

AVIAN INFLUENZA AND ORNITHOSIS :ORIGIN, TRANSMISSION AND PREVENTION

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Modern preventive measures for the prevention of avian influenza are considered. Were suggested the most effective methods of protecting the population from ornithosis.

Keywords: Avian influenza, ornithosis, viral infection, prevention, symptoms, reservoir, bacteria.

The number of important environmental problems of the 21st century which require preventive protective measures is constantly increasing. At present, the problems of animal and human diseases from birds migrating during spring and autumn periods, contributing to the transfer of dangerous diseases from southern and central latitudes, to urbanized areas have also been implicated.

The aim of the work is to offer methods of protection to the population against avian influenza and ornithosis on the basis of literature analysis.

The source of the infection is infected birds, whose excreta and excretions contain large amounts of active virus. The mechanism of infection is airborne. Factors of transmission of the virus include infected exchange containers (trays for meat and eggs), feed, and commercial products (carcasses of birds, eggs, feathers) obtained during the incubation period or from clinically ill poultry. A certain role in spreading the disease could also be played by wild birds (pigeons, sparrows, jackdaws and crows), as well as rodents and cats. Avian influenza occurs in the form of enzootic and epizootic. [1]

Avian influenza is an acute respiratory viral infection, transmitted mainly by wild ducks, doves and jackdaws. Ornithosis is caused by the bacteria *Chlamydochlamydia psittaci*. City pigeons, sick parrots, canaries and domestic birds are the main natural source of the infection. Humans usually inhale the bacteria with dust. The symptoms of both diseases are similar – fever, headaches, loss of appetite and muscle pain. Ornithosis is treated with antibiotics, whereas patients with avian influenza receive supportive therapy.

Preventive measures include vaccination (avian flu), regulating the population of pigeons in cities, avoiding contact with wild birds, appropriate sanitary regimens on poultry farms, maintaining personal hygiene and avoiding crowded places during flu seasons. [2]

Currently, vaccine prevention remains the most promising and effective measure for the prevention of avian influenza as well as variants of the disease caused by the pandemic strain of the virus.

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THE CONTENT OF PHOTOSYNTHETIC PIGMENTS IN LEAVES OF *BETULA PENDULA* AND THE NEEDLES OF *PINUS SYLVESTRIS* IN A ZONE OF INFLUENCE OF THE ENTERPRISE OF THE CEMENT INDUSTRY

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The purpose of the study was to analyze the photosynthetic pigment content in leaves of *Betula pendula* Roth and *Pinus sylvestris* L., which grow on the territory of a cement plant. The pigment content in leaves was determined by spectrophotometry. The influence of the atmospheric emissions of the OJSC «Krasnoselskstroyaterialy» on the presence of the pigments photosynthesis (chlorophyll *a*, chlorophyll *b*, summarized chlorophyll, carotenoids) in the leaves of the *Betula pendula* and the needles of *Pinus sylvestris* have been investigated. The true decrease

($p < 0,05$) in the presence of all groups of the pigments, which have more pronounced character while approaching near the cement enterprise, have been shown.

Keywords: air pollution, chlorophyll *a* and *b*, carotenoids, *Betula pendula*, *Pinus sylvestris*.

The harmful anthropogenic anomalies (with increased concentration of toxic substances) worsen the conditions for the existence of humans, plants, animals. In the presence of a constant source of pollution, the existence of anthropogenic anomalies is constantly not only maintained, but is also increasing. The danger of constant anomalies lies in the fact that even with a low level of contamination they act gradually and do not have a significant effect on the state of the biota. But the effect on the organisms for a long time of increased concentrations of biochemically active substances can have a cumulative character, manifested not only in disturbance of vital functions of the living generation, but also changing subsequent ones through the genetic code.

According to the CPCB (*Central Pollution Control Board*), the cement industry is one of the 17 most environmentally harmful industries. OJSC «Krasnoselskstroyaterialy» is one of the largest manufacturer of building materials in Belarus. It is located in the Grodno region, the village of Krasnoselsky. The activity of a cement enterprise has a significant impact on the environment, since during its operation, a mass ejection of volatile (gaseous) production waste occurs.

Plants are very sensitive to the state of the natural environment and therefore play an important indicator role in determining the contamination of the atmosphere by some impurities. Possessing different sensitivity to the influence of certain pollutants or their complex effects, indicator plants can be used both to detect individual air pollutants and to assess the overall qualitative state of the natural environment. Coniferous rocks are less resistant to the effect of industrial emissions.

The first link on the biochemical level, which is affected by toxicants, are chloroplasts. Accumulation of toxic gases in them leads to their destruction and decomposition of pigments. The changes in the content of pigments, in particular, chlorophylls, are often used as an indicator reaction of damage occurring under the influence of air pollutants.

The purpose of the our study was to study the influence of volatile (gaseous and dust) wastes of the enterprise on the state of the pigment complex (the content of chlorophyll *a* and *b*, carotenoids) in the leaves of *Betula pendula* and needles of *Pinus sylvestris*, depending on the degree of approach to the enterprise.

For sampling, experimental sites were determined in the gradient of the distance to the source of contamination. The vector of research was determined, if possible, by the prevailing wind directions and the relative homogeneity of the soil, climatic and water regimes. The selection of birch and pine needles was carried out on experimental sites with a fivefold repetition and at the same distance from the surface of the earth (2 m) in plants of the same age. As a control, plants grown in a relatively clean area, not less than 2 km from the enterprise, were used. The content of pigment complex (total chlorophyll, carotenoids) were determined spectrophotometrically. Chlorophylls were determined in the alcohol extract of pigments.

Determination of chlorophyll content in leaves of *B. pendula* and needles of *P. sylvestris* showed that the closer to the object of pollution it significantly decreases the range of 1500 m ($P = 0,0462$) and 2000 m ($P = 0,0364$). Near the plant, at a distance of 500–1000 m, the chlorophyll content reaches its maximum values.

Thus, there is a natural depression in the content of pigments of photosynthesis in the leaves of *B.pendula* and needles of *P.sylvestris*, caused by the influence of gas-dust emissions of the plant, which increases as you get closer to the object. The most sensitive to contaminant exposure is the photosynthetic apparatus. There is a tendency to reduction of content of all types of photosynthetic pigments. The high chlorophyll content in leaves of *Betula pendula* at a distance of 500–1000m is probably due to the adaptation to the lack of solar radiation due to heavy dust the surface of the leaves. This could indicate a compensatory mechanism aimed at reducing negative impacts of pollution.

ASSESSMENT OF ENVIRONMENTAL AWARENESS OF THE POPULATION ABOUT THE PARASITOLOGICAL SITUATION IN THE CITY

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The paper assesses the awareness of the city's population in relation to the ecological and parasitological situation in the distribution of acarines in rest areas.

Keywords: ticks, acarines, tick-borne infections, environmental awareness.