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Too Much Testosterone Kills Your Brain

High levels of testosterone trigger neurone's death

One of the secondary effects of using steroids seems to be a catastrophic loss of brain cells, as proved by a new study of Yale School of Medicine. “Taking large doses of androgens, or steroids, is known to cause hyperexcitability, a highly aggressive nature, and suicidal tendencies. These behavioral changes could be evidence of alterations in neuronal function caused by the steroids,” said Barbara Ehrlich, professor of pharmacology and physiology."Next time a muscle-bound guy in a sports car cuts you off on the highway, don't get mad, just take a deep breath and realize that it might not be his fault," said Ehrlich. Testosterone is the main male hormone, playing a key role in development and differentiation of male traits and cell growth. Testosterone's effects on neurons induce changes in behavior, mood and memory.Both neuroprotective and neurodegenerative effects of androgens have been reported. High levels of testosterone triggered programmed cell death in neurons “in vitro” (in culture). Cell death (apoptosis) is critical in many life processes, including development and disease. It is characterized by membrane instability, activation of caspases (digesting proteins) in apoptosis, change in membrane potential, and DNA fragmentation."In the present study we have demonstrated for the first time that the treatment of neuroblastoma cells with elevated concentrations of testosterone for relatively short periods, six to 12 hours, induces a decrease in cell viability by activation of a cell death program," Ehrlich said. "Low concentrations of testosterone had no effects on cell viability, whereas at high concentrations the cell viability decreased with incremental increases in hormone concentration."The testosterone-induced apoptosis seems to be triggered by overactivation of intracellular Ca2+ signaling pathways. Overstimulation of the cellular death of the neurons is found in several neurological conditions, such as Alzheimer disease and Huntington disease.