



# Effects of MK-801 concentration on cell proliferation in rats with focal cerebral ischemia-reperfusion

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Genet. Mol. Res. 14 (4): 12841-12847 (2015)

Received February 18, 2015

Accepted May 18, 2015

Published October 21, 2015

DOI <http://dx.doi.org/10.4238/2015.October.21.3>

**ABSTRACT.** We explored the relationship between MK-801 concentration and neural stem cell proliferation in rats with focal cerebral ischemia-reperfusion (FCIR). A total of 60 male Sprague Dawley rats were randomized into control (six rats), sham-operation (six rats), operation (12 rats), and MK-801 groups. The MK-801 group comprised 36 rats that were subjected to different doses of MK-801 (0.2, 0.4, 0.6, 0.8, 1.0, and 1.2 mg/kg). Suture occlusion was used to establish an ischemia reperfusion model of middle cerebral artery occlusion (MCAO); 30 min before establishing the FCIR model, the MK-801 group rats were intraperitoneally injected with different doses of MK-801, while the sham-operation and control groups were injected with normal saline. Seven days after model establishment, bromodeoxyuridine-positive cerebral cortex cells adjacent to the focus of infarction were labeled for immunohistochemistry. MK-801 at a concentration of 0.4 mg/kg prevented endogenous neural stem cell proliferation, and this inhibitory effect was strengthened with increasing MK-801 concentration, especially at concentrations greater than 0.8 mg/kg. MK-801 inhibits endogenous neural stem cell proliferation in rats with

FCIR, and the inhibitory effect is strengthened with increasing MK-801 concentration.

**Key words:** Focal cerebral ischemia reperfusion; FCIR; Neural stem cell; MK-801; Rat