UNIVERSITY OF GDANSK

TECHNOLOGY TRANSFER OFFICE

TECHNOLOGICAL OFFER
No. 052/1/2018

ACTIVE INGREDIENT CARRIER THAT INCREASES PERMEABILITY TO CELL NUCLEUS

Market

Nowadays, use of peptides penetrating cell membrane is part of clinical trials in the treatment of dermatitis, cancer and cardiac insufficiency. Peptidomimetic containing fluorescent moiety in sequence (5/6-carboxyflourescein) may find application in the pharmaceutical industry and in particular, to facilitate penetration into nucleus of therapeutic substances used in anticancer therapy.

According to report Drug Discovery Services Market by Process (Target Selection, Hit-to-Lead Identification, Lead Optimization), Type (Medicinal Chemistry, Biology Services, DMPK), Drug Type (Small Molecules, Biologics), Therapeutic Areas (Oncology, Neurology) - Forecast to 2022 medicine market is estimated expand to $ 14,4 billion by 2022.

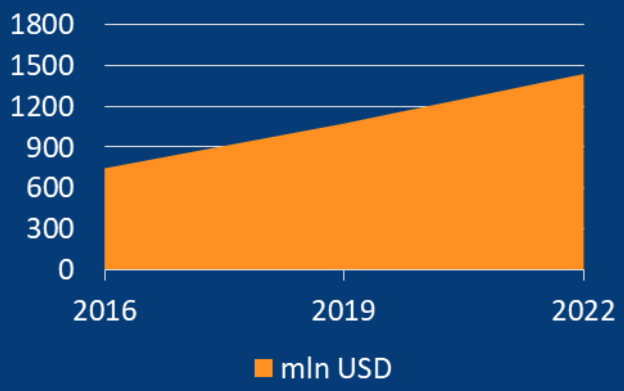
Technology

Peptidomimetic containing fluorescent moiety (5/6-carboxyflourescein) its purpose is product used in pharmaceutical industry being a component of drugs characterized by long penetration time into the cell nucleus, giving possibility of accelerating this process.

Developed method allows introduction of active substance of drug in more targeted approach, while maintaining low risk of destruction of healthy cells. Use of an innovative substance gives positive effect of accelerating process of cancer treatment.

Opportunity Analysis and Forecasts to 2022

Market of medicinal products



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Technology highlights

1. Peptidomimetic containing fluorescent moiety (5/6-carboxyflourescein) has ability of penetrating into the cell nucleus therapeutic substances used in anticancer therapy. Specificity penetrates into the nucleus by diffusion.

2. Obtained compound effectively penetrates cell nucleus and as a result is accumulated in it, does not show cyclotoxic properties.

Authors

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Commercialization opportunities

- Licensing relationship
- Transfer of ownership
- Spin off

IP Status

The invention was submitted for patenting according to Polish (P. 424583) procedures.

Implementation progress

TRL 4
Technology validated in laboratory conditions

Summary

Cell nucleus is the main and most important component of most cells, in which transcription occurs which is molecular target of many therapies. Transport of therapeutic substances to interior of the nucleus is still challenge for the world of science. To effectively deliver molecule to nucleus, it should be marked with nuclear localization sequence.
Peptidomimetic containing fluorescent moiety (5/6-carboxyflourescein) a compound that is incubated with skin cells (fibroblasts and keratinocytes) effectively penetrates into the cell nucleus and moreover, it accumulates noticeably in this organelle.
Research shows that this compound effectively explores the cell membrane of cells being tested, accumulated in cell nucleus does not show significant cytotoxicity. In addition, it has proteolytic stability. The research was carried out using human keratinocytes, as a result, strong fluorescence of cell nucleus was observed. The developed method allows introduction of active drug substance in more targeted approach while maintaining small risk of destruction of healthy cell. Use of an innovative substance gives positive effect of accelerating the process of cancer treatment.

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