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Brain Research Bulletin

Volume 65, Issue 6, 30 May 2005, Pages 471-477

Enhanced neurogenesis during trimethyltin-induced neurodegeneration in the hippocampus of the adult rat

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<https://doi.org/10.1016/j.brainresbull.2005.02.031>

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Abstract

The occurrence of neurogenesis in the hippocampus of the adult rat during trimethyltin (TMT)-induced neurodegeneration was investigated using bromodeoxyuridine (BrdU). Fifteen days after TMT intoxication, BrdU-labeled cells were significantly more numerous in the hippocampus of treated animals, gradually decreasing towards the control value 21 days after intoxication in the dentate gyrus (DG), while in the CA3/hilus region BrdU-labeled cells were still more numerous in TMT-treated rats. In order to investigate the fate of newly-generated cells double labeling experiments using neuronal or glial markers were performed. Colocalization of the neuronal marker NeuN was detected in many BrdU-positive cells in the DG, while in the CA3/hilus region no colocalization of NeuN and BrdU could be observed. No colocalization of BrdU and the astroglial marker GFAP or the microglial marker OX-42 was detected either in the DG and or in the CA3/hilus

region. The results indicate an enhancement of endogenous neurogenesis in the hippocampus during TMT-induced neurodegeneration, with the development of a subpopulation of regenerated cells into neurons in the DG, while in the CA3/hilus region the population of newly-generated cells should be regarded as undifferentiated.



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Keywords

Neurogenesis; Hippocampus; Trimethyltin; Neurodegeneration; Bromodeoxyuridine

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