

Abstract

This study addressed the impact of varying lengths of abstinence periods on the epitranscriptomic modification of m⁶A and the enzymes involved in this modification as well as on transcription factors in the brains of morphine-dependent rats. The methods used included a colorimetric kit to determine m⁶A levels and Western blotting to quantify the levels of enzymes and transcription factors. The results showed that different lengths of morphine abstinence did not have a significant effect on m⁶A modification, suggesting that this pathway was likely not influenced by morphine abstinence. However, significant changes were observed in the levels of enzymes involved in the regulation of m⁶A, which were localized and time-specific, without a clear trend. Examination of transcriptional regulators Δ FosB and MeCP2 also revealed significant changes only in certain parts of the brain and at specific times, but without a clear trend in changes in levels. The outcome of this study is that the dynamics of transcriptional regulators, N⁶-methyl-adenosine, and enzymes involved in m⁶A modification are localized and time-specific, opening new questions regarding the mechanisms that govern neurobiological processes during the abstinence period.