

Spinal cord injury victims may benefit from stem cell transplantation studies

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Two studies recently published in *Cell Transplantation* reveal that cell transplantation may be an effective treatment for spinal cord injury (SCI), a major cause of disability and paralysis with no current restorative therapies.

Using laboratory rats modeled with SCI, researchers in Spain found in laboratory tests on cells harvested from rats - specifically ependymal progenitor cells (epSPCs), [multipotent stem cells](#) found in adult tissues surrounding the ependymal canal of the [spinal cord](#) - responded to a variety of compounds through the activation of purinergic receptors P2X4, P2X7, P2Y1 and P2Y4. In addition, the epSPCs responded to adenosine triphosphate (ATP) through this activation. ATP, a chemical produced by a wide variety of enzymes that works to transport energy within [cells](#), is known to accumulate at the sites of spinal cord injury and cooperate with growth factors that induce remodeling and repair.

"The aim of our study was to analyze the expression profile of receptors in ependymal-derived neurospheres and to determine which receptors were functional by analysis of intercellular Ca²⁺ concentration," said study co-author Dr. Rosa Gomez-Villafuertes of the Department of Biochemistry at the Veterinary School at the University of Complutense in Madrid, Spain. "We demonstrated for the first time that epSPCs express functional ionotropic P2X4 and P2X7 and metabotropic P2Y1 and P2Y4 receptors that are able to respond to ATP, ADP and other nucleotide compounds."

When they compared the epSPCs from healthy rats to epSPCs from rats modeled with SCI, they found that a downregulation of P2Y1 and an upregulation of P2Y4 had occurred in the epSPCs in the SCI group.

"This finding opens an important avenue for potential therapeutic alternatives in SCI treatments based on purinergic receptor modulation," the researchers concluded.

More information: www.ingentaconnect.com/content...content-CT-0904_Gabr

Provided by Cell Transplantation Center of Excellence for Aging and Brain Repair

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