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## **The relationship between serum brain-derived neurotrophic level and neurocognitive functions in chronic methamphetamine users**

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**M**ethamphetamine (METH) is a highly addictive psychostimulant that has neurotoxic effects on the brain. Given evidence indicating that Brain-Derived Neurotrophic factor (BDNF) is associated with addictive behaviors, this study aimed to investigate the serum level of BDNF and cognitive functions in chronic meth users and healthy subjects. Thirty-seven chronic meth users and 37 healthy controls were recruited in this study. Cognitive functioning including executive functions and working memory were assessed using the Wisconsin Card Sorting Test (WCST) and Wechsler Memory Scale (WMS), respectively. The levels of serum BDNF were also examined using an enzyme-linked immunosorbent assay kit. Current results showed that METH users had significant impairment in executive function and working memory compared to healthy subjects. Also, the serum BDNF concentrations of METH users were significantly higher than the healthy subjects ( $42 \pm 13.34$  ng/ml vs.  $24 \pm 7$  ng/ml). BDNF concentration was significantly correlated with duration ( $r=0.37$ ,  $p=0.02$ ) and dose of METH use ( $r=0.35$ ,  $p=0.02$ ). Besides, the BDNF level was not associated with any subscales of WCST and WMS. These results provide further evidence regarding the role of increased serum BDNF level in the pathophysiology of METH addiction and protective response against the neurotoxicity of METH.

Besides, these findings suggest that increased serum BDNF levels are not related to cognitive impairment in METH users.

### **Biography**

Reza Arezoomandan was born in Qaen (South Khorasan), Iran. He received his bachelor degree in Biology and M.Sc. degree in Animal Physiology at Ferdowsi University of Mashhad, Iran in 2008 and Ph.D. degree in Neuroscience at Shahid Beheshti University of Medical Sciences, Tehran, Iran in 2015. My current position is assistant professor in the addiction department and also vice-chancellor for research in school of behavioral sciences and mental health (Institute of Tehran Psychiatry), Iran University of Medical Sciences. His main research area is addiction, particularly neurobiology and neuropsychology of addiction, brain stimulation, and neuro-rehabilitation, and behavioral study in animal model of addiction. His main current projects are: "The effects of methadone, buprenorphine, and opium tincture substitution treatments on cognitive performance, oxidative stress, and inflammation factors", "Evolution of protective effect of melatonin and n-acetyl cysteine on pathogenic factors resulted from methadone in male rat reproductive system", "Deep brain stimulation in OCD and Addiction", "The therapeutic effects of tDCS on methamphetamine craving and neuropsychological impairments and "Comparative study of the cognitive rehabilitation effectiveness on improving cognitive deficits (working memory and selective attention) and brain wave changes (EEG) in opioid and stimulant dependents".

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