

# Marine compound discovery shows promise of improved drug treatment for COPD patients

February 28 2013

---

(Medical Xpress)—Pharmacy researchers at the University of Florida have isolated a new marine compound they believe may lead to improved drug therapies for pulmonary diseases by inhibiting their progression rather than managing their symptoms.

Known as symplostatin 5, the compound was extracted from blue-green algae collected in Cetti Bay, Guam, by Hendrik Luesch, the Frank A. Duckworth eminent scholar chair in drug research and development. The new compound targets an enzyme overactive in [chronic obstructive pulmonary disease](#), asthma, acute [respiratory distress syndrome](#), [cystic fibrosis](#) and other diseases.

"These compounds can potentially offer a new opportunity to treat COPD and related diseases in a different way and possibly more effectively," Luesch said.

COPD is the fourth leading cause of death in the United States, killing more than 120,000 Americans each year, according to the [Centers for Disease Control and Prevention](#). Current therapies alleviate symptoms of COPD, but do not slow disease progression. Only one drug, Sivelestat, targets the enzyme, called elastase, but its marginal effects are delaying further clinical approvals, Luesch said.

Elastase is an enzyme that breaks down a variety of proteins. In COPD,

where there is excessive enzyme activity, this contributes in part to lung damage and inflammation. The effects of elastase on these processes contribute to the irreversible destruction of [lung tissues](#) typically observed in COPD patients.

Lilibeth Salvador, a researcher in Luesch's Marine Natural Products lab, led the investigation published Feb. 14 in the [Journal of Medicinal Chemistry](#). The study revealed that the blue-green algae prevented elastase-driven changes in bronchial [connective tissue cells](#). She is also presenting the findings at the college's 26th Annual Research Showcase on Thursday.

Salvador, who will earn her doctorate from the UF College of Pharmacy in May, uses a soccer analogy to describe how the compound may prove to be a more effective drug therapy.

"By inhibiting this enzyme, we prevent one of the key players in the initiation of COPD. So, we prevent the ball from being relayed on to other players involved in the progression of the disease," she said.

[Blue-green algae](#) investigated by the Luesch lab contain naturally occurring molecules essential for survival in a harsh marine environment. These ingredients are what Luesch believes will lead to a new source of drugs that he hopes to develop for improved treatments for patients suffering from COPD and a host of other diseases.

From his marine samples collected in the Atlantic side of the Florida Keys to as far away as Guam in the Pacific, Luesch has discovered dozens of new promising compounds. His lab has already chemically synthesized several of these natural products and designed and generated similar compounds with improved drug-like properties. Further research funding enables him to continue the drug development process. His early

studies show these marine compounds have the right stuff to begin further clinical studies for drugs to treat colorectal, prostate and metastatic breast cancer, enhance bone regeneration and slow the progression of Alzheimer's disease.

Provided by University of Florida

Citation: Marine compound discovery shows promise of improved drug treatment for COPD patients (2013, February 28) retrieved 24 April 2024 from <https://medicalxpress.com/news/2013-02-marine-compound-discovery-drug-treatment.html>

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.