder it right now. I really, really appreciate it. I think we both do.

Sydnee: We're really proud of this book, and I think you'll really like it.

Justin: I think you'll like it, if you like our show. And honestly, if you know somebody that didn't like our show, but likes, like, medical trivia and weird old medical stuff? Get it for them, 'cause there's a lot of...

Sydnee: Or just trivia. I always think this is the kind of book, like, for that person who just likes to know things that nobody else knows.

Justin: Yeah. I learned a lot writing it.

Sydnee: Yeah.

Justin: I think we both did, so...

Sydnee: Mm-hm.

Justin: But folks, that is going to do it for us for now. So until next time, my name is Justin McElroy.

Sydnee: I'm Sydnee McElroy.

Justin: And as always, don't drill a hole in your head!

[theme music, "Medicines" by The Taxpayers, plays and ends]

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