

Scientific research and usage of stem cells

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Introduction. Researching of stem cells enlarge our knowledge how the whole organism develops from the only cell, and how healthy cells replace the damaged ones in the adult organism. The learning of the quality stem cells reveals broad abilities and the future application of the cellular therapy in treatment different serious diseases.

Researching of human stem cells can give us some information about complex processes which occur during growth of human. Primary aim of this work is determination of how undifferentiated cells become differential ones. It is known that base of this process is inclusion and exclusion of appropriate genes. Some serious diseases, such as malignant tumors or anomalies of human development, appear as a result of incorrect cells division and their differentiation.

Stem cells, directed to differentiate into special types of cells, could be a source for getting cells and tissues, necessary for treatment a lot of diseases including Parkinson's and Alzheimer's diseases, spinal cord injury, strokes, burns, heart diseases, diabetes, osteoarthritis and rheumatoid arthritis.

Human stem cells can also be used for testing new medicaments. For example, safety of new medicaments can be examined in differentiated cells formed from pluripotent cell lines. Other types of cells lines are already used nowadays. For example, cells lines of cancer cells are used for testing potential anti-cancer drugs.

Simple availability of pluripotent stem cells can give ability to conduct research on many different types of cells.

One of the most important using of human stem cells is generation cells and tissue, that could be used in cell therapies. Today donor organs are often used for replacement sick or destroyed tissues, but there is a great necessity for tissues and organs for the transplantation.

Conclusion. Summing up, it can be said that future application of stem cells is very promising, but it is necessary many years of intensive researches to overcome all obstacles.

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