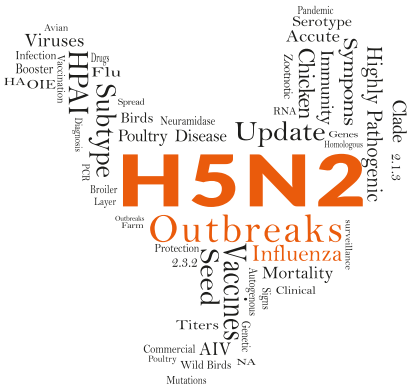
ADDCON XL forte vs. Influenza

The *Orthomyxoviridae* family includes enveloped viruses causing significant diseases in animals and humans. These viruses can also cause Influenza, or flu, a synonym that is accepted for the disease. The most important viruses from this family are Influenza viruses of type A, B, and C.

Avian Influenza is a highly contagious poultry disease caused by a virus Influenza virus type A, H5N2 and H7N1 antigenic structure. In nature Low and Highly pathogenic strains are present. The main characteristic is the appearance of hemorrhagic disease with the symptoms such as apathy, dyspnea, edema and cyanosis of the head and diarrhea.

Swine Influenza is a contagious disease with an acute course, caused by Influenza virus type A and C, H1N1 and H3N2 antigenic structure. The main characteristics are respiratory disorders in the form of catarrhal inflammation of the epithelium of the respiratory tract, difficult and irregular breathing and strong coughing.



Sensitivity (survival) of virus

Viruses that cause disease in birds are more resistant. In nature fresh water is an ideal medium to preserve (survive) and transmit the virus. In cold water for several months. In very dry feces for two days. They are sensitive to fat solvents and disinfectants.

Transmission of virus

The main reservoirs of the virus are wild migratory waterfowl. They spread the virus over long distances (up to thousands of kilometers). Those birds show no symptoms of the disease but excrete the virus in their feces for weeks. Other reservoirs are pigs.

Infection of domestic birds/pigs

Transmission in susceptible birds is direct infection by the fecal-oral route. Vectors are feed, drinking water, equipment, clothes, vehicles, contaminated eggs in the incubator stations, pigs, humans, rodents, cats, wild cats, marine mammals. Chickens and turkeys are the most receptive. Transmission in sensitive pigs is via aerosol, droplet and feces.

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Control

There is no therapy in poultry (eradication of the disease by culling the sick animals). The vaccine strains provide partial protection but is not always allowed.

There is no specific therapy in pigs to date (clean water and quality feed, dry and clean mat, without dust). Sometimes use of inactivated vaccine.

Good biosecurity measures and management of all critical points in the poultry/pig farm/houses are one of the main tools to control Influenza – which include:

- Dry cleaning
- Wet cleaning (35-55 bar pressure)
- Disinfection
- Restriction for vehicles/personal entering farm
- Prevention of the contact with wild birds/animals
- Feed/Water sanitation
- Good environnemental conditions (ventilations, light, reduced stress)

Due to possible connection with outside contaminated waters, the quality of the drinking water should be checked regularly for presence of pathogenic microorganisms (bacteria, viruses, moulds and yeasts).

To control pathogenic microorganisms and biofilm inside the pipes, pH of the water in all parts of the drinking line (especially at the end of the line, in last nipple) should be 4.5.

Anti-viral impact of ADDCON XL forte

ADDCON's 3rd generation liquid acidifier, ADDCON XL forte, designed to inhibit pathogenic Gram-negative, Gram-positive bacteria and moulds as well as biofilm control in drinking water, showed the potential to control some viruses as well.

The efficiency of the ADDCON XL forte was tested in two concentrations of 0.1% and 0.05% against Influenza virus type A/H3N2/ssRNA/Enveloped, using tap water.

To achieve reproducibility, virus and each concentration of ADDCON XL forte were tested in 4 replicates, and the results represent the mean value after 24 h of incubation.

Table 1:
ADDCON XL forte effect against Influenza virus, NIVS Belgrade, 2022

Influenza virus type A/H3N2/ssRNA/ENVELOPED

Exposure time	0		30 min		60 min		24 h	
XLF concentration	0	0	0.05%	0.1%	0.05%	0.1%	0.05%	0.1%
Virus titer (log10/mL)	**5.5**	**5.5**	**3**	**neg**	**3.25**	**neg**	**neg**	**neg**
Water pH	7.5	7.5	4.4	4.1	4.3	3.9	4.3	3.9
Virus titer reduction (log10/mL)	na	na	2.5	5.5	2.5	5.5	5.5	5.5
Cell line	MDCK							

Conclusion

Evaluation of the antiviral efficacy of ADDCON XL forte in aqueous solution showed effective reduction of the Influenza virus type A/H3N2 in both dosages. Due to active ingredients inside the product the effect against viruses is expected in all types of enveloped viruses.

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