

IMMUNOGENIC REAGENTS IN DIAGNOSTICS

Market

Immunodiagnosics using radiation emission measurement is a dynamically developing branch of biomedical analysis. It results from an increasing number of analytical methods with their usage. According to the report „Esoteric Testing Market by Type (Infectious Disease, Endocrinology, Oncology, Toxicology, Immunology, Neurology), Lab Type (Independent Labs, Hospital Laboratories), Technology (Mass Spectrometry, CLIA, ELISA, PCR) - Global Forecast to 2023” the global market of esoteric tests is expected to grow from USD 20,38 Billion 2018 to USD 35,24 Billion in 2023.

Technology

Offered markers (labels and indicators) based on acridinium/acridan esters have the following unique features:

- inherence of a multiple bond in aromatic ester function;
- the fragment of molecule responsible for light emission is favourably separated from the group of atoms responsible for binding the label with biomolecules;
- appropriate configuration of substituents in molecular system, moving emission range towards longer wavelengths;
- possibility of carrying out two-stage immunochemical tests;
- chemiluminescent labels containing few chemiluminogenic fragments;
- profitable acridan-type luminogenic indicators containing substituents of differentiated electron and steric effect applied together with appropriately selected amplifiers of emission signal.

Opportunity Analysis and Forecasts to 2018



Market of laboratory esoteric tests in years 2018-2023 in USD Billion



The key factors influencing the growth of the market are:

- rising demand for early and accurate disease diagnostics, increasing prevalence of infectious diseases, growing public-private investments as well as research funding and grants for developing innovative laboratory testing procedures,
- advancements in clinical diagnostic techniques.

Technology highlights

- 1 Original chemiluminogenic labels and indicators (chemical markers) are available as pure compounds or can be bounded to antibody specific for given type of assay.
- 2 Proposed reagents make an alternative to traditional colorimetric determinations used in typical IA or ELISA tests because of their high sensitivity, small reagents amount to be used, simplicity and low costs.
- 3 The use of acridinium chemiluminogenic salts encompasses wide area of medical immunodiagnostic applications, including immunoglobulins, nucleic acid detection and environmental analysis.

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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.416813 procedures.

Implementation progress



TRL 4

Technology validated in laboratory conditions

Summary

The invention encompasses field of luminescence immunodiagnostics and concerns an ultra-sensitive quantitative analyses of biological molecules such as specific proteins, nucleic acids and others. The subjects are labels and indicators for immunodiagnostic tests which can be used in chemically bound or free form or to create new test formats not even used so far in biomedical analytics. These reagents allow for carrying out immunodiagnostic tests (direct, indirect and immune-enzymatic ones), such as CLIA and ECLIA, which make the types of modern biomedical diagnostics, where chemiluminescence detection is applied. They may be used instead of classical IA and ELISA tests. The new reagents give also opportunity to quantify other substrates like hormones, vitamins and medicines or assay their antioxidative properties. Antibody producers may use luminogenic substrates to create for order a higher-value, custom-made ready to use specific immunodiagnostic reagents, by equipping given biological substrate with the labels. Carrying out analyses with the use of new reagents requires only simple luminometer, capable of measuring in any way the intensity of emission. Proposed reagents make an alternative for traditional colorimetric indicators because of high sensitivity (femtomolar or even lower levels of analyte detection are attainable), small reagents amounts used, simplicity and low costs of preparation. Methods based on the new reagents may be widely applied not only in pharmaceutical and environmental analysis, but also in every field where conventional analytical technologies based on spectroscopic measurements (e.g. absorption, fluorescence) are not sufficiently sensitive.

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