



DIABETES: THE SENSE OF SMELL IS INFLUENCED BY FRUCTOSE

Type 2 Diabetes represents a major public health problem. Between 2000 and 2013, the number of patients concerned world-wide increased by 80%. Modern dietary habits (too rich in fats and in sugars) contribute to increases in epidemics of diabetes and obesity. In particular, the consumption of an excess of fructose, a sugar that is widespread in foods of industrial origin, is one of the factors incriminated in the development of this disease.

In recent years, it has been shown that patients suffering from type 2 diabetes have reduced olfactory capacities, but the existence of a direct causal link has not yet been established. In a study published in Scientific Reports (Nature Publishing Group), researchers of the CSGA recently showed that diabetes disturbed the olfactory system at a very early stage of the disease. Their research concerns the modulation of olfaction in mice made diabetic after a diet that was enriched in fructose. Very rapidly, after 4 to 8 weeks of this diet, the animals showed signs of an early type 2 diabetes. At the same time, their olfactory abilities were negatively affected: for example, these mice are incapable of discriminating between two simple smells (a task that they carried out easily under normal conditions). Furthermore, the high fructose diet modifies the cell dynamics of the olfactory epithelium and alters the detection of odorants in the nasal cavity. The researchers conclude that early diabetic state, induced by an excess of fructose in the diet, disturbs the olfactory system at the first stages of odour perception.

These results provide major knowledge in the field of diabetes development. Since olfaction plays a major role in regulating food intake, its early alteration could aggravate diabetic phenotypes through deregulation of feeding behaviour that may in turn intensify the type 2 diabetes symptoms.

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To know more

Rivière S, Soubeyre V, Jarriault D, Molinas A, Léger-Charnay E, Desmoulins L, Grebert D, Meunier N & Grosmaître X (2016). High fructose diet inducing diabetes rapidly impacts olfactory epithelium and behavior in mice. *Scientific Reports*, 6, 34011.

Key words

Olfaction; mouse; fructose; diabetes; physiology; olfactory behaviour