

Bird flu threat calls for new vaccine technology

Münster, February 7th.2023. The current avian influenza outbreak among mammals in Spain shows the potential of the influenza virus for a pandemic with highly pathogenic virus strains that are also dangerous for humans. The solution to prepare for this threat lies in the development of subunit vaccines that can easily be produced on a large scale worldwide. Ciliates, protozoan microorganism, could provide the technological basis for this.

Virologists are concerned about a recent bird flu outbreak at a Spanish mink farm. They see signs that the H5N1 virus is adapting to mammals – and could therefore become more dangerous to humans. According to a report by the German Press Agency, Thomas Mettenleiter, president of the Friedrich Loeffler Institute for Animal Health, Germany, said it is possible that the pathogen could have spread from mammal to mammal during the outbreak in Spain (1).

In addition, Spanish scientist Montserrat Agüero and colleagues reported in the scientific journal Eurosurveillance in January 2023 that this was the first outbreak with large-scale transmission of the highly pathogenic avian influenza virus between mammals (2).

"If it is true that the spread has occurred among mammals, this could mean a greater risk to public health," says Christian Scheiner, CEO of biotechnology company Cilian AG.

The pandemic threat posed by viruses that spread to humans from distant animal species are known from the SARS Cov-9 virus.

"In order to be prepared for such dangers, it is important to have flu vaccines available which can be produced worldwide in straightforward fashion and already existing production plants. Vaccine production should not be based on conventional chicken egg-based production technologies as these technologies are too slow and too difficult to scale up in a pandemic", Scheiner says.

Cilian scientists are already developing an advanced protein-based subunit influenza vaccine from ciliates that could easily be produced in

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commercially available bioreactors worldwide. "We were able to present our results in animals for several influenza strains at the 8th International Influenza Meeting in Münster, Germany, and demonstrate the effectiveness in two animal models", says Dr. Marcus Hartmann, CSO of Cilian AG.

For the first time there is the potential to have a subunit vaccine available - also in an influenza pandemic – which could be produced quickly on a large scale – worldwide.

The Corona pandemic showed us that we should be prepared to produce vaccines, which can be manufactured cost-effective, world-wide and not only limited to industrialized countries", says Hartmann.

Sources:

1.) <https://www.n-tv.de/wissen/Vogelgrippe-Ausbruch-bei-Nerzen-alarmiert-Experten-article23877555.html>, Bird flu outbreak in mink alarms experts, January 29th, 2023, n-tv.de, mdi/dpa

2.) Highly pathogenic avian influenza A(H5N1) virus infection in farmed minks, Spain, October 2022, *Eurosurveillance*, Volume 28, Issue 3, January 19th 2023, Authors: Montserrat Agüero1,* , Isabella Monne2,* , Azucena Sánchez1 , Bianca Zecchin 2 , Alice Fusaro2 , María José Ruano1 , Manuel del Valle Arrojo3 , Ricardo Fernández-Antonio4 , Antonio Manuel Souto5 , Pedro Tordable5 , Julio Cañas5 , Francesco Bonfante2 , Edoardo Giussani2 , Calogero Terregino2 , Jesús Javier Orejas6

3.) <https://www.youtube.com/watch?v=JqXYLKWj4xE> In vivo efficacy of the recombinant influenza vaccine candidate CiFlu derived from the CIBEX system, Cilian AG, September 3rd 2022.