

عنوان مقاله:

Is the level of Nuclear Respiratory Factor 1 gene expression changed in the brain stem of methamphetamine addicted rats during buprenorphine treatment

محل انتشار:

هشتمین کنگره علوم اعصاب و پایه و بالینی (سال: 1398)

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خلاصه مقاله:

Background and Aim : Methamphetamine (METH), also known as ice or crystal, is an addictive pharmacologic psychostimulants with strong neurotoxic effects on the central nervous system (CNS). In recent years, dynamic disorders of mitochondria have reported to result from mitochondrial dysfunction triggered by METH. One of the key molecules of mitochondrial biogenesis is nuclear respiratory factor1 (NRF1). Buprenorphine, a semi-synthetic opioid, is a partial mu-opioid receptor agonist and kappa-opioid receptor antagonist that is approved by the US Food and Drug Administration (FDA) for use in the treatment of opioid use disorder. Little is known about the buprenorphine effects on mitochondrial biogenesis. The aim of this study was to investigate the acute and chronic effect of buprenorphine on the level of nuclear respiratory factor1 (NRF1) gene expression during methamphetamine-induced addiction in the spinal cord of male rats. **Methods :** 56 male Wistar rats were randomly assigned into 8 experimental groups (n=7): Control, Saline, Methamphetamine (10 mg/kg, i.p. for 5 days), buprenorphine (6, 10 mg/kg, i.p.), methamphetamine+ buprenorphine with 2 doses for 5 days and Spontaneous methamphetamine withdrawal syndrome (72 hour later). The brain stem of spinal cord tissue were assayed for the expression of nuclear respiratory factor1 gene using by real time polymerase chain reaction method (RT- PCR). **Results :** Chronic administration of methamphetamine to control group increased the nuclear respiratory factor1 gene expression in comparison to control group ($p<0.05$). Chronic administration of buprenorphine (10 mg/kg) for 14 days also increased the nuclear respiratory factor1 gene expression in comparison to control group ($p<0.05$). **Conclusion :** These findings revealed that methamphetamine toxicity changed the expression pattern of NRF1 as a biomarker of mitochondrial biogenesis. Buprenorphine as a partial opioid agonist also increased the level of this biomarker. Further study is need to explain detailed mechanisms involved in these process.

کلمات کلیدی:

Nuclear Respiratory Factor 1, Methamphetamine, Buprenorphine

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