

**Title:** Unexpected Treatment Possibilities for PTSD: Mechanisms of MDMA in the Remission of Post-Traumatic Stress Disorder

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The goal of this research project is to propose a reasonable hypothesis for the mechanism behind the efficacy of MDMA when used in combination with psychotherapy in the treatment of Post-Traumatic Stress Disorder (PTSD). First, research was done on the molecule MDMA in order to develop a framework of its structure and function. Next, research databases were searched for the known effects of the MDMA molecule on the brain chemistry of healthy individuals. Following this, the same search process was conducted to identify key ways in which the brains of patients with PTSD differ from healthy controls. The data gathered in this process was analyzed, and the impacts of MDMA on brain chemistry were compared to the known abnormalities in the brain chemistry of patients with PTSD. This information was used to develop a reasonable explanation for how the impacts of MDMA on brain chemistry can be uniquely beneficial in patients with PTSD. This research process revealed one possible reason for the success of MDMA in treatment of this patient group, which is that it may enable previously ineffective psychotherapy by halting the fear response of traumatized patients. These findings suggest that MDMA, and potentially other illegal drugs, may have unrecognized potential in PTSD and other treatment resistant conditions which frequently disable and take the lives of many. This research aims to show the potential benefits of examining previously unconsidered compounds as possibilities in the treatment of disorders including PTSD.

## References

- Michopoulos, V., Norrholm, S. D., & Jovanovich, T. (2015, September 1). Diagnostic Biomarkers for Posttraumatic Stress Disorder (PTSD): Promising Horizons from Translational Neuroscience Research. *Biological Psychiatry*, 78(5), 344-353.
- Ot'alora, G. M., Grigsby, J., Poulter, B., Van Derveer, J., Giron, S., Jermoe, L., ... Doblin, R. (2018, October 29). 3,4-Methylenedioxymethamphetamine-assisted psychotherapy for treatment of chronic posttraumatic stress disorder: A randomized phase 2 controlled trial. *Journal of Psychopharmacology*, 32(12).
- Phase 3 Trials: FDA Grants Breakthrough Therapy Designation for MDMA-Assisted Psychotherapy for PTSD, Agrees on Special Protocol Assessment (2017, August 26). In Multidisciplinary Association for Psychedelic Studies. Retrieved from <https://maps.org/research/mdma>
- Pierce, P. A., & Peroutka, S. J. (1988, August 12). Ring-substituted amphetamine interactions with neurotransmitter receptor binding sites in human cortex. *Neuroscience Letters*, 95, 208-212.
- Riedlinger, J. (1985). The scheduling of MDMA: a pharmacist's perspective. *Journal of Psychoactive Drugs*, 17(3), 167-171.