

Inflammation may be key to diabetes, heart disease link

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Inflammation may be the reason high blood sugar levels damage blood vessels, raising the possibility that anti-inflammatory medications might someday be used to lower the risk of blood vessel disease in people with diabetes, according to a study presented at the American Heart Association's High Blood Pressure Research Scientific Sessions 2014.

"These findings may explain why good [blood sugar](#) control is not sufficient to avoid the development of diabetes-induced cardiovascular diseases," said Carlos F. Sánchez-Ferrer, M.D., Ph.D., study author and professor of pharmacology at the Universidad Autónoma de Madrid, Spain. "We need to find new medications focused on reducing inflammation."

Using cultured [smooth muscle cells](#) from the main human artery (aorta), researchers found:

- In the absence of inflammation, excess glucose in the culture fluid didn't enter the cells.
- When extra glucose was forced into the cells, no harm was done in the absence of inflammation.
- When the inflammation-stimulating protein interleukin-1 (IL-1) was introduced, more glucose entered the cells.
- With IL-1, the glucose entering the cells was metabolized via chemical pathways that spur escalating inflammation, overwhelming the cells' ability to counteract it.
- In the presence of the anti-inflammatory drug anakinra, which

blocks the activity of IL-1, the deleterious changes didn't occur.

"We need to reduce the inflammatory environment associated with diabetes," Sánchez-Ferrer said. "Changes in life-style, such as physical exercise and weight reduction, are important not only because they reduce blood sugar but because they reduce inflammation."

The researchers plan to test whether the effect is similar in cultured cells from the lining of blood vessels and explore the blood sugar/inflammation connection in animals.

Provided by American Heart Association

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