

## Effect of Papaverine on Neurospheres

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**Abstract :** Mitochondrial toxins including papaverine may be implicated in the etiology and pathogenesis of Parkinson's disease. The aim was to detect the effect of papaverine on the proliferation and viability of neural stem cells. Rat neural progenitor cells were isolated from embryos (E14) brains. The dispersed tissues were allowed to settle, then, The supernatant was centrifuged at 1,000 g for 5 min. The pellet was placed in Hank's solution cultured as free-floating neurospheres Dulbecco's modified Eagle medium (DMEM) and Hams F12 (3:1) supplemented with B27 (Invitrogen GmBH, Karlsruhe, Germany), 20 ng/mL epidermal growth factor (EGF; Biosource, Karlsruhe, Germany), 20 ng/mL recombinant human fibroblast growth factor (rhFGF; R&D Systems, Wiesbaden-Nordenstadt, Germany), and penicillin and streptomycin (1:100; Invitrogen) at 37°C with 7.5% CO<sub>2</sub>. Differentiation was initiated by growth factor withdrawal and plating onto a poly-d-lysine/ laminin matrix. The neurospheres were fed every 2-3 days by replacing 50% of the culture media with fresh media. The culture suspension was transferred to a dish containing 16 wells. The wells were divided as follows: 4 wells received no papaverine (control), 4 wells 1 u, 4 wells 5 u and 4 wells 10 u of papaverine solution. In the next 2 weeks, photography (0,4,5,11 days) and viability test were done. The photographs were analysed. Results : papaverine didn't affect proliferation of neurospheres, while it affected viability compared to control , this was dose related. Conclusion: This indicates the harmful effect of papaverine suggesting it to be a candidate neurotoxin causing Parkinsonism.

**Keywords :** neurospheres, neural stem cells, papaverine, Parkinsonism

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