

The expression and the role of progranulin in the neural stem cells

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Neurogenesis is transiently enhanced by cerebral ischemia, but the number of newly generated neurons are not enough to compensate for damage of brain tissue. Furthermore, it seems that the majority of newly generated endogenous neurons after cerebral ischemia fail to survive. Therefore, acceleration of endogenous neurogenesis in the brain has a potential to become a new therapeutic approach for stroke. Progranulin (PGRN) is a cysteine-rich protein which is implicated in cell proliferation and tumorigenesis. In this study, we investigated the effect of PGRN on proliferation and differentiation in cultured neural stem cells. The sphere diameter of neural stem cells used in this study increased with time and these cells had multipotency. Treatment with recombinant PGRN (rPGRN) enhanced the ability of neural stem cells to proliferate and differentiate into neurons. Proliferation of neural stem cells was promoted by oxygen-glucose deprivation (OGD) treatment, and PGRN was co-localized with nestin in these cells. These results suggest that PGRN contributes to the proliferation and differentiation of neural stem cells after cerebral ischemia.