Induction of adult cortical neurogenesis by an antidepressant

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The production of new neurons in the adult normal cortex in response to the antidepressant, fluoxetine, is reported in a study published online this week in *Neuropsychopharmacology*.

The research team, which is based at the Institute for Comprehensive Medical Science, Fujita Health University, Aichi, has previously demonstrated that neural progenitor cells exist at the surface of the adult cortex, and, moreover, that ischemia enhances the generation of new inhibitory neurons from these neural progenitor cells. These cells were accordingly named "Layer 1 Inhibitory Neuron Progenitor cells" (L1-INP). However, until now it was not known whether L1-INP-related neurogenesis could be induced in the normal adult cortex.

Tsuyoshi Miyakawa, Koji Ohira, and their colleagues employed fluoxetine, a selective serotonin reuptake inhibitor, and one of the most widely used antidepressants, to stimulate the production of new neurons from L1-INP cells. A large percentage of these newly generated neurons were inhibitory GABAergic interneurons, and their generation coincided with a reduction in apoptotic cell death following ischemia. This finding highlights the potential neuroprotective response induced by this antidepressant drug. It also lends further support to the postulation that induction of adult neurogenesis in cortex is a relevant prevention/treatment option for neurodegenerative diseases and psychiatric disorders.

Provided by National Institute for Physiological Sciences

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