

Breakthrough points to new drugs from nature

April 16 2014

Researchers at Griffith University's Eskitis Institute have developed a new technique for discovering natural compounds which could form the basis of novel therapeutic drugs.

The corresponding author, Professor Ronald Quinn AM said testing the new process on a marine sponge had delivered not only confirmation that the system is effective, but also a potential lead in the fight against Parkinson's disease.

"We have found a new screening method which allows us to identify novel molecules drawn from nature to test for [biological activity](#)," Professor Quinn said.

"As it happens, the first new compound we discovered through this process has demonstrated a response in Parkinson's disease cells."

Prestigious chemistry journal *Angewandte Chemie* has published the results in "NMR Fingerprints of the Drug-like Natural Product Space: Ietrochotazine A, a Chemical Probe to Study Parkinson's Disease".

The first author Dr Tanja Grkovic said the screening process involves nuclear magnetic resonance (NMR) spectroscopy; a highly sensitive instrument through which it is possible to see natural products weighing as little as 20 micrograms, which is less than a grain of salt.

"When you are searching for nature-derived molecules, the jackpot is

finding something that nobody has ever seen before and rather than just a variation on a known theme," Dr Grkovic said.

"We began the project by selecting 20 marine sponge samples randomly from Griffith's Nature Bank facility and using the NMR technique trying to visualise all the small molecules which could meet the requirements for a potential new drug.

"The idea was to look at patterns of data and identify unusual or unique sets. We followed one such pattern and isolated a natural product with a novel skeleton which has turned out to be a molecule which was completely unknown previously."

Griffith's Nature Bank is a unique drug discovery resource based on [natural products](#) found in Australia, China and Papua New Guinea. It comprises more than 45,000 samples of plants and marine invertebrates, 200,000 semi-purified fractions, 3,250 pure compounds and over 600 naturally-occurring fragments.

This NMR screening process provides a new way of searching all those natural samples stored in Nature Bank and uncovering the potential biological activity of the compounds within them.

Deputy Director of the Eskitis Institute and co-author of the paper, Associate Professor George Mellick, is a specialist researcher in neurodegenerative diseases such as Parkinson's disease. He is delighted by the research prospects this new molecule may provide.

"What is very intriguing about this novel natural product is that, while we have found it has an effect on cells sourced from a Parkinson's patient, it showed a different biological activity on cells from healthy individuals," Associate Professor Mellick said.

"This provides us with a new tool to study the fundamental biology of Parkinson's and to get a better understanding of the cellular processes involved in the development of this disease.

But the Parkinson's response is just the start.

"This new research technique opens the door to unlimited opportunities, both in terms of chemistry and biology research at Eskitis, as we continue the search for new therapies against disease," Professor Quinn said.

More information: Paper: [DOI: 10.1002/anie.201402239](https://doi.org/10.1002/anie.201402239)

Provided by Griffith University

Citation: Breakthrough points to new drugs from nature (2014, April 16) retrieved 19 April 2024 from <https://phys.org/news/2014-04-breakthrough-drugs-nature.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--