

Is Body Weight Loss a Harbinger of Methamphetamine-induced Neurotoxicity?

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Abstract

Methamphetamine (MA) is a drug of abuse of societal concern. Euphoria, increased energy/alertness and enhanced libido all contribute to the appeal, and therefore, abuse of this psych stimulant. Weight loss represents still another attribute of MA as indicated in both human [1-4] and animal [5, 6] studies. In fact, weight loss has been reported as a reason for MA use [7-9] and MA under the trademark name Desoxyn, has been approved for use clinically in the treatment of exogenous obesity, as well as for ADHD and narcolepsy

In animal studies, MA has served as an agent to induce neurotoxicity within the Nigrostriatal Dopaminergic (NSDA) system, and thus a means to study conditions that modulate this neurotoxicity. For example, sex, hormonal factors and adrenergic blockers all affect the degree of MA-induced neurotoxicity. A summary of the pair wise differences in MA-induced neurotoxicity (dorsal striatal dopamine depletion) for these three different factors, along with the corresponding changes in body weight to MA is illustrated in panels A-C of the Figure 1. In all three situations, conditions showing greater amounts of dopamine depletion (A-males versus females, B-testosterone versus sesame oil vehicle treated controls, C-Propranolol (PROP) versus Prazosin (PRAZ)) are associated with the greater amounts of body weight reductions.

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Biography

Dean E Dluzen is a versatile author and has contributed

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