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# ROLE OF CONDITIONALLY PATHOGENIC MICROFLORA IN HUMAN LIFE ACTIVITIES

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**Abstract**
Since the establishment of microbiology as a science, scientists have focused their attention on the study of pathogens of infectious diseases (morphology, cultivation methods, enzymatic properties, clarification of the range of susceptible organisms, pathogenesis of diseases caused by the pathogen, methods of diagnosis, treatment and prevention).

**Keywords**: pathogens, diagnosis, treatment, prevention, microorganisms.

## Introduction

However, in parallel with the study of pathogenic microorganisms, scientists identified and studied the microflora of environmental objects (air, soil, water, milk, etc.) that did not cause infectious diseases, but were used for preparing food products (lactic acid bacteria, yeast, etc.). They also studied the microflora of various parts of the body and organs of humans and animals, which were later called the normal microflora of the body. Based on their ability to cause an infectious process under favorable conditions, all existing microorganisms are divided into pathogenic, opportunistic and saprophytic. Opportunistic microorganisms include representatives of the normal microflora of humans and animals (Escherichia coli, Enterococcus faecalis, Streptococcus epidermidis, Proteus vulgaris, etc.) that live on the skin, mucous membranes of organs and systems communicating with the external environment. In a healthy body, normal microflora creates competitive conditions for pathogenic microbes, suppressing their growth and reproduction, and has a stimulating effect on the development and functioning of the immune system.

Opportunistic microbes exhibit their inherent potentially pathogenic properties when the body's defenses are weakened, when they can cause various diseases, mainly diseases affecting the respiratory and digestive tracts. Microorganisms enter the animal's body from the first minutes after birth. Thus, with the first breath, with the first feeding, bacteria enter the newborn's body.



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Some of them die without finding favorable conditions, others colonize the surface of the body, the upper respiratory tract and especially the gastrointestinal tract. Some of them have become resident (in the old way: obligate, autoflora or normal microflora of a healthy body), others - transient (in the old way - facultative). The normal microflora of the body is a collection of many microbiocenoses that populate one or another ecological niche in the animal's body. The most complex microbiocenoses in mammals are the microflora of the colon, mouth and nasopharynx; simpler ones - microflora of the surface of the skin, nasal passages, genitals. One of the most important functions of normal microflora is that, together with the host organism, it provides colonization resistance - a set of mechanisms that impart stability to the normal microflora and prevent the colonization of the host organism by foreign microorganisms. Apparently, normal microflora is a nonspecific barrier, after breaking through which specific defense mechanisms are activated. Despite constant contact with the external environment, associations of certain microorganisms are characteristic of different parts of the body.

In healthy animals and poultry, the quantitative diversity of microflora is influenced by the type of animal, age, type of feeding and environmental conditions. For the first time, I. I. Mechnikov pointed out the possibility of manifestation of pathogenic properties in normal microflora in humans. In recent years, in many countries, outbreaks of infectious diseases caused by opportunistic microbes have become more frequent, characterized by a severe course, difficult to treat and characterized by high mortality. In the etiology of these diseases, along with cocci (staphylococci, streptococci), the leading place is occupied by gram-negative flora: Escherichia coli, Klebsiella, Proteus, Pseudomonas. One of the reasons for the increase in diseases caused by opportunistic microorganisms was the disruption of the balance that had developed during evolution between the macroorganism and the microflora inhabiting it, as well as between the individual species that make up this flora.

Such shifts in the microbial ecology of animals may be due to the use of antibiotics, especially broad-spectrum antibiotics, unfavorable ecology, an increase in the overall level of radiation, and other factors. Under the influence of these factors, changes in the species composition of normal microflora on the skin and mucous membranes, a decrease in the concentration of resident (obligate, permanent) and an increase in the frequency and concentration of transient (facultative, non-permanent) representatives, and selective reproduction of more pathogenic, drug-resistant forms are observed. Potentially pathogenic properties are manifested in almost all representatives of the normal microflora of animals. Thus, of the obligate intestinal microflora, only bifidobacteria are considered non-pathogenic. Bacteroides, enterococci, and Escherichia are described as etiological factors in various diseases. For example, E. coli (a permanent inhabitant of the large intestine) can cause cystitis, cholecystitis, and septicemia.

A more common cause of inflammatory processes are representatives of facultative microflora living in various parts of the body, among which potentially pathogenic forms predominate. Many representatives of normal microflora have factors that determine their potential pathogenicity. These include, first of all, surface structures that determine adhesive properties (K-antigen in Escherichia) and suppress the protective functions of the body (capsules - in Lactobacillus, Klebsiella, Staphylococcus; mucus - in Pseudomonas; Vi-antigen - in Escherichia and Citrobacter). Many representatives of normal microflora also produce enzymes that promote the



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spread of microbes in tissues: hyaluronidase, neuraminidase, fibrinolysin, etc. The pathogenicity of representatives of normal microflora can increase due to the exchange of genetic information that exists in natural conditions, which determines the possibility of transmitting pathogenicity factors to normal inhabitants of the body from invading pathogenic bacteria. In particular, the transfer, using plasma, of the ability to synthesize K-antigen and produce enterotoxin to non-pathogenic Escherichia coli from enteropathogenic ones has been established. Thus, the microflora inhabiting the open cavities of the body can play the role of both a biological barrier and a potential reservoir of infection.

The manifestation of protective or pathogenic properties by its representatives depends on the state of the body and the barrier functions of the mucous membranes and skin. Currently, opportunistic microorganisms occupy a significant place in the infectious pathology of animals.

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