Sulphated galactosylceramide

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To the Editor: In the December 2009 issue of *Diabetologia*, an article by de Mello et al. [1] and a commentary by Gill and Sattar [2] draw attention to ceramides as being associated with inflammation, which plays a role in the development of type 2 diabetes and the metabolic syndrome. In this context, some variants of ceramides are interesting too. In beta cells, ceramide is taken up and ligated with galactose by ceramide galactosyltransferase to β -galactosylceramide (GalCer) [3] and, furthermore in the Golgi apparatus, a sulphate group is linked by galactosylceramide sulfotransferase to form sulphated galactosylceramide, also called sulfatide [4]. The same process takes place in the brain and is likely to occur in the liver. Like ceramides, sulfatide is present in the blood, where its concentration is inversely correlated with insulin resistance [5]. The sulfatide level is lower in type 2 diabetic patients than in matched healthy controls [5]. Sulfatide inhibits the production of IL-6, as well as other cyto- and chemokines, both in fat cells and in peripheral leucocytes, and thus acts as an anti-inflammatory agent [6, 7]. Sulfatide has several

other beneficial properties, including a possible role in insulin secretion from pancreatic beta cells (see [8]).

Ceramide is a precursor of sulfatide; thus, high concentrations of the former might facilitate production of the latter. However, in insulin-resistant individuals, high concentrations of ceramide but low levels of sulfatide are observed. This raises the question of whether the pathway involved in sulfatide synthesis is involved in the pathogenesis of the disease.

Thus, a derivative of ceramide known as sulphated galactosylceramide or sulfatide is positively correlated with insulin sensitivity and acts as an anti-inflammatory agent by, among other things, inhibiting the production of IL-6. Lower blood concentrations of sulfatide are observed in type 2 diabetic patients.

Duality of interest The author declares that there is no duality of interest associated with this manuscript.

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