Reduced mRNA expression of D4 Receptor in blood lymphocytes among mixed opioid and amphetamine type stimulants disorder

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ABSTRACT

Introduction: The rewarding effects of Opioid and amphetamine type stimulant (ATS) is exerted by stimulating the dopaminergic system in the mesolimbic area. Dopamine system in peripheral blood lymphocytes has been suggested to reflect the central dopamine system's activity and pathology, especially in addiction and other neuropsychiatric diseases. The present study assessed the effect of mixed opioid and ATS addiction towards mRNA expression of dopamine receptors in peripheral blood lymphocytes (PBLs) among drug dependent subjects (n=36) undergoing methadone maintenance therapy in comparison to control subjects (n=36). **Methods:** Ten mL blood was obtained from the subjects followed by lymphocyte isolation, RNA extraction and reverse transcription. DRD4 and DRD5 mRNA expression in peripheral lymphocytes was assessed using real-time PCR. **Results:** The DRD4 mRNA expression but not DRD5 was significantly reduced in the peripheral lymphocytes of subjects. Mean expression value for DRD4 was 14.0+0.24 among patients and 13.3+0.25 among control subjects. For DRD5 it was 12.87 + 0.75 among patients and 12.59 +1.24 among controls. **Conclusion:** Mixed opioid and ATS addiction was associated with persistent deficiency of DRD4 but not DRD5 in PBLs.