Serum activity of matrix metalloproteinases 2 and 9 in opium and methamphetamine users

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Abstract:
Drug dependence is a complex phenomenon with psychological problems and consequences, which may be associated with neural damage and the remodeling of specific brain circuits. Matrix metalloproteinases (MMPs) are a group of zinc-dependant proteolytic enzymes responsible for extracellular matrix (mainly collagen) degradation and remodeling.
We have investigated the activity of the MMP2 and MMP9 in serum of amphetamine and morphine users that decided to abandon their addiction.
Materials and Methods: The activity of MMPs in the serum of 43 patients addicted to morphine or methamphetamine, were determinate by gelatin zymography in the same samples mentioned above Twenty healthy men participated as a control group.
our findings showed that the activity of MMP2 is significantly higher in amphetamine users than other groups and MMP9 activity is lower than control group. In morphine users both MMP2 and 9 was lower than control group.
The effects of amphetamines are associated with an increase in extracellular dopamine levels in the brain, achieved by facilitating the release of dopamine from pre-synaptic nerves. It has been proposed that cellular and molecular mechanisms for drug dependence involve processes similar to synaptic plasticity. This study showed that long term abuse of opium and amphetamine changes the activity of MMPs. further study is necessary for determination of the underlying mechanisms involves in this phenomena.

Keyword: Matrix metalloproteinase, opium, amphetamine