

## Asthma researchers test substance from coralberry leaves

September 14 2017



The leaves of the coralberry (*Ardisia crenata*) contain the natural substance FR900359. Credit: Raphael Reher/Daniela Wenzel/Uni Bonn



The coralberry could offer new hope for asthmatics. Researchers at the University of Bonn have extracted an active pharmaceutical ingredient from its leaves to combat asthma, a widespread respiratory disease. In mice, it almost completely inhibits the characteristic contraction of the airways. The plant can be found in any well-stocked garden center. The study is published in the renowned journal *Science Translational Medicine*.

The coralberry is no outstanding horticultural beauty during most of the year. But this changes in the winter months—it forms striking, bright red berries, which make it a popular ornamental plant during the holidays. Nevertheless, the scientists involved in the study are interested in the plant for another reason—the leaves of the coralberry contain a substance designated FR900359. It could be suitable as a medication against certain diseases, despite the fact that Ardisia crenata (its botanical name) has so far been largely disregarded by science.

Researchers at the University of Bonn and collaborators have now published a study that could change this. They found that FR900359 is effective at preventing the bronchial muscles from contracting. Asthmatics regularly suffer from these pronounced contractions, preventing adequate ventilation of the lungs. The resulting shortness of breath can be life threatening.





Professor Dr. Daniela Wenzel, Alexander Seidinger, Annika Simon and Dr. Michaela Matthey (from left). Credit: Katharina Wislsperger/Ukom-UKB

## More effective than common medicines

The new compound relieves these spasms, and has a more prolonged action than the most common asthma drug, salbutamol. "However, we have so far only tested the substance in asthmatic mice," says Dr. Daniela Wenzel. Wenzel is doing research in respiratory diseases at the Institute of Physiology I at the University of Bonn and led the study.

The idea to test FR900359 came from the Institute of Pharmaceutical



Biology. There, the scientists managed to isolate and characterize the active pharmaceutical substance from the leaves of the coralberry. "This compound inhibits critical signaling molecules in our cells, the Gq proteins," explains Wenzel. Gq proteins exert key functions in many processes in the body, including control of the airway tone.



The active pharmaceutical ingredient was tested on the bronchia of mice in the study. Credit: &Raphael Reher/Daniela Wenzel/Uni Bonn



Normally, the interaction of signaling pathways induces narrowing of the airways. Inhibition of individual signaling pathways can reduce the contraction of the respiratory tract. However, this does not make it possible to completely prevent such contractions in patients with severe asthma. The contracting signals converge on Gq proteins and trigger airway spasm events. "When we inhibit the activation of Gq proteins with FR900359, we achieve a much greater effect," says Dr. Michaela Matthey from the Institute of Physiology I.

This worked exceptionally well in asthmatic mice in the study. "We were able to prevent the animals from reacting to allergens such as house dust mites with a narrowing of the bronchia," Wenzel is pleased to report. There were few side effects, as the active pharmaceutical ingredient was administered via inhalation to the <u>respiratory tract</u>, and thus only reached the systemic circulation in small quantities. However, it is not known whether the substance is suitable for use in people. Although the scientists have already demonstrated that human bronchial muscle cells and isolated human airways react in a similarly in vitro, further tests, which could take years, are required prior to human use.

**More information:** Michaela Matthey, Richard Roberts, Alexander Seidinger, Annika Simon, Ralf Schröder, Markus Kuschak, Suvi Annala, Gabriele M König, Christa E Müller, Ian P Hall, Evi Kostenis, Bernd K Fleischmann, Daniela Wenzel: Targeted inhibition of Gq signaling induces airway relaxation in mouse models of asthma; *Science Translational Medicine*; DOI: 10.1126/scitranslmed.aag2288

Provided by University of Bonn

Citation: Asthma researchers test substance from coralberry leaves (2017, September 14) retrieved 27 April 2024 from



https://medicalxpress.com/news/2017-09-asthma-substance-coralberry.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.