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The majority of endogenous neural stem cells reside in the most rostral part of lateral ventricle in the adult mouse brain

Golmohammadi MGh[1], Azari H[2], Mardani M[3], Esfandiari E[3], Rietze R[4].

1 Department of Anatomy, Medical school, Ardabil University of medical Sciences, Ardabil, Iran.

2 Department of Anatomy, Medical school, Shiraz University of medical Sciences, Shiraz, Iran.

3 Department of Anatomy, Medical school, Esfahan University of medical Sciences, Esfahan, Iran

4 Queensland Brain Institute, University of Queensland, Queensland, Australia.

E-mail: golmohammadi50@gmail.com

Introduction: It is now clear that adult mammalian brain contains a population of neural precursor cells (neural stem and progenitor cells) that maintain homeostasis and can also replace lost cortical and subcortical neurons following injury. Given the paucity of information regarding the distribution of neural precursor cells in the adult mammalian brain we employed three distinct assays, the neurosphere assay (NSA), neural colony forming cell assay (N-CFCA) and label retaining cell (LRC) approach, to compile a detailed atlas of the frequency and distribution of these cells along the adult mouse brain ventricular neuraxis.

Materials and Methods: Brains were harvested and serially Vibratome and Cryo sectioned (400 and 14 µm/section respectively) starting at the level of the olfactory bulb. The periventricular region (PVR) was then microdissected from each section and transferred to neurosphere and N-CFCA culture conditions. The absolute number of neurospheres, Colonies and LRCs in each region were counted and plotted according to their rostral-caudal distribution.

Results: The NSA, N-CFCA, and LRC approach each detected precursor cells throughout the ventricular neuraxis, however, the number of precursors detected in individual 400µm sections varied from a minimum of 8 to a maximum of 891 depending upon the rostral-caudal coordinate assayed.

Conclusion: By employing the N-CFCA to enumerate NSC-derived colonies we now report that the Majority of Endogenous Neural stem cells reside in the most rostral part of lateral ventricle in the adult mouse brain.

Key words: *Endogenous Neural stem cells, Lateral ventricle, Adult mouse brain.*

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Down-regulation of the effect of FSH in the presence of Mullerian inhibitory substance (MIS): An *in-vitro* developmental study of the Syrian mice preantral follicles and enclosed-oocytes

Javed A[1, 2], Rezaei-Zarchi S[3], Javeed Ghani M[4], Jamil A[2], Kalantar SM[1].

1 Research and Clinical Center for Infertility, Shahid Sadoughi University of Medical Sciences, Yazd, Iran.

2 Molecular Biochemistry Lab, Department of Biochemistry, University of Agriculture, Faisalabad, Pakistan.

3 Department of Biology, Payam-e-Noor University, Yazd, Iran.

4 Department of Bioinformatics, Government College University, Faisalabad, Pakistan.

E-mail: smkalantar@yahoo.com

Introduction: FSH is one of the most prominent follicle growth regulators. Therefore, the factors affecting the sensitivity of ovarian follicles to FSH are also important for follicle growth. The aim of the present study was to investigate whether MIS has an inhibitory effect on follicle growth by decreasing the sensitivity of ovarian follicles to FSH. Furthermore, the combined action of AMH and FSH on ovarian follicle development was examined.

Materials and Methods: Three different experiments were performed to see the regulatory effect of 100, 200, 400, 600, 800, 1000 and 1200 ng/ml MIS on the FSH function during the follicle development.

Results: To determine the effect of MIS on the follicle and oocyte growth, the preantral follicles (diameter, 95 ± 5 µm) were cultured in the TCM199 medium alone (control) and in the presence of different concentrations (100, 200, 400, 600, 800, 1000 and 1200 ng/ml) of MIS. The addition of exogenous MIS caused a slightly increasing follicular growth patterns in a concentration-dependent manner (upto 800 ng/ml). Diameter increased from 113 µm to 159 µm ($p<0.001$) while, the follicle survival rate showed an opposite and negative effect of MIS on the survival rate (25%) as compared to the control (28%), where $p = 0.042$ ($p>0.01$) when control experiment was compared to MIS-experiment. These results show a negative effect of MIS on the survival rate of the growing follicles. While, oocyte maturation (23%) and GVBD rates (36%) increased significantly in the culture groups exposed to 800 ng/ml MIS as compared to the controls with 2% maturation and 9% GVBD rate