

Dual Diagnosis

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Where in the brain ritalin exerts its effects

Methylphenidate (MPD) is a readily prescribed drug for the treatment of attention deficit hyperactivity disorder (ADHD) and moreover it is used and abused by youths and young adults for its cognitive enhancing effects and recreation. Repetitive MPD exposure leads to an augmented behavioral response referred to as behavioral sensitization, an experimental marker for a drug's ability to elicit dependence. There is evidence that dopamine (DA) and GABA are key players in the acute and chronic MPD effect, however the exact roles of DA and GABA in the effects elicited by MPD are still debated. Psychostimulants such as cocaine and amphetamine exert their effects on brain regions known as the motive or reward circuit. Since MPD has functionally and structurally similar properties as amphetamine and cocaine, it is important to find out whether MPD elicits its effect on some of the motive circuit nuclei such as the nucleus accumbens (NAc), prefrontal cortex (PFC), caudate nucleus (CN), and ventral tegmental area (VTA) and the role of DA and GABA in MPD effects. The study lasted for 12-21 consecutive days. Seventeen groups of male SD rats were used to produce electrical and chemical lesions in the VTA, NAc, PFC, and CN, and GABA, DA D1 and D2 antagonists were used. Data will show the role of the VTA, NAc, PFC, and CN and the effects of DA and GABA on acute and chronic MPD action.

Biography

Nachum Dafny has received his MS and PhD degrees from Hadassah Medical School in Jerusalem in 1965 and 1969, respectively followed by post-docs at Caltech, UCLA, and Columbia. He is currently a Professor of Neurobiology at the University of Texas Medical School at Houston.

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