UNIVERSITY OF GDANSK

TECHNOLOGY TRANSFER OFFICE

TECHNOLOGICAL OFFER
No. 039/1/2018

INFLUENZA ANTIGEN AND VACCINE

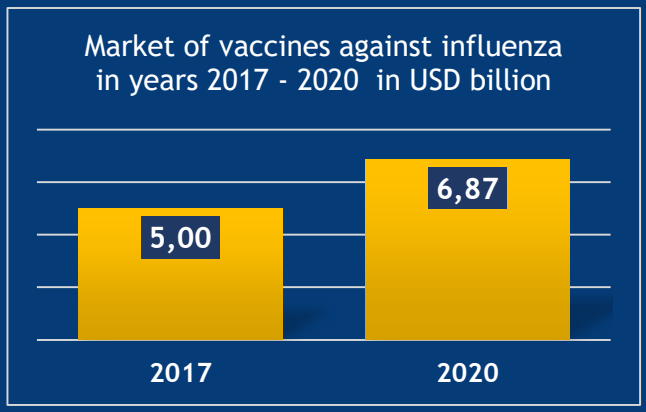
Market

Various strains of influenza virus infect from 350 million to more than 1 billion people worldwide every year. In Poland almost 750 thousand people are affected annually. Complications after influenza cause annually from 250 to 500 thousand of death cases mainly among children, elderly people and people with lower immunity.
According to the report „Global Influenza Vaccine Market & Forecast (30 Countries Market & Vaccinated Population Data) By (Pediatrics & Adult) & Vaccine Brands Analysis, estimated value of vaccines against influenza world market will significantly increase from the amount of USD 5 billion in 2017 to USD 6,87 billion in 2020.

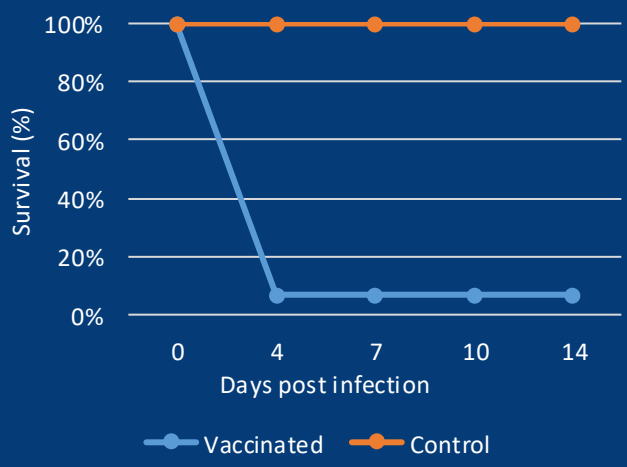
Technology

The technology offered here is a method of generation of a new antigen and the construction of a recombinant vaccine based on this antigen. The novel method relies on external production of antigen by Pichia pastoris KM 71 and SMD 1168 strain which can be used for manufacturing vaccines. Highly immunogenic antigen based on haemagglutinin is obtained, without the need of contact with the whole virus.
Vaccine thus produced does not contain virus or its parts, but only purified antigen, allowing for very high protection with minimal risk. Moreover, manufacturing method is both simple and inexpensive, compared to currently existing solutions, allowing for rapid production of vaccine against new virus strains isolated during a given season.
The antigen can be also utilised in Western Blot and ELISA tests.

Influenza vaccines - Market Analysis and Forecasts to 2020



Average survival rate of chickens immunized with H5DHdelHis6 protein compared to non-immunized control group.



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Technology highlights

1. External production of antigen by Pichia pastoris KM 71 and SMD 1168 strains.
2. New method of manufacturing new antigen and vaccine for the production of only purified antigen without virus or its fragments.
3. Numerous applications of new antigen, including vaccination and diagnostics (WB and ELISA tests).
4. New method is simple and inexpensive and allows for rapid production of vaccine against new virus strains isolated during a given season.

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Commercialization opportunities

- Licensing agreement
- Transfer of ownership
- Spin off

IP Status

The invention was submitted for patenting according to Polish (P.406631) and international (PCT/PL2014/000148) procedures.

Implementation progress

TRL 4
Technology validated in laboratory conditions

Summary

Currently influenza virus can be divided into three groups: A, B or C. Group A is commonly found in humans, pigs, horses and birds, with types B and C specific to humans. While the strain C causes only local disease, strains A and B are capable of causing epidemic or pandemic spread. Various strains of influenza virus infect about 5-15% of human population every year, and complications after influenza cause from 250 to 500 thousand of death cases, particularly among children, elderly people and people with lower immunity level.

Vaccinations still remain the most effective method of protection against influenza virus in order to reduce the risk of epidemic or pandemic spread.

The active substance in the offered influenza vaccine is a pure protein produced in relatively cheap system which allows for rapid production of vaccine adjusted to the new virus strain isolated during a given season.

The new technology is simple and inexpensive compared to currently existing on the market, and the antigen additionally can be used in diagnostic tests e.g. in Western Blot and ELISA.

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