

Garlic oil component may form treatment to protect heart

November 16 2011

A component of garlic oil may help release protective compounds to the heart after heart attack, during cardiac surgery, or as a treatment for heart failure.

At low concentrations, [hydrogen sulfide gas](#) has been found to protect the heart from damage. However, this unstable and volatile compound has been difficult to deliver as therapy.

Now researchers at Emory University School of Medicine have turned to diallyl trisulfide, a garlic oil component, as a way to deliver the benefits of hydrogen sulfide to the heart. Their findings suggest that doctors could use diallyl trisulfide in many of the situations where researchers have proposed using hydrogen sulfide.

The data are being presented Wednesday, Nov. 16 at the [American Heart Association](#) (AHA) Scientific Sessions conference in Orlando.

"We are now performing studies with orally active drugs that release hydrogen sulfide," says David Lefer, PhD, professor of surgery at Emory University School of Medicine and director of the [Cardiothoracic Surgery](#) Research Laboratory at Emory University Hospital, Midtown. "This could avoid the need to inject sulfide-delivery drugs outside of an emergency situation."

Working with Lefer, postdoctoral fellow Benjamin Predmore blocked the coronary arteries of mice for 45 minutes, simulating a heart attack,

and gave them diallyl sulfide just before blood flow was restored. The compound reduced the proportion of damaged [heart tissue](#) in the area at risk by 61 percent, compared with untreated animals.

"Interruption of oxygen and blood flow damages mitochondria, and loss of mitochondrial integrity can lead to cell death," he says. "We see that diallyl sulfide can temporarily turn down the function of mitochondria, preserving them and lowering the production of reactive [oxygen species](#)."

Additional data on diallyl trisulfide in a mouse model of [heart failure](#) is being presented by a member of Lefer's team, postdoctoral fellow Kazuhisa Kondo Wednesday at 11:30 a.m.

Transverse aortic constriction results in enlargement of the heart and is a model of heart failure. Diallyl sulfide twice daily, given after aortic constriction, could reduce heart enlargement, Kondo found.

Also at the meeting, Lefer's team is presenting additional data on mice deficient in the enzyme that generates hydrogen sulfide.

More information: More information on abstracts here:

bit.ly/ty16hl

bit.ly/v7B6VU

Previous publication:

www.pnas.org/content/104/39/15560.full

Review describing benefits of H₂S therapies and translational avenues:

www.ncbi.nlm.nih.gov/pubmed/20628909

Provided by Emory University

Citation: Garlic oil component may form treatment to protect heart (2011, November 16)
retrieved 26 April 2024 from

<https://medicalxpress.com/news/2011-11-garlic-oil-component-treatment-heart.html>

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