

# Vasopressin in the lateral septum decreases conditioned place preference to amphetamine and nucleus accumbens dopamine release

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The lateral septum (LS) is a limbic nucleus interconnected with several brain areas involved in the regulation of mood and reward. Vasopressin (AVP) is a neuropeptide that has been related to the effects of drugs of abuse, but its role in the addictive process is poorly understood. LS expresses a high density of AVP 1A receptors (V1A). The aim of this work was to examine whether the modulation of LS AVP system affects the behavioral and neurochemical responses to amphetamine (AMPH) in male rats. Our results show that AMPH-induced conditioned place preference (CPP) produces a decrease in LS AVP content. Besides, we demonstrate that the microinjection of AVP in the LS impairs the expression of AMPH-induced CPP and that this effect is mediated by the activation of the V1A receptor in the LS. AVP microinjection in the LS elicited a decrease in neuronal activity in the nucleus accumbens (NAc) in animals subjected to AMPH conditioning. Finally, AVP microinjection in the LS decreased dopamine (DA) release in the NAc. Overall, our data demonstrate that intra-LS AVP diminishes the expression of AMPH conditioning behavior while decreasing neuronal activity and DA release in the NAc. Presumably, the effects of AVP in the LS produce an inhibition of GABAergic projections to the VTA, increasing local inhibitory tone in this nucleus, which in turn reduces the activity of DA projections to NAc. Thus, these results contribute to the knowledge about the role of AVP in LS in regulating the reward circuit and addictive like

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amphetamine

dopamine

lateral septum

nucleus accumbens

vasopressin