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Therapeutic use of Psilocybin to treat alcohol use disorder: New York University

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ABSTRACT

Alcoholism, a pervasive global health issue, demands innovative and effective treatment modalities. Recent interest in psychedelic drug therapy has opened new possibilities for addressing the complexities of alcohol use disorder (AUD). This research paper provides a comprehensive analysis of the groundbreaking trial conducted by New York University, which investigated the therapeutic potential of psilocybin, a classic psychedelic substance, in treating alcoholism. The trial's methodology included a double-blind randomized clinical trial measuring the efficacy of psilocybin against a placebo. Results indicated that 50% of the patients who received psilocybin stopped drinking altogether. These findings signify the potential of psychedelic drug therapy as a transformative intervention for alcoholism and highlight the need for further research in this promising field.

Keywords: *Ethical, Psilocybin, AUD (Alcohol Use Disorder), Psychedelic, Clinical Trial, Placebo*

1. INTRODUCTION

The Centers for Disease Control and Prevention reports that excessive alcohol use kills roughly 95,000 Americans every year[1]. Other than that, excessive alcohol consumption leads to liver failure, behavioural disorders, workplace accidents and much more. Pharmaceutical drugs such as Antabuse have been used to help chronic consumption of alcohol but due the effectiveness of the medication depending on the person and whether they choose to administer it, it doesn't always prove to be effective for everyone. Additionally, people who use Antabuse experience unpleasant side effects such as weakness, sweating, violent nausea and moreover the medication doesn't reduce the craving of alcohol and hence Antabuse by itself is not enough for treating alcoholism [2].

In recent years, the psychoactive compound psilocybin has garnered attention for its potential in treating stress and anxiety disorders. Several studies have demonstrated promising results, showcasing its ability to alleviate symptoms and promote psychological well-being in individuals suffering from these conditions. Building on these encouraging findings, researchers at New York University embarked on a pioneering clinical trial to investigate whether psilocybin's therapeutic benefits could extend to treating alcoholism. By harnessing its unique properties in a controlled and supportive environment, psilocybin-assisted therapy aimed to address the underlying emotional and psychological factors contributing to alcohol use disorder. Initial outcomes from the trial have shown promising reductions in alcohol consumption and cravings, suggesting that psilocybin-assisted therapy could be a transformative intervention for individuals battling alcoholism, offering new hope for a more effective and compassionate approach to addiction treatment.

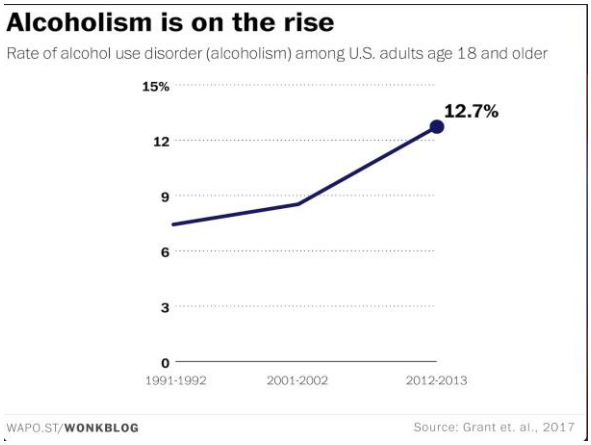

Figure 1: displaying rise of alcoholism in the USA

2. THE USE OF PSILOCYBIN

Psilocybin, commonly known as magic mushroom, has gained recognition for its therapeutic potential, distinguished by its low risk of addiction and overdose compared to substances like cocaine or heroin. The molecule is reported to have significant effects on behaviour, cognition, spirituality, and introspection. In the 1950s, scientists recognized the potential of psychedelic compounds in neuroscience, noting their favorable safety profile in contrast to opioids. The rise in alcohol, substance abuse, and suicide-related deaths in America in 2017, coupled with limited progress in psychiatric drugs, motivated researchers to explore psychedelics as a treatment option. Psilocybin-assisted psychotherapy has shown effectiveness in addressing depression and anxiety in cancer patients, as well as treatment-resistant depression. Pioneering work by Franz Vollenweider in 1998 revealed that psychedelics like LSD and psilocybin act on serotonin 5-HT2A receptors in the human brain, producing "dream-like" effects with heightened awareness and insight as the basis for hallucinatory experiences [3]. Given the success of psilocybin in treating depression and anxiety, Dr. Bogenschutz and other medical professionals proposed its use in the trial.

3. METHODOLOGY

The clinical trial received approval from multiple prestigious institutions, including the Heffter Research Institute, the US Food and Drug Administration, Drug Enforcement Administration, and the New York State Bureau of Narcotics. Several institutes, including Purdue in West Lafayette, Indiana, provided the psilocybin for the study. The trial was closely monitored by a data and safety monitoring board. Recruitment of participants occurred at the University of New Mexico and New York University, with individuals aged between 25 and 65, diagnosed with alcohol dependence using the Structured Clinical Interview for DSM-IV. Eligible participants had at least four heavy drinking days in the 30 days before screening. Exclusion criteria involved major psychiatric and drug use disorders, recent hallucinogen use, over 25 lifetime uses of hallucinogens, medical conditions contraindicating study medications, use of specific medications, and current treatment for AUD. All participants provided written consent prior to the trial.

4. TRIAL DESIGN

This trial was a double-blind randomized design, participants underwent 12 weeks of standardized psychotherapy. They were then randomly divided into two groups, with one receiving psilocybin and the other diphenhydramine during two day-long medication sessions at weeks 4 and 8. Assessments of the outcomes were conducted throughout the 32-week double-blind period starting from the administration of the initial dose of study medication. The trial took place at two academic centers in the United States. All participants were offered a total of 12 psychotherapy sessions provided by a team of two therapists, one of whom was a licensed psychiatrist. The psychotherapy approach encompassed motivational interviewing and cognitive behavioural therapy, tailored specifically for addressing Alcohol Use Disorder (AUD). Additionally, participants were given material to assist them in managing and harnessing the psychoactive effects of the study medication. To maintain blinding, both the study staff, investigators, and participants remained unaware of the treatment assignment. The medication was administered orally, concealed within a single opaque capsule of uniform appearance and weight. Psilocybin doses were adjusted based on participant body weight to ensure precise control. If participants experienced no dose-limiting adverse events and consented to the increase, they received a higher dose during the second session. After medication administration, participants were required to remain in the therapy room for a minimum of 8 hours, during which they were encouraged to lie on a couch with headphones provided, playing standard music. For safety purposes, medications to manage conditions like psychotic symptoms and severe anxiety were readily available in the room.

5. ASSESSMENTS AND OUTCOMES

The States of Consciousness Questionnaire was employed to evaluate the subjective effects of psilocybin compared to diphenhydramine, with participants completing the questionnaire after each medication session. The primary drinking outcome,

pre-established before the study, focused on the percentage of heavy drinking days during weeks 5 to 32. This measure was assessed at weeks 8, 12, 24, and 36 using timeline follow back. Secondary outcomes included the percentage of drinking days and the average number of drinks per day. At week 24, hair or fingernail samples were collected and analyzed for ethyl glucuronide (EtG) concentration to verify self-reported abstinence. During the first 6 hours of each medication session, blood pressure and heart rate were monitored at 30- to 60-minute intervals. The Morningness-Eveningness Questionnaire (MEQ) scores for both the initial and second medication sessions were calculated and compared between the psilocybin and diphenhydramine groups using t-tests for independent samples. To assess the effects of treatment on continuous drinking outcomes (PHDD, PDD, and DPD), a three-dimensional multivariate repeated-measures analysis of variance was employed.

6. RESULTS

A total of 95 participants were included in the study, with 49 randomly assigned to receive psilocybin and 46 to diphenhydramine. During the 12 weeks before screening, they reported consuming alcohol on average 74.9% (SD: 28.1%) of days, with heavy consumption occurring on approximately 52.7% (SD: 30.58) of those days, and an average of 7.1 (SD: 4.1) standard drinks per drinking day. Notably, both treatment groups experienced significant reductions in PHDD (percentage of heavy drinking days), PDD (percentage of drinking days), and DPD (mean number of drinks per drinking day) between screening and week 4. During this period, participants underwent 4 psychotherapy sessions and attempted to cease drinking in preparation for the initial medication session (refer to Table 2). Among participants who subsequently received psilocybin, PHDD decreased by an average of 32.37 (95% CI, 23.68-41.07; Hedges g, 1.08; 95% CI, 0.74-1.47).

Similarly, participants who subsequently received diphenhydramine also experienced similar changes in PHDD. Comparatively, those treated with psilocybin demonstrated a higher likelihood of having no heavy drinking days and achieving a two-level reduction in WHO risk level from weeks 5 to 36. Furthermore, participants treated with psilocybin showed moderate to large reductions in various categories of drinking-related problems at either week 24 or week 36.

Table 2: Treatment effects [4]

Table 3. Treatment Effects on Dichotomous Drinking Outcomes

	Follow-up period	No. (%)[a] Diphenhydramine (n = 45)	Psilocybin (n = 48)	NNT	OR (95% CI)[b]	*P* value[b,c]
Abstinence	Weeks 5-36	4 (8.9)	11 (22.9)	7.1	3.05 (0.89-10.40)	.06
	Weeks 33-36	11 (24.4)	23 (47.9)	4.3	2.84 (1.17-6.89)	.02
No heavy drinking	Weeks 5-36	5 (11.1)	16 (33.3)	4.5	4 (1.32-12.10)	.01
	Weeks 33-36	18 (40.0)	30 (62.5)	4.4	2.5 (1.08-5.76)	.03
WHO risk level[d]						
Decrease 1	Weeks 5-36	32 (71.1)	40 (83.3)	8.2	2.03 (0.75-5.50)	.16
	Weeks 33-36	29 (64.4)	43 (89.6)	4	4.74 (1.57-14.39)	.004
Decrease 2	Weeks 5-36	18 (40.0)	29 (60.4)	4.9	2.29 (1.00-5.26)	.049
	Weeks 33-36	18 (40.0)	29 (60.4)	4.9	2.29 (1.00-5.26)	.049
Decrease 3	Weeks 5-36	6 (13.3)	14 (29.2)	6.3	2.68 (0.93-7.73)	.06
	Weeks 33-36	8 (17.8)	18 (37.5)	5.1	2.78 (1.06-7.26)	.03

Interpretation and Evaluation

The trial's results indicate that psilocybin exhibits promising potential in significantly reducing the frequency of heavy drinking, overall alcohol consumption, and drinking-related problems. Furthermore, participants who underwent psilocybin-assisted therapy experienced noticeable improvements in various aspects related to their alcohol use. The efficacy of psilocybin in treating alcohol use disorder can be attributed to its distinct psychoactive characteristics, which encompass inducing altered states of consciousness, fostering introspection, and enhancing emotional processing. These unique attributes of psilocybin may facilitate a deeper exploration and resolution of underlying psychological factors contributing to addiction. The trial's robust methodology, including randomization and a double-blind approach, adds credibility and reliability to the findings. The endorsement and collaboration of esteemed institutions like the Heffter Research Institute, the US Food and Drug Administration, Drug

Enforcement Administration, and the New York State Bureau of Narcotics further validate the scientific rigour of the study. Nonetheless, while the results are encouraging, additional extensive research and large-scale clinical trials are essential to corroborate and expand upon these initial findings. Moreover, continued investigation is crucial to assess the safety and potential long-term effects of psilocybin-assisted therapy for treating alcoholism. The trial on psilocybin for treating alcohol use disorder showed promising results, but it has some limitations. The small sample size and lack of long-term follow-up limit the generalizability and sustainability of the findings. Ethical concerns regarding the use of a psychoactive substance should be considered. Additionally, the potential influence of placebo effects and unaccounted external factors should be acknowledged. Despite these weaknesses, the trial provides valuable insights for future research in addiction treatment.

Future potential

The horizon for psilocybin and psychedelics in the realm of science holds much promise, driven by ongoing research revealing

their potential therapeutic benefits in treating various mental health conditions like depression, anxiety, PTSD, and addiction. As these compounds undergo further clinical trials, a deeper understanding of their effectiveness, safety profiles, and optimal dosing regimens is anticipated to unfold. Advancements in neuroimaging and neuroscience will illuminate the intricate neural mechanisms underlying their profound impact. Collaboration among experts in diverse fields such as neuroscience, psychology, pharmacology, and psychiatry will foster a comprehensive comprehension of their multifaceted effects. Additionally, with evolving regulations, we may witness increased access to psilocybin and psychedelics for medical use, offering renewed.

Hope for individuals seeking alternative treatment options. Responsible research and unwavering ethical considerations remain central to fully harnessing their potential in advancing mental health care. As the road ahead unfolds, the potential for psilocybin and psychedelics to revolutionize mental health care practices becomes apparent. These compounds hold the promise of addressing the intricate challenges posed by mental health disorders and opening new vistas for transformative treatments. Embracing this future entails ongoing scientific exploration, collaborative efforts across disciplines, conscientious usage, and adherence to ethical guidelines, laying the foundation for a new era in psychiatric medicine, where psilocybin and psychedelics emerge as powerful allies in fostering mental well-being.

7. BIBLIOGRAPHY

[1]. Psychedelic Drug Therapy May Help Treat Alcohol Addiction." NYU Langone News, 24 Aug.
[2]. 2022,https://nyulangone.org/news/psychedelic-drug-therapy-may-help-treat-alcohol addiction#:~:text=Within%20an%208%2D month%20period,their%20drinking%20by%2051%20percent.
[3]. Juergens, Jeffrey. "Disulfiram: Alcoholism Treatment Medication - Addiction Center." Addiction Center, 19 Jan. 2023, www.addictioncenter.com/alcohol/disulfiram .
[4]. Brown, David Jay. "Psychedelic Healing?" Scientific American Mind, vol. 18, no. 6, 2007, pp. 66–71. JSTOR,
[5]. http://www.jstor.org/stable/24939766 . Accessed 10 Augt. 2023.
[6]. Miller, Greg. "Tackling Alcoholism with Drugs." Science, vol. 320, no. 5873, 2008, pp. 168–70. JSTOR, http://www.jstor.org/stable/20054958 . Accessed 10 July. 2023.
[7]. Rucker, James J. H. "Psychedelic Drugs Should Be Legally Reclassified so That Researchers Can Investigate Their Therapeutic Potential." BMJ: British Medical Journal, vol. 350, 2015. JSTOR, https://www.jstor.org/stable/26520205 . Accessed 23 July. 2023.
[8]. Griffiths, Roland R., and Charles S. Grob. "Hallucinogens as Medicine." Scientific American, vol. 303, no. 6, 2010, pp. 76–79. JSTOR, http://www.jstor.org/stable/26002307 . Accessed 23 July. 2023.
[9]. Kupferschmidt, Kai. "High Hopes: Psychedelic Drugs Fell from Grace in the 1960s. Now, Scientists Are Rediscovering Them as Potential Treatments for a Range of Illnesses." Science, vol. 345, no. 6192, 2014,
[10]. pp. 18–23. JSTOR, http://www.jstor.org/stable/24744795 . Accessed 28 July. 2023.
[11]. GRINSPOON, LESTER, and RICK DOBLIN. "Psychedelics as Catalysts of Insight-Oriented Psychotherapy." Social Research, vol. 68, no. 3, 2001, pp. 677–95. JSTOR,
[12]. http://www.jstor.org/stable/40971906 . Accessed 30 July. 2023.
[13]. Richards, William A., and G. William Barnard. "Psychedelic Frontiers in Medicine." Sacred Knowledge: Psychedelics and Religious Experiences, Columbia University Press, 2016, pp. 139–51. JSTOR, http://www.jstor.org/stable/10.7312/rich17406.20 . Accessed 1 Aug. 2023.
[14]. "Psychedelic Drug Therapy May Help Treat Alcohol Addiction." News Hub, 24 Aug. 2022. https://nyulangone.org/news/psychedelic-drug-therapy-may-help-treat-alcohol-addiction#:~:text=Psychedelic%20Drug%20Therapy%20May%20Help%20Treat%20Alcohol%20Addiction%20%7C%20NYU%20Langone%20News&text=Two%20doses%20of%20psilocybin%2C%20a,psychotherapy%2C%20a%20new%20study%20shows.

