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GENETIC DISEASES AND HEREDITY

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ABSTRACT:

This article provides detailed information about the biological basis, causes, types and impact of genetic diseases and heredity on human health. It also covers methods for preventing genetic diseases and the importance of genetics in modern medicine, especially in the pharmaceutical field.

Introduction

Heredity is an important property of living organisms, through which genetic information is transmitted from generation to generation. A person inherits not only external signs from his parents, but also a predisposition to certain diseases.

Genetic diseases occur as a result of changes in genes or chromosomes. The development of modern science is expanding the possibilities of studying, diagnosing and treating these diseases.

The concept of heredity

Heredity is the process of transmitting genetic traits from parents to children. Genes are located in the DNA and control the development and functioning of the organism.

Each person:

• Receives 23 chromosomes from his mother

• 23 chromosomes from his father

and has a total of 46 chromosomes.

Types of genetic diseases

1. Monogenic diseases

Arise as a result of a mutation of a single gene.

Examples: hemophilia, phenylketonuria

2. Chromosomal diseases

Associated with changes in the number or structure of chromosomes.

Examples: Down syndrome, Turner syndrome

3. Multifactorial diseases

Develop under the influence of genetic and environmental factors.

Examples: diabetes, cardiovascular diseases

Causes of genetic diseases

The following factors cause genetic diseases:

• Gene mutations

• Chromosomal abnormalities

• Marriage between relatives

• Radiation and harmful substances

• Unhealthy lifestyle

Biological basis of genetic diseases

Genetic diseases arise as a result of changes in the structure of DNA. These changes lead to disruption of protein synthesis and disruption of cell activity.

Mutations can be hereditary or acquired. Some diseases are congenital, while others develop later.

The role of genetics in medicine

Genetics has become an integral part of modern medicine:

• Early detection of hereditary diseases

• Prenatal tests

• Gene therapy

• Personalized treatment

The importance of genetics in pharmaceuticals

1. Pharmacogenetics

Since each person's genetic structure is different, their response to drugs also varies. Genetic analysis can help to select the right medicine and dosage.

2. Development of new drugs

Genetic research helps to identify the causes of diseases and provides the basis for developing new effective drugs.

3. Gene therapy

Allows treatment of diseases by correcting or replacing genes.

4. Biotechnological drugs

Insulin, vaccines and other drugs are produced using genetic engineering.

Prevention of genetic diseases

1. Medical and genetic counseling

It is important to consult a specialist before marriage.

2. Prenatal examinations

Allows early detection of diseases during pregnancy.

3. Healthy lifestyle

It is necessary to abandon harmful habits.

4. Avoiding marriage between relatives

This reduces the risk of hereditary diseases.

Conclusion

Genetic diseases and heredity are important in human life. By studying them, diseases can be prevented, detected early and treated effectively.

The application of genetics in the pharmaceutical industry plays an important role in the creation of new drugs and the development of individualized treatment

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