

IMMUNOSENSOR FOR DETECTION OF INFLUENZA VIRUS AND METHOD OF ITS OBTAINING

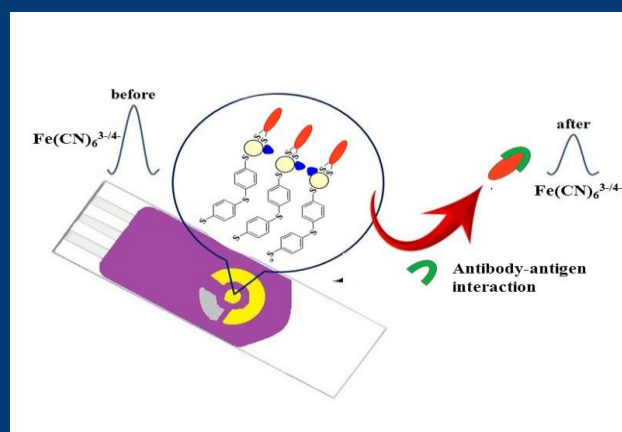
Market

Biosensors are the analytical devices used to analytes detection. They find wide usage in various applications like clinical, environmental and agricultural. There is a rising demand for them in foods industry. They are used in a variety of tasks like veterinary and agricultural applications, environmental pollution control and screening for diseases. Biosensors are efficient in cost, easy to use and highly accurate in case of analytes detection. According to the report „Global Biosensors Market - By Type, Component, Industry, Regions - Market Size, Demand Forecasts, Industry Trends and Updates (2016-2022)” the biosensors market was valued at USD 15,96 billion in 2016 and is estimated to reach USD 27,06 billion by 2022.

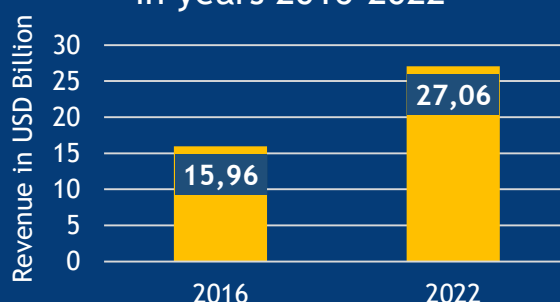
Technology

The proposed technology is an immunosensor for the detection of influenza virus, containing on the gold electrode surface a layer of thiobisbezenothiol, with a monoclonal antibody being a part of the scFv antibody, recognizing hemagglutinin (HA), and a method of its obtaining. The method of the immunosensor obtaining includes steps in which the gold electrode is cleaned, then placed in a solution of thiobisbezenothiol (TBBT), next a solution of colloidal gold is dropped on their surface, after which the monoclonal antibody or its part specifically recognizing hemagglutinin (HA) or its fragment. The murine monoclonal antibody or its fragment used in immunosensor specifically recognizes hemagglutinin (HA) from the A / swan / Poland / 305-135V08 / 2006) virus and may be used for influenza virus detection, and in particular the avian influenza H5N1 virus.

Opportunity Analysis and Forecasts to 2022



Biosensors Market in years 2016-2022



The growth for usage of biosensors is caused by appearance of latest non-medical applications, technological developments in micro-fluids, increase in number of chronic health conditions leading to rise in home diagnostics, expansion of usage in POC testing. However, there stand a few challenges for the biosensors market, for example high cost, lack of standardization, and competition from the side of dipstick tests and spectrophotometry.

Technology highlights

- 1 Proposed immunosensor is based on monoclonal antibodies and may be applied in diagnostics and treatment of infectious, autoimmunological and cancer diseases. It enables obtaining high efficiency during carrying out of diagnostic process.
- 2 Development of genetic engineering technics makes possible designing and obtaining antibodies of required qualities including monoclonal antibodies and their derivatives.

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Commercialization opportunities



- ➔ Licensing relationship
- ➔ Partnership for further studies and commercialisation
- ➔ Transfer of ownership

IP Status



The invention was submitted for patenting according to Polish P. 413262 procedures.

Implementation progress



TRL 4

Technology validated in laboratory conditions

Summary

Immunosensors are a type of biosensors. They are intended for analytes detection, based on specific interactions between antibody and antigen. They have the ability to detect animal, plant and bacterial cells as well as proteins and sugars. The main advantages of immunosensors are: simplicity of obtaining with the possibility of miniaturization, small samples required for analysis and the ability to determine antigens even in complex mixtures, e.g. in serum or leaf extract. These features allows to their numerous applications including analysis of pathogens, pesticide and micro-organisms, toxins and antibiotics. The subject of invention are: monoclonal murine antibody, recombinant fusion protein, application of antibodies, immunosensor for the detection of influenza virus and the method of immunosensor obtaining. Influenza is an infectious, viral disease of the respiratory system. Natural and the largest reservoir of influenza virus are migratory water birds which are the main source of domestic fowl infections. The influenza virus is characterized by significant genetic variability and the ability to mutation. High pathogenicity strains are known that can cause significant mortality in poultry and contribute to enormous material losses for poultry farmers. These strains usually do not occur among wild birds. They appear most frequently in poultry kept in large clusters and poor sanitary conditions. Therefore, fast, sensitive, easy to use and inexpensive methods of specific detection of different types of influenza virus and identification of strains are necessary, particularly for Poland as a major poultry producer in the European Union. Proposed immunosensor may be applied in diagnostics and treatment of cancer, autoimmunological and infectious diseases.

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