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Stem cells and its importance in medicine

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Abstract: Stem cells are the ancestor of all cells in our body. They have still undifferentiated cells . The new cells formed by the division of these cells have the ability to transform into various organs and tissues. They always increase with new, young cells because of this power. So, stem cells do icreasing themselves and producing differentiated cells for organism. All stem cells , however , share two fundamental properties that define them : 1) they are replenish themselves as stem cells , generally throughout the lifetime of the organism – a process called self – renewal ; 2) and they can also produce differentiated cells. But , stem cells are not in all parts of the body. They are found blood , bone morrow , cord blood , fat tissue. These cells are currently used in regenerative medicine.

Keywords: Differentiated cells , progenitor cell , intermediate cell, umbilical cord blood, muscle cell , nerve cell, microcephaly, cancer , regenerative medicine , stem cells therapy , medical aesthetics.

The purpose of research: The role of stem cells in the body and their importance in modern medicine.

It is known that cells in organisms reproduce and renew themselves . However , there are some cells that are formed only in the embryonic period and cannot divide and reproduce in an adult organism. For example : nerve cells and muscle cells. There are cells in the body that have the ability to become some tissue , and these cells is called stem cells. These cells are found bone marrow, peripheral blood, umbilical cord blood , adipose tissue . When a stem cell divides , there are two choices of cells produced : or it remains a stem cell ; or it specializes . Stem cells usually do not form directly differentiated cells . Instead of it forms intermediate cells that can differentiate and produce them. So, it forms more differentiated cells , and these cells are called progenitor cell . Number of differentiated cells increases that can conformable because of progenitor cells divided . In adult organism , there are some stem cells which are at rest and only when we needed them , they activate . They divide rarely or never divide . Only they activate when triggered by a stimulus such as tissue damage. We can hold up a skeleton muscle this group of cells . The skeleton cells have many nucleus , they ensued a lot of unification of differentiated myoblasts. Humans do not normally generate new skeletal muscle in adult life , but they still have the capacity to do so when there is a need for muscle grows and contained. Muscle progenitor cells are retained as small , flattened , and contained within its sheath of basal lamina . If the muscle is damaged or stimulated to grow , these satellite cells are activated to proliferate . So, satellite cells are stem cells of muscle , they usually kept at rest in reserve .

Result materials and results : Hematopoietic (producing blood) stem cells that produce red blood cells (erythrocytes) and white blood cells (leukocytes) are located in the bone marrow of adults , and they also produce blood platelets. By stem cells always renew to keep homeostasis of tissues which high cell turnover rates many tissues in adults, principally , blood ,

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skin and , intestinal mucosa cells . There is a control that regulates the work of stem cells. This control helps to control the number of cells. Undifferentiated cells uncontrolled production causes cancer to come out .

Microcephaly is a stunted growth and development of the brain characterized by slowing down . Careful observation of the developing brain organoids showed that in case , the lack of differentiated brain cells was revealed as a result of premature cessation of proliferation and differentiation of brain progenitor cells.

The significance of the umbilical cord blood or cord blood of the embryo is that it contains biologically active stem cells. An embryo makes extensive use of stem cells during grows and development. The majority of embryonic cells become more specialized and eventually become organs. As a result, the fluid or '' cord blood'' passing through the umbilical cord is saturated with active stem cells. That's why it's a good idea to collect and store cord blood when a baby is born , because it will provide the body with a matching stem cell when needed.

These stem cells show promising results when used in stem cell therapy . First of all , difficulty of organ transplantation , aesthetic surgery , dermatology , and cardiology . That is , when we want , it makes it possible to use the stem cells in the cord blood and get the necessary tissues .

Known as regenerative medicine , or stem cells therapy . It helps us to restore diseased , dysfunctional , damaged tissues with stem cells . It is used in transplants to replace organs that are in limited supply. Researchers grow specialized stem cells in the laboratory . These stem cells are manipulated to become heart muscle , blood cells , or neural cells. Differentiated cells can then be transplanted into a person . For example , if an organism develops heart trouble , until the embryonic stem cells become functional heart cells reprogrammed. In exploration , when new heart cells were injected into animals with heart trouble , hurt function improved and they survived.

Which diseases can we treat by stem cells therapy ?

1) Alzheimer's disease
2) Parkinson's disease
3) Cancer disease
4) Spinal cord injury
5) Type 1 diabetes disease
6) Burns
7) Insult
8) Osteoarthritis
9) Amyotrophic lateral sclerosis
10) Heart diseases

For many years , it was believed that nerve cells only reproduce during the embryonic period and are never regenerated in adult organisms. But , the stem cells that form neurons and glial cells remain in certain parts of the brain . The ''acne'' protein is important in the regulation of these neuronal stem cells . This protein responds to the migration of cells. If the concentration of ''acne'' protein is low , it remains in the initial state . Thus, it has been proven that nerve cells can also be restored.

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Hence the importance of stem cells in pharmacy is that new drugs are tested for safety and efficacy . Some types of stem cells can be used to test safety and quality of drugs before they are used in human research studies.

Summary.

Why is stem cell therapy still so underdeveloped?

This is because embryonic stem cells are taken from eggs fertilized in vitro fertilization clinics , but never implanted in a women's uterus. These cells were given with their consent.

Embryonic stem cells are from early stage embryos . This means that the embryo has started to develop , and we are a child who has consciously stopped its development by separating the stem cells from it .

Because of this , this method is considered by many to be incompatible with medical aesthetics .

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