Olfactory sphere cell

Olfactory sphere cells (OSCs) are stem cells generated by culturing olfactory mucosa.

OS cells were transplanted into injured rat spinal cords. The transplanted cells integrated into host tissue and differentiated into oligodendrocytes. When transected saphenous nerve ends were encased in collagen-containing silicone tubes with or without OS cells, the transplanted OS cells differentiated into Schwann cells. Our data provide new insights into of the stemness of OS cells¹⁾.

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Adult rat OSCs express oligodendrocyte progenitor cell (OPC) markers and differentiate into mature oligodendrocytes. Although OSCs also express nestin, a marker of neural stem cells (NSCs), it remains unclear whether adult rat OSCs are multipotent and capable of giving rise to neurons as well as oligodendrocytes. Valproic acid (VPA) is a histone deacetylase inhibitor that has the contradictory capacity to induce both differentiation of NSCs and dedifferentiation of OPCs. This study investigates a potential role for VPA in inducing either differentiation or dedifferentiation of adult rat OSCs. Treatment of OSCs with VPA induced hyperacetylation of histones and decreased cell proliferation in the absence of changes in the number of nestin-positive cells. Furthermore, VPA promoted the genesis of y-aminobutyric acid (GABA)-producing neurons identified by expression of Tuj1/GAD67/GABA while repressing oligodendrocyte production. These findings suggest that OSCs treated with VPA did not exhibit stem cell properties indicative of dedifferentiation but rather switched to a neuronal identity during their terminal differentiation. OSCs were then transplanted into the hippocampus of rats with kainic acid-induced temporal lobe epilepsy and were systemically given VPA. Although grafted OSCs expressed Tuj1 and GAD67, these cells did not sufficiently inhibit epileptic activity. These results suggest that OSCs are a transplantable cell source for GABAproducing neurons that can be modulated by VPA. However, further investigation is required to develop them for clinical applications 2 .

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Ohnishi Y, Iwatsuki K, Shinzawa K, Ishihara M, Moriwaki T, Umegaki M, Kishima H, Yoshimine T. Adult olfactory sphere cells are a source of oligodendrocyte and Schwann cell progenitors. Stem Cell Res. 2013 Nov;11(3):1178-90. doi: 10.1016/j.scr.2013.08.005. Epub 2013 Aug 15. PubMed PMID: 24012985.

Ohnishi YI, Maruo T, Shinzawa K, Iwatsuki K, Moriwaki T, Oshino S, Kishima H, Yoshimine T. Olfactory sphere cells are a cell source for γ -aminobutyric acid-producing neurons. J Neurosci Res. 2015 Mar 18. doi: 10.1002/jnr.23585. [Epub ahead of print] PubMed PMID: 25790078.

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