

Neurological Sciences Official Journal of the Italian Neurological Society and of the Italian Society of Clinical Neurophysiology

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10.1007/s10072-003-0120-4

ORIGINAL

Amphetamines induce ubiquitin-positive inclusions within striatal cells

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Abstract. The present study explores whether effects induced by amphetamine derivatives on striatal GABA cells might be connected with effects on dopamine (DA) metabolism. Methamphetamine (METH) and 3,4-methylenedioxymethamphetamine (MDMA, “ecstasy”) were administered to C57Black mice following a dosage regimen in which various doses of both drugs were injected i.p. at 2-h intervals. Neuronal inclusions produced under these experimental conditions were examined under electron microscopy. Drugs reducing DA availability prevented inclusion formation; conversely we observed that increasing DA synthesis or impairing physiological DA degradation enhanced the number of inclusions. The present study indicates that the presence of extracellular striatal DA is essential for the production of subcellular alterations induced by amphetamine derivatives. This is in line with a recent hypothesis connecting striatal DA release with degeneration of striatal GABA neurons.

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