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Psychoactive Drug Research: What's New with Hallucinogens?

POSSIBLE CLINICAL UTILITY OF PSYCHODELIC DRUGS SUCH AS PSILOCYBIN

You are listening to ReachMD, The Channel for Medical Professionals.

It used to be common for researchers to study the potential medicinal uses for hallucinogenic drugs including psilocybin, Ecstasy, and LSD. The 60s left a blemish on legitimate research and it grinded to a halt, not anymore.

Welcome to The Clinician's Roundtable. I am Dr. Leslie Lundt, your host and with me today is Dr. Matthew Johnson, a psychopharmacologist on the Faculty of the Department of Psychiatry at the Johns Hopkins School of Medicine. His research background includes the use of behavioral and economic theory in the study of drug consumption, self-control in addiction, and the study of psychoactive drug effects in human participants.

DR. LESLIE LUNDT:

Welcome to ReachMD, Dr. Johnson.

DR. MATTHEW W. JOHNSON:

Thanks **great** to be here.

DR. LESLIE LUNDT:

So, tell us about your work with Hopkins, psilocybin, and research projects?

DR. MATTHEW W. JOHNSON:

Our work with psilocybin really stems from an interest in this class of compounds and their association with spiritual experience. When we step back and look at the history of use of hallucinogens like psilocybin, they have been used by indigenous cultures virtually

universally for mystical or spiritual purposes and although they became associated with drug abuses as recreational drugs in the 1960s, there was great interest before that in the 1950s and really to the 1970s in using these drugs as both tools for neuroscience and also for potential therapeutic effects. So, we are actually looking at 2 aspects. I mentioned before we were using these tools for studying the spiritual experience or you could say the neurobiology of spiritual experience and we are also pursuing the clinical side of things and actually we have recently initiated a trial looking at use of psilocybin in cancer patients to see if psilocybin facilitate a spiritual experience, can be helpful, and helping people overcome existential anxiety and depression.

DR. LESLIE LUNDT:

So, what you did you learn so far?

DR. MATTHEW W. JOHNSON:

So far, we have been studying healthy normals, people without any sort of clinical problem and we have been studying them in order to investigate just the general effects of the use of compounds when administered in a highly supportive and prepared context, and what we found being consistent with long history of indigenous use of these compounds is that when properly prepared and when in a safe context more often than not, these sessions with psilocybin lead to an experience which appears indistinguishable from what has been called the primary mystical experience. That is an experience that has commonalities across different religious traditions that has been reported by Saints and sages from centuries past up until the day. There are certain commonalities such as the sense that all is one, that the universe is ultimately a good place versus positive aspects versus nomadic quality meaning that one feels they had a glimpse of reality that is larger than everyday reality or certain more fundamental than everyday reality, also a sense of transcendence of time and space. So these categories really have been looked at in the psychology of religion and scales have been developed in the psychology of religion to study these types of spiritual experiences. Our study represents the first time when such scales have been used to look at a drug-induced experience, and we found that indeed people have experiences that are indistinguishable from classic primary mystical experiences and furthermore when we assess how personally meaningful and spiritually significant these sessions are, we find that most people rank the session to be amongst the top 5, some of the top 1, but most rank the sessions be amongst the top 5, most personally meaningful and spiritually significant events of their lives. These are highly educated hallucinogen-naive participants and highly functioning professionals, I should say most of them had a life long and all of them have a current, but have a life long interest in spirituality and spiritual pursuits.

DR. LESLIE LUNDT:

What the mechanism of action for this, can we know?

DR. MATTHEW W. JOHNSON:

Well, psilocybin along with the other classic hallucinogens like LSD that might be the most widely known one, but these agents all have a common mechanism in terms of being an agonist that Serotonin 2A receptor. Now, in terms of how causing an effect of the Serotonin 2A receptor translates into someone having a profound transcendental experience, that is why more work needs to be done. So, we know mechanistically how they work, but in terms of the state of consciousness that has produced lot of unknowns there.

DR. LESLIE LUNDT:

If you just joining us, you are listening the clinician's round table on ReachMD, The Channel for Medical Professionals. I am Dr. Leslie Lundt, your host and with me today is Dr. Matthew Johnson. We are discussing the possible clinical utility of psychedelic drugs such as

psilocybin. Dr. Johnson, you mentioned earlier the trial you are doing with cancer patients.

What other clinical uses might hallucinogenics have?

DR. MATTHEW W. JOHNSON:

Well, the research from the 1950s to the 1970s found 2 main therapeutic applications that were most promising; one of which was the treatment of existential anxiety associated with cancer and the other one of which was the treatment of addictions. This was primarily using LSD in the treatment of alcoholism and this is something that we would also like to pick up some research and to continue studying. Evidence in both domains is limited. I mean state of the science in psychiatry was not what it is today, and so that research really lacks the control groups and experimental vigor that would be expected of modern trials, but the results in both domains were suggestive at least and worthy of followup, and all of that research really ceased not because of any clinical findings, but more because LSD emerged as a widely popular drug of recreational use and that really tainted the research that was being done with it, most of which was very legitimate research.

DR. LESLIE LUNDT:

I can understand the spirituality piece of cancer, treating alcoholism, though I am not connecting the dots there with the theory?, how would psilocybin help alcoholics?

DR. MATTHEW W. JOHNSON:

Well, actually the group that first stumbled upon this was in Saskatchewan in Canada and they originally had passes. This was back in the 1950s. They originally had passes was that they could mimic delirium tremens, DTs, or the shakes and they come from alcohol withdrawal by giving LSD and they thought well lot of people get better after they have the DTs, so maybe we can mimic the DTs and maybe that will cause something to happen, but what they actually found instead of having these psychotomimetic effects or disturbing effects that they were shooting for, they found what came to be known as psychedelic effects or transcendental effects. The patients suddenly said, "I had the most profound insight about my life", break down in tears that would be more like a religious experience and experience very similar to what Bill Wilson, founder of AA had, which was apparently spontaneously occurring. Interestingly, Bill Wilson in the 1960s became interested in the use of LSD to provide that spiritual component that is useful in the 12-step treatment program, however, really at that point, it was not politically correct within the AA framework because they took a very sort of harsh stance against use of all drugs including those given under medical care, but that is the connection and the fact that an overwhelming experience where one can step back in a broad sense to look at what they have done with their lives and perhaps how they hurt others, what direction their life is going in, and find some sort of redemption from the experience.

DR. LESLIE LUNDT:

Now, what about the downside, what about side effects to medicines like psilocybin?

DR. MATTHEW W. JOHNSON:

Ya, that is a great question and we are very careful to note that in our studies, we have found that about third people on this high dose of psilocybin at one point or another during the session will report strong anxiety, fear, or sense of feeling trapped, something like that,

something that anecdotally could be called a bad trip. Now in the context of our research where people are prepared, they know the clinicians that they are working with, they are in a safe environment whether or not could be running across the street or something. This is very easily handled and the fact afterwards many people say that is a sort of difficult psychological experience of fear actually lead to some of the most useful aspects of the session. They have really learned something going through these difficulties, but certainly one could manage in an uncontrolled setting, some could really get into trouble. In fact, I should say it is very, very rare, but there are legitimate cases where people has taken a drug like this and had been on a roof top and thought they could fly or run across the highway, got run over things like that. Again, it is still very rare even with uncontrolled recreational use, but nonetheless, this represents a possibility because these drugs you know, strongly alter one's sense of the environment and sense of self. It appears to be safe in a research context and this is also our findings are consistent with older research suggesting that when administered to well-prepared volunteers; the rate of adverse reactions lasting beyond the normal time course the drug is very, very small.

DR. LESLIE LUNDT:

Yeah, certainly make sense of my experience actually when I was in school, worked at Rock Medicine, which was the Haight-Ashbury Clinic, outreached to mostly Grateful Dead concerts, and we had to hold tent for bad trips and that was amazing in that kind of environment, we never had to use Haldol or tranquilizers that restrain people like we did in ER that we know that people dealt with it without any sort of extreme intervention. So, what about other side effects like nausea, vomiting you hear with the hallucinogenics?

DR. MATTHEW W. JOHNSON:

Psilocybin is, I think we have one person that vomited a small amount out of the over 100 session, so very few people report any nausea at all, so it is not one associated with a lot of nausea. We give the synthetic psilocybin, which is the active ingredient and psilocybin mushrooms, which are the form that are available illicitly. Now sometimes, those can cause nausea if there are like any other food products that the mushrooms themselves having them stored properly and they get a little moldier something that can lead to nausea.

DR. LESLIE LUNDT:

So, it is more the mushroom than the psilocybin perhaps?

DR. MATTHEW W. JOHNSON:

Yeah, exactly, but not a lot of this nausea even associated with illicit psilocybin mushrooms. There are the related compounds, for example <____> which is in KOD, which is used by the native American church that is associated with significantly more nausea at is the beginning of the experience and there are other drugs like lowasca, which is a south American combination of drugs actually which is psychoactive and in the same family using some of the compounds and that is associated with some more nausea.

DR. LESLIE LUNDT:

Any resources for listeners if they would like to find out more about this?

DR. MATTHEW W. JOHNSON:

Yeah, absolutely our website, you could find out about our cancer study. It is cancer-insight.org. You can also just find this by googling Hopkins Cancer Insight and find more information about us there.

DR. LESLIE LUNDT:

Thanks much for being on our show today.

DR. MATTHEW W. JOHNSON:

Yeah, you are welcome. It has been a pleasure.

DR. LESLIE LUNDT:

We have been discussing hallucinogens with Hopkins' psychopharmacologist, Dr. Matthew Johnson. I am Dr. Leslie Lundt. You have listening to The Clinician's Roundtable on ReachMD, The Channel for Medical Professionals. For a complete program guide and Downloadable Podcasts, visit our website www.reachmd.com. Thank you for listening.