NATIONAL INSTITUTE OF CHEMISTRY

Sectors: Life Sciences, Biotech

Industries: Agriculture, Phytopharmacy

TARGETED PHYTOPHARMACEUTICALS COMPOUNDS FOR BETTER PROTECTION OF AGRICULTURAL CROPS

TYPE OF COOPERATION
R&D cooperation and Technology licensing opportunities

INTELLECTUAL PROPERTY
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Co-ownership:
University of Ljubljana
and
University Tübingen

DEVELOPED BY
Department of Molecular Biology and Nano-biotechnology

MORE INFORMATION ABOUT THE INVENTION

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Our researchers have discovered an entirely new approach to agricultural crops protection against microbial pathogens. Pathogenic microbes affecting fruit and vegetables such as potatoes, soybeans, tomatoes, tobacco and vines, secrete a number of harmful molecules that allow the microbes to infect and spread along the plant. The new targeted compounds inhibit those secreted molecules, more specifically NLP proteins, which enable the spreading of microbes into the plant, thus preventing infestation of the plant. As the proteins are secreted out of the microbial cell, the inhibition is extra-cellular. This targeted approach to control pests affects only specific effector proteins that are secreted outside microbes onto the affected plants. This inhibition disables the microbes' ability to infect the plant host. The proposed mechanism presents a completely new branch of plant protection agents.

Technology

The group has identified two potent inhibitors of NLP proteins and tested their inhibitory potential on biochemical level, as well as in-vivo. We also confirmed the inhibitory effect of our new compounds on the toxic activity of the infamous potato pest, oomycete Phytophthora. The preliminary test show no toxicity on human cells.

Main advantages

- Targeted crop protection, extracellular targets meaning less chemicals;
- Broad spectrum of protection from microbes of diverse taxonomic groups;
- Preliminary results show no toxicity on humans and environment;
- Easily scalable production of the protective compounds.

Keywords

Microbe, Targeted Crop protection, NLP proteins

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