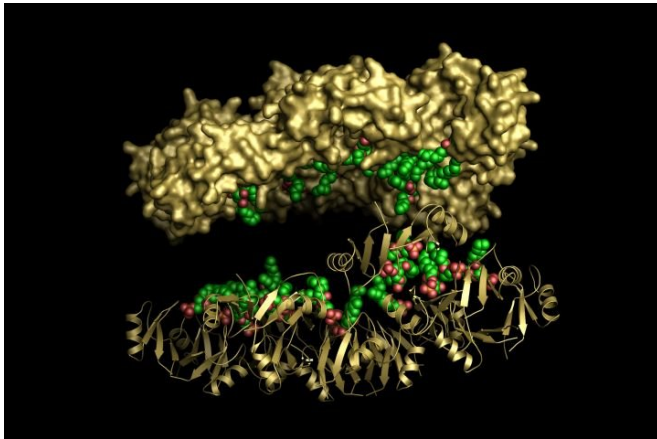


Protein found in tobacco plant has potential to fight life-threatening infectious diseases

17 May 2018



Credit: La Trobe University

A team of scientists from Melbourne's La Trobe University has shown a protein found in a tobacco plant has the potential to fight life-threatening infectious diseases.

The scientific discovery, published in the prestigious journal *Nature Communications*, could lead to the development of a new class of [antibiotics](#) and meet the challenge of rising [antibiotic resistance](#).

Dr. Mark Hulett and Dr. Marc Kvansakul from the La Trobe Institute for Molecular Science said their team had demonstrated the peptide NaD1 found in the flowers of the ornamental [tobacco plant](#) *Nicotiana glauca* has [infection](#)-busting qualities.

"Infectious diseases are a major global health problem, accounting for more than one in eight deaths and mortality rates are predicted to skyrocket over the next 30 years," Dr. Hulett said.

"Antibiotic resistance at the current rate will eventually lead to the exhaustion of effective long-term drug options. It's imperative we develop new

antibiotic treatments."

Using the power of the Australian Synchrotron, the team led by Dr. Hulett and Dr. Kvansakul have shown in atomic detail how the tobacco plant peptide can target and destroy the micro-organism responsible for a dangerous fungal infection.

The peptide perforates the parachute-like outer layer of *Candida albicans* cells, ripping them apart and causing them to explode and die.

"They act in a different way to existing antibiotics and allow us to explore new ways of fighting infections.

"It's an exciting discovery that could be harnessed to develop a new class of life-saving antimicrobial therapy to treat a range of [infectious diseases](#), including multidrug-resistant golden staph, and viral infections such as HIV, Zika virus, Dengue and Murray River Encephalitis."

In 2014, Dr. Hulett and Dr. Kvansakul found NaD1 could also be effective in killing cancer cells.

Background

Candida albicans is responsible for life-threatening infections in immune-compromised patients, including those diagnosed with cancer and transplant recipients. There are limited effective antibiotics available to treat the infection.

Nicotiana glauca flowers naturally produce potent antifungal molecules for protection against disease. The plant is related, but different, to tobacco plants grown for commercial use.

More information: Michael Järvå et al, X-ray structure of a carpet-like antimicrobial defensin–phospholipid membrane disruption complex, *Nature Communications* (2018). [DOI: 10.1038/s41467-018-04434-y](https://doi.org/10.1038/s41467-018-04434-y)

Provided by La Trobe University

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