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Antidiabetic action of natural fatty acid derivatives not confirmed

A team of researchers at Sanofi and Mainz University finds no positive action of isomers of the fatty acid derivatives 5- and 9-PAHSA in diabetes models

A research consortium between the healthcare company Sanofi and Johannes Gutenberg University Mainz (JGU) investigated the antidiabetic action of certain natural fatty acids, so-called FAHFAs, which US-American scientists had reported in 2014. For some of these compounds, e.g. 5-PAHSA and 9-PAHSA, elevated levels were found in mice which overexpressed the glucose transporter Glut4. This transporter is controlled by insulin and causes the uptake of blood glucose in particular into muscle cells. It had been reported that both PAHSA isomers occur in food and are also produced by human cells. Diabetics have lower blood levels of these compounds than healthy individuals. When mice were fed with a FAHFA-enriched diet, their blood glucose levels were found to decrease and insulin was released.

These results published in a prominent journal caused a stir among scientists as they suggested a new point of attack in the fight against a widespread disease. Chemists under guidance of Professor Till Opatz from Mainz University synthesized the stereoisomers of 5- and 9-PAHSA and sent them to their colleagues at Sanofi in Frankfurt for biological testing. In some of the tests, rudimentary metabolic changes could be detected but the overall effect of the compounds was sobering: none of these molecules was able to achieve positive effects on clearly defined endpoints in metabolism.

The results of the researchers from Frankfurt and Mainz recently appeared in Cell Metabolism, a highly renowned international scientific journal. Now the German scientists hope for a constructive discussion on the discrepancy between both studies resulting in a better understanding of the disease models.

The current publication demonstrates the successful collaboration between a university and a research-active healthcare company in a highly relevant area of basic research in biomedicine. It underlines the importance of verification of scientific results and their disclosure.

Publication:
E. Pflimlin et al., Acute and repeated treatment with 5- or 9-PAHSA isomers does not improve glucose control in mice
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Further Links:
http://dx.doi.org/10.1016/j.cell.2014.09.035 - Discovery of a Class of Endogenous Mammalian Lipids with Anti-Diabetic and Anti-inflammatory Effects, Cell, 09 October 2014