Results and discussion. Arguments have been raised whether Down syndrome is hereditary or genetic. Statistics have proved that for all three types of this syndrome, only about 1% can be traced to heredity while the 99% can be traced to some genetic factors.

The underlying disorder cannot be cured. Management depends on specific manifestations. Care should include genetic counseling for the family, social support, and educational programming appropriate for the level of intellectual functioning. Statistics have proven that you can find 1 out of every 700 births with this syndrome which makes it the most rampant chromosomal condition. About 6,000 babies are born with Down syndrome yearly. To adjust statistics, researches have now developed a new biosensor that could someday be used to diagnose this syndrome earlier in the fetus from the DNA of the mothers.

Conclusion. There are several famous people that have lived with this syndrome and have dealt with it properly such as American actor Chris Burke, British actor Tommy Jessop and so on. It has been discovered that people with this syndrome can live up to 60 years and even more.

There are some charity organizations that help to make people with this syndrome a valued member of the society, the organizations include; National Down syndrome society (America), Human right organization for individuals with Down syndrome, Down syndrome association (UK) and so on.

STEM CELLS: CHARACTERISTICS AND PERSPECTIVES USING THEM IN PHARMACY AND MEDICINE

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Introduction. Stem cells (SC) consider undifferentiated cells capable of self-repairing and producing at least one type of highly differentiated descendants.

Aim. Explore ways to obtain, characterize stem cells and their prospects for use in medicine and pharmacy.

Research methods: terminological and structural-logical analysis.

Results and discussion. There are two types of stem cells – pluripotent embryonic stem cells (ESCs) that are derived from blastocyst, and adult stem cells are limited (multipotent and unipotent) that are detected in different tissues. These groups of stem cells differ from each other and from their descendants by many morphological features, localization, receptors of the surface, transcription factors.

All stem cells, regardless of their origin, have common properties: capable of separation and self-renewal for a long time, they are not specialized, may give rise to specialized types of cells. stem cells can be restored a lot of times. The process of multiple cell renewal is called proliferation.

One of the main properties of stem cells is that they do not have any fabric-specific structures that would allow them to perform specialized functions. stem cells can not, as a cell of the heart muscle, interact with other cells to supply blood to the blood vessels; it can not tolerate oxygen molecules like erythrocytes; and it does not conduct electrochemical signals to other cells (like nerve cells).

Scientists are looking for factors that allow the stem cells to remain undifferentiated. It took many years and mistakes to learn to cultivate stem cells in laboratory conditions, to prevent them from spontaneous differentiation into certain cells. Only 20 years after the creation of laboratory conditions for the cultivation of stem cells mice, learned to grow the human embryonic stem.

Processes in which non-specialized stem cells give rise to special cells are called diffusion. Only now is the study of the signals that start this process. they are divided into internal and external. Internal signals are controlled by the cell genes that carry encoded instructions for all cell structures and functions. External signals include chemicals from other cells, physical contact with adjacent cells, some extracellular media molecules. Investigation of the signals of differentiation of the stem cells is necessary, because they help scientists to grow cells or tissues that can be used to treat many diseases.

Some of the most serious medical conditions, such as cancer and developmental defects, are the result of pathological division and cell differentiation. Understanding the genetic and molecular regulators of these processes can provide information on how these diseases occur and offer new strategies for therapy. A significant obstacle to the use of IC is the fact that signals that contribute to the transition of certain genes to the active and inactive state, as well as those affecting the differentiation of stem cells, are not fully elucidated.

Perhaps the most important potential use of human stem cells is the recovery of cells and tissues that could be used for cellular te-rapia. To date, donor organs and tissues are often used to change the diseased or damaged tissue, but the need for tissues and organs for transplantation exceeds their available supply. Stem cells, aimed at differentiating into certain types of cells, allows to restore sources of cell and tissue replacement for the treatment of diseases, in particular Parkinson's and Alzheimer's, spinal cord injury, bruising, burns, heart disease, diabetes, osteoarthritis and rheumatoid arthritis.

For example, it is possible to create healthy cells of the heart muscle in a laboratory with subsequent transplantation in patients with chronic heart failure. Previous studies in mice and other animals indicate that bone marrow stem cells that have been transplanted into a damaged heart can create heart muscle cells and successfully re-enter the heart tissue. Other recent studies in cell cultures indicate the possible targeting of differentiated embryonic stem cells or mature bone marrow cells to heart muscle cells.

In people with type 1 diabetes, pancreatic cells, which usually produce insulin, are damaged by their own immune system. New research suggests that it is possible to direct differentiation of human embryonic stem cells in a cellular structure in order to form insulin-producing cells that could be used in transplant therapy for patients with diabetes.

Consequently, for stem cell transplantation, the following properties should be present:

- Extensively proliferate and produce a sufficient number of tissues;
- differentiate into the desired cell types;
- maintain viability after transplantation;
- connect with surrounding tissues after transplantation;
- function to prolong the life of the recipient;
- do not harm the recipient in any way.

Conclusions. Thus, treatment with stem cells is perspective. their use is limited by technical reasons and high cost, but the accumulated results make it possible to assume that these limits will be overcome.

PHAGE TYPING AND ITS USES. THE EXEMPLE OF PHAGE THERAPY

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Introduction. Phage typing is a laboratory technique used to determine and differentiate bacterial strains within a species according to their particular sensitivity to certain virulent bacteriophages. Bacteriophages are viruses that infect bacteria by attaching themselves to the bacterium then, penetrate its cytoplasm and multiply there leading to the bursting of the bacterial cell. They possess only one type of nucleic acid, either DNA or RNA, have no enzymatic systems for energy supply and are unable to synthesize proteins on their own. The emergence of bacteria resistant to antibiotics and the lack of therapeutic means have brought back to the front a tool that the West had forgotten: Phage therapy.

Aim. Bacteriophages are used in many areas such as medical and industrial to identify the layers of leaven for example. The search for phage is also an indicator of Fecal Contamination (water, food...). Bacteria can also be used as a way to identify other bacteria (phage typing). The sensitivity to bacteriophages can vary according to the strains of the same species. The use of a series of appropriately selected phages makes it possible to characterize lysotypes (a type within a bacterial species determined