

HIGH FAT HIGH SUGAR DIET : THE SALIVARY GLANDS OF RUG RATS REACT!

It is known that the mother's diet during pregnancy and breastfeeding can alter adiposity, glucose tolerance and food preferences of their progeny. In this context, diets high in fat and sugar come under close scrutiny because of their prevalence in so-called Westernised countries and their effects on public health.

The mechanisms that determine metabolic disorders in response to over-rich maternal nourishment have been studied, focusing on specific organs such as liver, brain, kidneys, etc. However, there was no previous data on the impact of such a diet on salivary glands, even though earlier studies carried out by the CSGA (Centre for Taste and Feeding Behaviour) have shown that salivary glands are sensitive to a number of food compounds (phyto-oestrogens, sweeteners) and contaminants (bisphenol A). Salivary glands play a key role in maintaining sufficient and good quality salivation, which is vital for instance in terms of oral health and taste perception of foods.

In a study funded by INRA's metaprogramme DID'IT (Diet Impacts and Determinants: Interactions and Transitions), in collaboration with INRA Nantes, researchers from the CSGA studied the effect of a maternal diet high in fat and sugar on the salivary glands of the progeny in rats. Using previously established experimental models, they showed that the salivary glands of the offspring born to female rats that were fed according to this diet contained increased amounts of heat shock proteins and proteins that control biochemical oxidation. In addition, the expression of annexin A5, a protein involved in controlling cell death and inflammation, was lower in young male rats.

This study shows that salivary glands can be affected by too rich maternal diets. The long-term consequences on oral health and salivation now require further investigation.

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To know more

Morzel M, Brignot H, Ménétrier F, Lucchi G, Paillé V, Parnet P, Nicklaus S & Canivenc-Lavier M-C (2018). Protein expression in submandibular glands of young rats is modified by a high-fat/high-sugar maternal diet. *Archives of Oral Biology*, 96, 87-95.



Keywords

Maternal diet; salivary glands; rat ; sexual dimorphism.