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Sea sponge could be key in fight against TB

An Australian sea sponge could hold the key to successfully combatting the deadly disease tuberculosis (TB), a new study from the Centenary Institute and the University of Sydney suggests.

Reported in the journal 'Nature Scientific Reports', the sea sponge was found to contain an exceptionally potent anti-bacterial agent able to inhibit *Mycobacterium tuberculosis*—the bacteria that causes TB in humans.

Every year more than 10 million people fall ill with TB and 1.8 million die from the disease. The new finding has the potential to open-up a new avenue of research to target what is the world's top infectious disease killer.

"TB is a major global health problem and our battle against this resilient and deadly disease is incredibly difficult," said the study's lead author, Dr Diana Quan, a researcher affiliated with the Centenary Institute and the Microbial Pathogenesis and Immunity Group led by Professor Jamie Triccas at the University of Sydney.

"Effective antibiotics for TB are difficult to develop, there are constant issues with new drug-resistant TB strains and our current treatment approach for TB is both lengthy and complicated," she said. "There is an urgent need for new drugs and antibiotics which can shorten and simplify TB treatment in order to combat this burgeoning TB pandemic."

In the reported study, a sea sponge from the Tedaniidae family was examined by Dr Quan and found to yield compounds that displayed strong inhibitory potency against TB and also importantly, against drug-resistant strains of the disease. Following analysis, the active component from the sponge was identified as bengamide B which was also found to be non-toxic when tested against human cell lines.

"This is an extremely exciting finding," said Dr Quan. "Bengamide B shows significant potential as a new class of compound for the treatment of tuberculosis and also importantly, for the treatment of drug-resistant TB which is an ever increasing obstacle to TB eradication around the world."

The sea sponge was harvested off the Queensland coast and was one of approximately 1,500 different marine samples tested by Dr Quan for possible effectiveness against TB over the course of a three year program.

"Throughout history, the vast majority of antibiotics have been sourced from nature. In the search for new TB drugs, the marine environment offers a promising and largely untapped source of potential targets due to its amazingly potent biodiversity," said Dr Quan.

[ENDS]

PUBLICATION: Bengamides display potent activity against drug-resistant *Mycobacterium tuberculosis*.

URL: www.nature.com/articles/s41598-019-50748-2

IMAGES:

Dr Quan (3 images): Credit for all: The Centenary Institute.

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Marine samples being collected (2 images): Credit for both: Australian Institute of Marine Science.

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Marine samples being collected (1 image): Credit: Eric Matson - Australian Institute of Marine Science.

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