

Abstract View

EFFECTS OF METHYLPHENIDATE AND AMPHETAMINE ON LOCOMOTOR ACTIVITY AND CONDITIONED PLACE PREFERENCE IN DOPAMINE D_{4R} MICE

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Methylphenidate (MP) is a widely prescribed central nervous system (CNS) stimulant to treat Attention Deficit Hyperactivity Disorder (ADHD). It is not yet well understood what factors account for the variability in physiological and behavioral responses to MP. Several recent studies have reported that the dopamine D_{4R} plays an important role in ADHD and that polymorphisms in the D_{4R} are associated with novelty-seeking behavior, which is a hallmark of ADHD (Burgos-Arcos, et al. 2004). We utilized the D_{4R} deficient (D_{4R}^{-/-}) mouse model (Rubinstein, et al, 1997) to study conditioned place preference (CPP) for MP and another stimulant as comparison amphetamine (AMPH) at multiple doses. Previous studies have shown that D_{4R}^{-/-} mice are hypersensitive to psychostimulants, display reduced spontaneous locomotor activity, and perform better on rotorod tests compared to their D_{4R}^{+/+} counterparts (Rubinstein, et al, 1997).

In the present study, we tested the behavioral effects of both MP and AMPH in male D₄ mice using both a locomotor open field activity assay and conditioned place preference (CPP). The CPP paradigm is a powerful technique in assessing the environmental reinforcing aspects of a drug. Preliminary results have indicated significant differences in both locomotor activity and CPP to both MP and AMPH and that there was a dose effect in these effects. These findings will be discussed with respect to previous data and how these results relate to the notion that D_{4R} plays a critical role in the behavioral profile of ADHD.

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