



Title: Expectation of improvement of impaired Central Nervous System function - the purpose of stem cells research

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Abstract:

The concept of using human cells as therapy of diseases dates back to the 19th century when simple blood transfusions were performed. Currently, hematopoietic stem cell transplantation is the standard treatment of many hematological disorders. The knowledge gained from treating these rare diseases led to the development of efficient cell culture procedures, and naturally led to the need to develop new cell products to treat also neurological diseases.

Stem cell therapy offers promising hope for neurodegenerative diseases, including Alzheimer's diseases, Huntington's disease, and amyotrophic lateral sclerosis. The main role of stem cells, rather than substitution of lost neurons, is neuroprotective by acting as immunomodulators and neuroprotectors. The mechanisms of the action of stem cells in neurodegenerative diseases, which include secretion of growth factor, secretion of exosomes and the weakening of inflammation of the nervous system, should be constantly discussed. Accordingly, an increasing range of laboratory, preclinical and clinical research focuses on (i) definition the appropriate population of cells in a given disease, (ii) development of a protocol for obtaining standardized culture protocols in order to obtain a therapeutic biomaterial of high quality and effectiveness.

Stem cell research holds tremendous promise for medical treatments, but scientists still have much to learn about how stem cells, and the specialized cells they generate, work in the body and their capacity for healing.