



The CCIC Podcast

July 15th, 2015

This month: Dr Matt Hill
Interview by Dr. Mark A. Ware

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Introduction

Hello and welcome to the CCIC Podcast. The CCIC Podcast is a series of in depth interviews with leading experts and opinion leaders in the world of medical cannabis and cannabinoids.

The CCIC Podcast is brought to you by CannTrust™, a Canadian licensed medical cannabis producer.

In this edition of the podcast we are delighted to welcome Dr. Matt Hill from the Hotchkiss Brain Institute at the University of Calgary, talking about hot topics in cannabinoids and mental health:

“I think the stuff that’s really interesting is both in the realm of anxiety and in the realm of psychosis”

and discussing the potential clinical impact of this work:

“I think what’s really interesting is trying to understand what the biological risk factors are that would predispose someone to be highly vulnerable to developing an emergent psychotic syndrome after consuming cannabis”

Dr. Matt Hill is Assistant Professor in the departments of Cell Biology, Anatomy and Psychiatry at the Hotchkiss Brain Institute at the University of Calgary in Alberta, Canada. He is also the incoming president of the International Cannabinoid Research Society.

We spoke on July 15th, 2015

Dr. Ware Thank you Matt, for joining us on the CCIC podcast, and we will begin with a fairly general question; how did you first get started with cannabinoid research?

Dr. Hill When I was an undergrad at the UBC, I was working in a lab that investigated the effect of psychoactive drugs on sexual behavior, so they had looked at both antidepressants as well as recreational drugs

like methamphetamine, on sexual behavior of rodents. They also looked at the effects of stress on rodents' sexual behavior at the same time. But at that time, no one had looked at cannabinoids, and it was kind of at the beginning when the cannabinoid field was taking off, we just thought it would be something interesting to look at. Turned out to not do much; if you give rodents a lot of cannabinoids, they stop having sex and that's the end of that, but then we got more interested in the interactions with stress and cannabinoids, so we pursued that pathway instead.

Dr. Ware And subsequent to you getting involved in this, what do you feel have been the most significant findings up until now in your field of cannabinoids and mental health?

Dr. Hill I think there are a few. I think the stuff that is really interesting is both in the realm of anxiety and in the realm of psychosis, and I think those are the areas that really received the most attention, and they also represent two sides of the coin of cannabinoids in a lot of physiological conditions, in the sense that for the anxiety story there's a lot of evidence that suggests that cannabinoids might actually be beneficial in treating and levitating anxiety, but then the flip side being cannabinoids might be related to accelerated onset and worse prognosis on things like psychosis.

Dr. Ware In light of that, what is happening now? What are some of the major hot areas that you feel are really being looked at the moment?

Dr. Hill The really interesting stuff is looking at the idea that cannabinoids might be a whole new novel of therapeutic treatment for anxiety conditions, especially things like post traumatic stress disorder (PTSD). We have known for quite a long time that people with PTSD self medicate by consuming cannabis, but from a therapeutic perspective, the idea would be to understand why this is happening. What is it the cannabinoids are doing to the brain in a situation like PTSD, if it's actually letting the people cope with the disease, and if we can understand that, and we understand the biology of it, and if we can figure out if endocannabinoids are doing something similar, then that allows us to harness, from a pharmaceutical perspective, to try and create a whole new novel therapeutic for a condition like PTSD, which really doesn't have the greatest medications.

On the other side is schizophrenia and psychosis. I think what's really interesting is trying to understand what the biological risk factors are that would predispose someone to be highly vulnerable to developing an emerging psychotic syndrome after consuming cannabis. So is there something in our genes that makes some people more

vulnerable than others? If you have one gene variant, does that mean if you smoke pot as a teenager you are going to develop psychosis or you are going to develop it faster? I think the idea behind that would be very beneficial on a policy level, if we understood at a better level the biological risk factors of who would have an adverse detrimental response to consuming cannabis, I think that would also really help education and policy.

Dr. Ware When you talk about mood disorders and cannabinoids, anxiety is obviously very prominent. Is depression something that people have looked at? What's the story with cannabinoids and depressive mood disorders?

Dr. Hill It's interesting because that's where I started with much more focus on depression, especially because of the links of stress to it, and I think that there is certainly evidence that the endocannabinoid system might not be functioning properly in something like depression. It regulates all these physiological processes like reward sensitivity and stress coping and even things like pain and thermoregulation which seemed to be disturbed in depression. Maybe there is something wrong with the system that could be a biological basis of why some people get depression. But then when you look at the very limited amount of clinical data out there that has actually looked at cannabinoid interventions or cannabis in the context of depression, and there are some reports of people who have self medicated with cannabis to control the depression and in these situations there seems to be some anti-depressant affects of cannabis, but there are also reports that cannabis can aggravate depression or excess use might predispose someone to develop a depressive episode, so it's more of a mixed bag when you look at something like depression. There are people who have panic attacks when they consume cannabis, and a lot of people who exhibit pathological anxiety, which is very different, seem to respond beneficially.

Dr. Ware In terms of the booming interest in medical cannabis and the whole medical marijuana story, in terms of what's coming out of lab now, what do you see as the most direct clinical implications of the work that you are doing now?

Dr. Hill I would like to hope that the stuff we do might help provide a general understanding of anxiety, and if there is an important role in the endocannabinoid system. A lot of what we do is in rodent models and pre-clinical models and we also do a lot of collaborative work with clinicians, and we also do a lot of work with effects of the endocannabinoid system in human populations afflicted with anxiety conditions. The evidence is pretty strong actually, much more so than

I would say it is for most biological systems. Endocannabinoids are really important in regulating both trait and state anxiety in humans; trait being someone who is always anxious or always chill, it's just their personality, and state being when "I get stressed out and I become anxious", and both of these situations and these types of anxiety in humans and in rodents can be very heavily regulated by the endocannabinoid system. So I think that if the work we do helps us understand the basic neurobiology of how the brain generates an anxiety state, and if there is a role for endocannabinoids, I think that would be the most impactful stuff at a clinical level of what we are doing, and that will help inform novel treatments for anxiety disorders.

Dr. Ware As incoming president of the International Cannabinoid Research Society, what do you see as the role of the ICRS in this current medical cannabis environment?

Dr. Hill I think the best thing we can do is act as the voice of reason and evidence. I think the medical cannabis debate creates a lot of opinions, many of which are extreme and unfounded in evidence on both sides, so I think the best thing as a scientific community that we can bring to the table to say OK, let's remove emotions and opinions from the situation and let's actually evaluate the evidence like scientists and create hopefully meaningful bits of information that can help to inform policy and changes in this very evolving environment and how the public and politicians view cannabis. And so that's the role I would say the scientific community has, and the IRCS as a group of scientists who focus on the cannabinoid system, I really think that's the best thing we can do.

Dr. Ware Well I wish you luck with the presidency, with the society, and with all your own work. You are clearly leading the field in many ways, and it is a pleasure to have you on our podcast. We would like to take the chance to thank you for taking the time to join us, and to wish you all the best in the near and current future

Dr. Hill Thanks a lot... it was my pleasure too.

That was Dr Matt Hill, speaking to us from Calgary, Alberta.

Thank you for joining us.

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Tune in next month to the CCIC podcast.

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