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Title :	The effect of Glycogen synthase kinase3 (GSK3) inhibitor on proliferation of neural stem cells
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Abstract :	<p>Introduction: In adult mammalian brain, neural stem cells (NSCs) are located in subventricular zone of lateral ventricles and subgranular zone of dentate gyrus. In an injured brain, they can migrate toward the injured site to repair the damaged tissue. But this repair is not sufficient all the time. There are many signaling pathways that can activate neurogenesis in adult brain like Wnt signaling pathway. CHIR is a small molecule which can mimic this pathway via inhibition of Glycogen synthase kinase 3 (GSK3). So it seems that using CHIR can improve NSCs proliferation.</p> <p>Methods: NSCs of SVZ were isolated and expanded using "neurospher assay". To evaluate the effect of CHIR on neurospheres, different dosages ranging from 0.1 to 10 μM were used. For in-vivo studies, CHIR was injected for 4 days into the lateral ventricle of C57 male mice. To mark proliferating cells, intraperitoneal injection of Brdu was performed for 5 days, starting from second day of CHIR injection. After sampling, IHC and PCR analysis were used in this part.</p> <p>Results: CHIR in its lower concentrations (0.3 μM) can increase proliferation of neurospheres in-vitro. In vivo using of CHIR could increase the expression of NSCs transcripts such as Pax6, Sox1 and Nestin. Some Brdu+ cells were detected in CHIR groups but not in control groups.</p> <p>Conclusion: CHIR can increase proliferation of NSCs both in vitro and in vivo.</p>
Keywords :	Key Words: endogenous Neural stem cells, subventricular zone, CHIR99021