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Oxytocin and opioid addiction revisited: old drug, new applications.

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Abstract

Opioid addiction has devastating health and socio-economic consequences, and current pharmacotherapy is limited and often accompanied by side effects, thus novel treatment is warranted. Traditionally, the neurohypophyseal peptide oxytocin (OT) is known for its effects on mediating reward, social affiliation and bonding, stress and learning and memory. There is now strong evidence that OT is a possible candidate for the treatment of drug addiction and depression-addiction co-morbidities. This review summarizes and critically discusses the preclinical evidence surrounding the consequences of pharmacological manipulation of the oxytocinergic system on opioid addiction-related processes, as well as the effects of opioids on the OT system at different stages of the addiction cycle. The mechanisms underlying the effects of OT on opioid addiction, including OT' interaction with the monoaminergic, glutamatergic, opioidergic systems and its effect on the amygdala, the hypothalamic-pituitary-adrenal axis and on memory consolidation of traumatic memories, are also reviewed. We also review clinical evidence on the effects of intranasal OT administration on opioid-dependent individuals and discuss the therapeutic potential along with the limitations that accompany OT-based pharmacotherapies. Review of these studies clearly indicates that the OT system is profoundly affected by opioid use and abstinence and points towards the OT system as an important target for developing pharmacotherapies for the treatment of opioid addiction and co-existing affective disorders, thereby preventing relapse. Therefore, there is a clear need for clinical studies assessing the efficacy of OT-based pharmacotherapies in opioid addiction.

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