

Glucosamine causes the death of pancreatic cells

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High doses or prolonged use of glucosamine causes the death of pancreatic cells and could increase the risk of developing diabetes, according to a team of researchers at Universite Laval's Faculty of Pharmacy. Details of this discovery were recently published on the website of the *Journal of Endocrinology*.

In vitro tests conducted by Professor Frédéric Picard and his team revealed that [glucosamine](#) exposure causes a significant increase in mortality in insulin-producing [pancreatic cells](#), a phenomenon tied to the development of diabetes. Cell death rate increases with glucosamine dose and exposure time. "In our experiments, we used doses five to ten times higher than that recommended by most manufacturers, or 1,500 mg/day," stressed Professor Picard. "Previous studies showed that a significant proportion of glucosamine users up the dose hoping to increase the effects," he explained.

Picard and his team have shown that glucosamine triggers a mechanism intended to lower very high blood sugar levels. However, this reaction negatively affects SIRT1, a protein critical to cell survival. A high concentration of glucosamine diminishes the level of SIRT1, leading to cell death in the tissues where this protein is abundant, such as the pancreas.

Individuals who use large amounts of glucosamine, those who consume it for long periods, and those with little SIRT1 in their cells are therefore believed to be at greater risk of developing [diabetes](#). In a number of

mammal species, SIRT1 level diminishes with age. This phenomenon has not been shown in humans but if it were the case, the elderly—who constitute the target market for glucosamine—would be even more vulnerable.

"The key point of our work is that glucosamine can have effects that are far from harmless and should be used with great caution," concluded Professor Picard.

The results obtained by Picard and his team coincide with recent studies that cast serious doubt on the effectiveness of glucosamine in treating joint problems.

Provided by Universite Laval

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