

Nicotine Raises Blood Sugar Levels in Lab



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SUNDAY, March 27 (HealthDay News) -- Smoking is damaging to everyone's health, but the nicotine in cigarettes may be even more deadly for people who have diabetes.

In lab experiments, researchers discovered that nicotine raised blood sugar levels, and the more nicotine that was present, the higher the blood sugar levels were. Higher blood sugar levels are linked to an increased risk of complications from diabetes, such as eye and kidney disease.

"Smoking is really harmful for diabetics. It's even more harmful to them than to a non-diabetic," said study author Xiao-Chuan Liu, an associate professor in the department of chemistry at California State Polytechnic University in Pomona. "This study should encourage diabetics to quit smoking completely, and to realize that it's the nicotine that's raising [blood sugar levels]."

For that reason, it's also important to limit the use of nicotine replacement products, such as nicotine patches, Liu said.

"If you're using them for a short period of time to quit smoking, that's OK. But, if you still have this addiction to nicotine and are using this product long-term, it will do harm. Don't use electronic cigarettes or nicotine gum for a long time. You need to stop nicotine intake," he advised.

Liu is scheduled to present his findings Sunday at an American Chemical Society meeting in Anaheim, Calif.

It was already well-established that smoking increased the risk of problems in people with diabetes, Liu said. What hasn't been clear, he said, is if there is a specific component of cigarettes that increases the risk.

To test whether or not nicotine, an addictive substance found in cigarette smoke, contributed to higher blood sugar levels, Liu and his colleagues added equal amounts of glucose (sugar) to samples of human red blood cells. They also added varying levels of nicotine to each sample of red blood cells for either one day or two days.

They then tested the hemoglobin A1C (HbA1C) levels of the samples. HbA1C is a measure of what percentage of red blood cells have glucose molecules attached to them. In diabetes management, the HbA1C -- sometimes referred to just as A1C -- test gives doctors an idea of average blood sugar levels for the past three months or so. Most people with diabetes strive for a level of 7 percent or less, based on American Diabetes Association guidelines.

The researchers found that nicotine raised HbA1C. The smallest dose increased HbA1C levels by 8.8 percent. The highest dose -- after two days of nicotine treatment -- increased blood sugar levels by 34.5 percent.

"Nicotine is a toxic substance, and our results show that nicotine caused an increase in HbA1C," said Liu. "This is important for the public to know, and for smokers to know. It's not just the cigarette smoke. If you think you can just use a nicotine replacement product indefinitely, there's still a risk, and your chances of getting complications will be a lot higher," he cautioned.

Dr. Joel Zonszein, director of the Clinical Diabetes Center at Montefiore Medical Center in New York City, said that the researchers showed that nicotine can significantly raise A1C levels in the lab, but it's important to also know if it does so in the body.

But whether or not nicotine is the specific reason that blood sugar levels are higher in smokers, he said, "Everybody -- whether they have diabetes or not -- should stop smoking. Patients with diabetes already have a much higher risk of cardiovascular disease, and smoking adds to that."

He said that using nicotine replacement products for a month or two is fine. "If nicotine replacement is used for a short period of time with smoking cessation as the goal, there's no risk. But it's not OK if someone plans to replace smoking with nicotine replacement products indefinitely," said Zonszein.

Experts note that research presented at meetings is considered preliminary until it is published in a peer-reviewed journal.

More information

For advice on quitting smoking, visit SmokeFree.gov.