ABSTRACT

Avian influenza is a highly contagious infection caused by viruses of the family Orthomyxoviridae, genus Influenzavirus A influenza viruses are the only family Orthomyxovirus whose ability to infect birds was established. Type A avian influenza subtypes H5 and H7 is a disease causing a high infectiousness "classic avian influenza" and must be announced mandatory. International express is "Hoch Pathoener Aviarer Influenza (HPAI).

Influenza viruses are able to evolve so much by genetic mutations that they can not be recognized by the immune system. Newly emerging influenza viruses have the advantage of multiplying within the immune population, that is partially immune.

The spread of influenza, plays an important role waterfowl. They do not înbolnăvesc, but eliminate a large amount of influenza virus through droppings. Waterfowl is thus a reservoir of pathogens. Regarding infections with subtypes H1 and H3 influenza reservoir of pathogens is pig house.

Susceptible to influenza are generally birds like duck, rooster, turkey, goose, guinea fowl, quail, pheasant, dove, swallow the sea gulls, swan, crow, heron, sparrow, etc.. and many mammals such as horse, pig, man, seal, monkey, dog, cow, etc.. Influenza viruses have a specific Composition. The turkey pathogen attacks and lower respiratory tract.

A source of infection is through contact with infected animals hidden feces contaminated with contaminated equipment (eg, straw spreaders car, loading ramp, etc..) Or contaminated air. The clinical picture of influenza infection is acute or preacut. In general, young animals are more pronounced symptoms and higher mortality. Morbidity reached almost 100% with a mortality rate of 10 to 90%. Lying dead animals piled on litter.

Duration of disease is 2 to 4 weeks. The general condition of animals is strongly affected, leading to abnormal orientation and înfoierea feathers. Sinusitis are very swollen cavities bilaterally (head of owl), many animals have difficulty in breathing and turning the air searching. The shelter is strong strănuturi hear. The air bag ruptures formed a cap on the body and in extreme cases the node covers the entire body. Food consumption is reduced by up to 20% just a few hours. And water consumption is reduced by up to 50%.

To combat disease outbreaks in birds diagnosed, it is necessary to kill the entire population and conducting rigorous disinfection general decline in shelters, slaughterhouses, and now the recovery of organic waste.

To protect the human population against avian influenza virus contamination is essential veterinary hygiene compliance throughout the farming, production and processing of poultry products. Worldwide, was devised preparation of avian H5N1 vaccine type, but WHO considers that in the event of an avian flu pandemic would not be possible were sufficiently vaccine production, even for the people of Europe. Therefore, it is considered that the protection of birds and humans from avian influenza to be conducted primarily by general protection measures, non-specific. The remote transmission of these viruses is an important migratory wild birds, which should not come into contact with poultry or with feed or water for them. It is especially important for poultry to be kept in enclosed spaces where wild birds have access. Aceastra measures should be applied primarily in villages located in migration corridors of wild aquatic birds. In Romania there are two large black bird migration to the shore: the north (especially in the Baltic Sea) and south (the Nile Delta, Dakkar and Africa) to Delta or other meadows in the south. From the North (Baltic Sea), but also possibly to the east (Caspian) migration of birds with avian flu threatens Romania's territory and south of West Nile encephalitis virus, which occurs more frequently, being sent by mosquitoes (in animals and humans).

Transmission of influenza viruses in other ways and especially through the egg, although it seems possible, has not yet been found under natural conditions. Heat treatment of meat and eggs preclude human infection by this route, and wash with soap and warm water and hand generally contaminated areas, and use of antiseptics and disinfectants usual, ensures the virus within a few minutes.

Avian influenza reappeared in 2005 in Romania on 7 octombire non-business system, in households in an area highly exposed to risk, the Danube Delta. In the winter of 2005-2006 (October-April), the disease has spread to 53 outbreaks in nine counties in the Southeast of the country. A common feature of these counties was that all were placed in a high risk area with many lakes and ponds in the vicinity of the Danube Delta and Black Sea.

Avian influenza virus was isolated from 283 poultry, mainly chickens and turkeys. All 180 outbreaks were caused by High pathogenic avian influenza virus H5N1.

Avian influenza virus has been isolated in the wild of wild birds 24: 14 swans, wild geese 4, 1 Moorhen, 1 wood pigeon, 2 Coot, 1 BITLAN and 1 owl.

The introduction of avian influenza in bird populations in Romania can cause serious production losses to poultry industry, trade in live poultry may be dangerous and some products from them and also can affect costs for eggs and poultry meat, bringing financial damage to consumers.

Due to extremely high percentage of mortality (almost 100%), the disease has great economic importance, but also health, because it is considered a zoonosis. However, known cases of human infection with the virus "animals" are less reported. Thus, in 1997, were reported in Hong Kong, human illness, even death (6 cases) avian influenza virus (H5N1), which required all slaughter and destruction of poultry (Perdue and col., 2000).

In 2005, the 95 people infected died 41 - or 43 percent. In 2006 people were infected and 73 died from 47 to 64 percent. Some have interpreted this result as meaning that the virus could become more dangerous to human life.

It is not known but really that is the death rate from infection with H5N1. It seems to be about around 50 percent, which is huge, but is likely to be lower in reality, because it might some of those who were infected and had milder to not have gone to doctors.

Either way, however, the situation does not sound too good. Avian post-World War between 1918 and 1919 killed between 50 and 100 million people. Mortality rate of influenza virus that caused quite varied, from 10 percent among U.S. and British troops to 20 percent among Indian and to over 33 percent in Labrador and Alaska. It is assumed that the mortality rate from infection with avian influenza would vary a lot depending on various factors such as geographical area. In New Caledonia, Western-Pacific Regional Conference of the World Health Organization, public health officials representing over 20 countries met to analyze and find solutions to prevent the epidemic of influenza and fever epidemics by monitoring certain other expansion. We all agreed that a newly developed avian influenza subtype, influenza A (H5N1), has only a tiny genetic step to go before it will become transmissible between humans. If this mutation occurs, it is very possible to assist the most powerless epidemic in history. The H5N1 virus is the biggest cause for concern at this time, although there is some time, only recently declassified mass illness among bird populations, and he is more exposed than ever to deadly virus.

Avian influenza is an infectious disease of birds (hence the name bird flu), caused by mutation of type A influenza virus. Outbreaks of serious forms have been caused by H5 and H7 subtypes, but H5N1 is but one feature, for that is changing rapidly and tends to acquire genes from other viruses, seriously affecting people. H5N1 belongs to the same family of pathogens responsible

for Spanish flu, which killed 40 million people. To remove the danger, were killed 1.5 million chickens, representing the entire population of birds at that time. In 1999, in Hong Kong were infected two children, who were subsequently recovered and in 2003 became ill a couple of Hong Kong who traveled to China. One of them recovered, the other died. In 2003, the disease was reported in the case of 80 farmers in the Netherlands. Moreover, in the Netherlands were reported last year 241 outbreaks caused by H7N7 avian influenza virus.

Worldwide economic losses caused by avian influenza are enormous, which led the OIE to include the disease in a strict monitoring program. During the epidemic of Pensylvania-USA (1983/1984), to combat the disease have been culled and destroyed about 17 million poultry, worth about 350 million U.S. dollars, in the episode in Italy (1999/2000) was necessary to kill and destruction of 14 million birds, worth 200 million dollars., in 2002 Chile had a large number of birds died and 12,000 birds were slaughtered, the damage being estimated at over 25 million dollars, and the last episode of the Netherlands in 2003 have been neutralized culled and 30 million poultry, worth 750 million dollars. Euthanasia as a large number of birds in a very short time and without the risk of spread of diseases, has raised particular technical problems, requiring the design and installation methods are particularly complex and costly. Very large economic losses resulting from the interruption and economic links during implementation of quarantine measures epizootic. In many cases, losses due to the influence can not be predicted, may arise because a lot of other factors. These include a huge biological variety (plasticity) of strains, associated infections, stress, age and sex of birds, factors that may influence morbidity and mortality from negligible to almost 100%.

Given that to date, all wild birds has been isolated from the H5N1 bird flu virus in highly pathogenic variant, were either in phase one clinical influenza disease manifests either in agony or death, and that that these birds may be encountered infection low pathogenic variant virus can be issued on these assumptions about mode of transmission of the infectious agent:
1. Wild birds are the natural reservoir of low pathogenic avian influenza viruses (LPAI) (subtype H5, H7 and others) are the source of infection of poultry with this class of viruses. Following the change produced by adaptation of these viruses in poultry bodies appeared highly pathogenic variants (HPAI) subtype of that, passing from poultry to wild - if the latter come into contact with affected herds. Wild birds infected with HPAI viruses expressing disease and die, but can transmit the highly pathogenic variant virus further, other domestic or wild birds, small range (because not survive for long enough to fly long distances).

We can consider that wild birds may be carriers of highly pathogenic avian influenza virus, sometimes showing a natural resistance to infection with them. Thus, even if they are carriers of a viral subtype HPAI, they do not express symptoms and can survive long enough to travel long distances long enough to carry the virus in areas where poultry flocks are sick (from where they contracted the infection) in areas where no such bird. This hypothesis is based on the example situation where avian products from Qinghai Lake reserve, illness wild birds in a reserve located at distance from any actual poultry with HPAI, could be explained only by the transport of wild birds carrying the virus pathogen resistant, which flew long distances, without clinical signs manifest.

The second hypothesis, based on logical inferences are contradictory, but perfectly plausible if considered separately. The first assumption is perfectly explained by the specific epidemiological data obtained to date, and the lack of any evidence of HPAI virus subtype isolation from clinically healthy wild birds, the second hypothesis is also plausible because of the situation made in China, the Qinghai Lake.

Both assumptions are partially supported by the results of experimental studies, so that might be considered "rules" to express the pathogenicity of these viruses in wild birds is extremely variable both in time and depending on factors yet unknown. The investigations followed some diseased wild birds (infected with highly pathogenic form of the virus) and ducks, pigeons and sparrows, however, reveals a relative resistance to poultry further demonstrated by evidence of viral replication somewhat restricted.

The book is written in ten chapters and is structured in two parts. The first part (chapter I, II and III) summarizes the main bibliographic database of literature regarding the bird flu and is "current state of knowledge", and the second part (chapter IV, V, VI, VII, VIII and IX) refer to their research. Each chapter in Part II of the thesis has covered the material and working methods, results obtained and discuss their conclusions in part, except the head. IX outlines the monitoring and prevention of avian influenza in the specific conditions in the Danube Delta. The head. X 36 final conclusions are summarized the main points drawn from the investigations.

The paper exposed 41 tables and 162 figures, and bibliography includes 1162 titles. The first part of the paper is a synthesis of the literature relating to avian influenza, with emphasis on etiology, epidemiology, diagnosis, clinical and pathological aspects and the progress worldwide of the scientific research undertaken by the action of virus on the body.

The head. I presented data are currently available knowledge about the history, prevalence and economic importance of bird flu. Head. II deals with etiology, epidemiology and pathogenesis

of avian influenza. Have been reviewed, morphological and antigenic structure, replication, pathogenicity, virus resistance and pathogenesis, responsiveness and sources of infection. Head. III presents the clinical symptoms, macro and microscopic lesions, diagnosis issues in avian influenza prevention and control.

The premises from which it started in conducting their own research was to highlight some features of epidemiological aspects, clinical, lesion, diagnosis and surveillance strategy and prevention of avian influenza in terms of the Danube Delta. As part of its research into six chapters followed aspects epidemiological investigations of avian influenza outbreaks in Tulcea County in the period 2005 - 2007 (chapter IV), clinical apecte domestic and wild birds (chapter V), and microscopic aspects lezonale MACOR (chapter VI), the diagnostic value of serological and virological tests (chapter VII and VIII). The head. IX is the strategy of surveillance and prevention of avian influenza in terms of the Danube Delta. The head. X are summarized the final conclusions drawn from epidemiological research, clinical and pathological diagnosis

In epidemiological research, clinical and laboratory morphopathological performed in 11 outbreaks of bird flu in Tulcea County in the period 2005 to 2007, the result that:

- Evolution and outbreaks of avian influenza in the county of Tulcea is closely related to the migration routes of wild birds, weather conditions, food and shelter areas, extensive system of poultry farming water (especially palmipedele), quasi-domestic species ("junction") and poultry with wild birds living together.

- Lack of occurrence of clusters in Tulcea County, can be interpreted as a result of the fact that in the county, even within the Danube Delta, the disease has played by land, through human or other vectors, but only by air being spread by wild birds.

- Using the evolution of avian influenza outbreaks in poultry, we appreciate and better understand migration of wild birds, which can help us in making future monitoring programs and to fight against those diseases transmitted by birds wild.

- Route of infection was a direct contact with infected migratory birds through habitat and an indirect (gloss of water that have stopped migrating wild birds infected).

- Unlike domestic birds, wild birds typically do not show symptoms of disease, but may be a permanent source of infection in areas etinse the world.

- Mild winters, high density and agglomerations of birds are factors favoring the emergence and dissemination of disease in wild birds.

- Mortality decreased over time with outbreaks of avian influenza. The outbreak started in the first place Ceamurlia bottom, in 2005 mortality was 60.45% and the last outbreak in 2006 instead. Valley Nucarilor mortality decreased to 13.41%.
- 2377492 were clinically supervised poultry (1703027 chickens, 100,531 turkeys, guinea fowl 3693, 182,978 ducks, 382,506 geese, quail 4401, 379 pigeons, pheasants and 2 ostriches 2) were clinical signs of disease in 410 birds of which: 359 chickens, 28 turkeys, 15 ducks and 8 geese.
- Symptoms of disease vary depending on the species of bird, age, route of transmission, pathogenicity and viral strain, development of intercurrent diseases, immune status, system growth, environmental factors;
- The incubation period varied from several hours to several days, more than a week;
- Clinical disease manifested by supraacute form, acute respiratory, digestive or nervous;
- The main clinical signs were observed in hens: the developments supraacute sudden death without clinical signs or severe depression, horiplumație, loss of appetite, fatigue general adinamie and death within hours. in acute forms of disease were most common, were observed: general feeling depressed, horiplumație, loss of appetite, polydipsia, adimanie, head and neck edema, cyanosis and swelling ridge and bărbițelor, conjunctival congestion and hypersecretion, diffuse bleeding , bruising and petechiae in the legs, crest and bărbițelor. Respiratory signs: sneezing, coughing, snotty jetaj abundant, dyspnea, tracheal rales. Initially green then white watery diarrhea, indigestion and drain aqueous ingluvială the beak. Signs of nerve: incoordonare, sterno-abdominal lie flat today, ataxia, torticollis, opistotonus, paralysis and tremors. Also observed sharp decrease of egg laying and production or shelled, soft skin.
- Clinical symptoms of turkeys, quails, guinea fowl and other domestic fowls were similar to those described in chickens but could be expressed in a longer development period with several days being recorded in addition to a more obvious inflammation extended development sinusurilor.Aceeşi disease was encountered in web-footed, where mortality rates were lower than in domestic chickens and clinical manifestations were less pronounced;
- The Mute Swan in the case of avian influenza outbreak in Maliuc mortality rate was 27.8%, 19.6% and morbidity rate of 70.5% lethal. Clinic has been characterized by rapidly evolving, the main clinical signs were the nerve were affected in particular juvenile birds.
- From 1295 pathologoanatomic samples examined 611 samples from poultry samples from 684 domestic and wild birds. If 77.57% of poultry samples from chickens proivin, 9.49% from geese,

ducks of 8.51%, 1.63% of samples were collected from guinea, 1.30% from turkeys, quails and 0.65% from 0.81% of the pigeons.

- Lesions vary depending on the evolving form of the disease, species of birds affected and age. To evolving disease lesions were observed failure, bleeding or hemoragico-necrotic.
- In cases caused by highly pathogenic strains that exitusul quickly intervened, pato-picture is nesugestiv. The changes generally have a character bleeding from severe sepsis.
- In the acute form of chicken these lesions were found: cyanosis and swelling crest and chan, conjunctivitis, subcutaneous tissue infiltration of the head and neck injuries by type of bleeding on seroasele cavity toraco-abdominal fat in the heart and organs .
- Mild forms of the disease is characterized by bluetongue sinusitis, sero-fibrin or fibrin, bold air bags with fibrin exudate, pertonite bluetongue, fibrin and / or yolk, enter mules and / or fibrin.
- The Mute Swan was found following lesions: beak cyanosis, haemorrhagic diathesis, haemorrhagic or haemorrhagic enteritis climbing, hemorrhagic pancreatitis, bleeding in the glandular stomach, pericardium, endocardium, Epicardium and adjacent tissues, the meninges and cerebellum.
- Histopathological aspects seen in 26 samples of central nervous tissue, spleen, liver, kidney, myocardium, lung and skin tissue differ depending on disease progress, tracking the virus and bird species affected.
- From the histological point of view, avian influenza is characterized by vascular abnormalities that lead to the formation of edema, hemorrhage and infiltration perivasculară, especially in the myocardium, spleen, lungs, brain, pancreas and caruncule. The samples from chickens with acute form of disease were observed in necrotic foci in the lungs, liver and kidney. In the brain were observed gliozã, vascular proliferation and neuronal degeneration. Its most prominent microscopic lesions of encephalomyelitis necrotic degenerative nature, swelling and bleeding in the central nervous system, myocardial necrosis and myocarditis.
- Morphopathological and histological aspects seen in turkeys, ducks and geese are similar to those described in chickens, but may be less pronounced (less severe) or may be absent.
- The analysis of epidemiological data, clinical signs and lesions is clear that disease palmipedele are harder, longer incubation period, expressed less internal injuries and less intensity;
- Of 792 samples reacted positive serological ELISA test for fowls, 82 samples were positive by agar gel immunodiffusion and 19 of these reacted positively to the haemagglutination inhibition

reaction, but only 17 samples were confirmed by virological examination (PCR). So, a percentage of 2.1% of the total sample was confirmed positive ELISA test.

- If palmipedelor and wild birds in total 3317 positive samples from ELISA test on agar gel immunodiffusion only 168 were positive and haemagglutination inhibition reaction were 25 samples reacted positively. Since they were confirmed by PCR only 6 samples, so a rate of 0.18% of the samples reacted positively to ELISA.
- Compared with test ELISA immunoassay tests and test agar gel immunodiffusion, haemagglutination inhibition reaction is specific and sensitive and can be used in serological diagnosis of avian influenza in poultry.
- The serological tests used in diagnosis of influenza aviarediferă depending on the species of birds from coming samples.
- Of 13,618 samples analyzed by rapid test imunocromatografic were obtained 60 positive results for avian influenza, which represents 0.44% of total samples analyzed. Quick Test is a test imunocromatografic indicative, but may be used in diagnosis of avian influenza as from anywhere in field conditions, is economical and can eliminate negative samples.
- Of 104 samples analyzed by virological test Real - Time PCR, 26 samples were positive for avian influenza, which is a percentage of 25%. Diagnostic value of RT-PCR for avian influenza is high (25%) and the test has the same fidelity to both domestic and wild birds.
- Identification of Matrix protein specific to avian influenza genome using specific primers to amplify the gene regions for polymerase chain reaction in real time is certainly molecular diagnosis for avian influenza in poultry.
- The fact that some households palmipedele of avian influenza that has evolved not become sick or have clinical signs is due certainly higher incubation period, duration of disease progression longer respond rapidly to veterinary authorities, which by measures of killing all poultry in localities where the disease was no longer allowed diagnosis or morphopathological clinical manifestation of disease;
- Prevention of avian influenza in Tulcea County, in particular in the Danube Delta can be achieved by biosecurity measures and regionalization easily controlled by natural borders.
- Maybe we should reconsider and attitude toward other species of wild or domestic animals-including humans-that may be involved in the emergence of a mutant virus with high pathogenicity for humans and our actions and by correlating the evolution of different types of

- Mortality decreased over time with outbreaks of avian influenza. The outbreak started in the first place Ceamurlia bottom, in 2005 mortality was 60.45% and the last outbreak in 2006 instead. Valley Nucarilor mortality decreased to 13.41%.
- 2377492 were clinically supervised poultry (1703027 chickens, 100,531 turkeys, guinea fowl 3693, 182,978 ducks, 382,506 geese, quail 4401, 379 pigeons, pheasants and 2 ostriches 2) were clinical signs of disease in 410 birds of which: 359 chickens, 28 turkeys, 15 ducks and 8 geese.
- Symptoms of disease vary depending on the species of bird, age, route of transmission, pathogenicity and viral strain, development of intercurrent diseases, immune status, system growth, environmental factors;
- The incubation period varied from several hours to several days, more than a week;
- Clinical disease manifested by supraacute form, acute respiratory, digestive or nervous;
- The main clinical signs were observed in hens: the developments supraacute sudden death without clinical signs or severe depression, horiplumație, loss of appetite, fatigue general adinamie and death within hours. in acute forms of disease were most common, were observed: general feeling depressed, horiplumație, loss of appetite, polydipsia, adimanie, head and neck edema, cyanosis and swelling ridge and bărbițelor, conjunctival congestion and hypersecretion, diffuse bleeding , bruising and petechiae in the legs, crest and bărbițelor. Respiratory signs: sneezing, coughing, snotty jetaj abundant, dyspnea, tracheal rales. Initially green then white watery diarrhea, indigestion and drain aqueous ingluvială the beak. Signs of nerve: incoordonare, sterno-abdominal lie flat today, ataxia, torticollis, opistotonus, paralysis and tremors. Also observed sharp decrease of egg laying and production or shelled, soft skin.
- Clinical symptoms of turkeys, quails, guinea fowl and other domestic fowls were similar to those described in chickens but could be expressed in a longer development period with several days being recorded in addition to a more obvious inflammation extended development sinusurilor.Aceeşi disease was encountered in web-footed, where mortality rates were lower than in domestic chickens and clinical manifestations were less pronounced;
- The Mute Swan in the case of avian influenza outbreak in Maliuc mortality rate was 27.8%, 19.6% and morbidity rate of 70.5% lethal. Clinic has been characterized by rapidly evolving, the main clinical signs were the nerve were affected in particular juvenile birds.
- From 1295 pathologoanatomic samples examined 611 samples from poultry samples from 684 domestic and wild birds. If 77.57% of poultry samples from chickens proivin, 9.49% from geese,