Variations in salivary function in a rodent model of pre-diabetes

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Diabetes is a widespread disease representing an enormous part of the total health costs. An early diagnostic could be of extremely importance both for the understanding and prevention of this pathology. Saliva is a fluid with increasing interest as a source of biomarkers for disease diagnostic and saliva protein composition changes have already been reported for diabetic individuals. However, the studies were performed after the onset of the disease and it is unknown if salivary changes are present in the early stages of development of the disease or a characteristic of overt diabetes.

Wistar rats have been selected for their glucose intolerance (GIR). GIR females were compared with Wistar females with normal glucose tolerance (control) for changes in saliva protein composition and salivary gland histology. Fasting glycemias were observed to be normal (<95 mg/dl) in GIR animals, indicating an absence of a diabetic state. However they presented an abnormal increase in glycemia after a glucose bolus.

For salivary parameters a marked increase in total protein concentration and alpha-amylase activity occurred in GIR animals, comparatively to controls. After separation of salivary proteins by SDS PAGE differences between the experimental groups for some protein bands, with apparent molecular masses ranging from 20 to 55 kDa were observed. Different expression of alphaamylase at salivary gland duct level is also apparent for pre-diabetic animals. Although preliminary, these results suggest changes in saliva occurring before the onset of diabetes, reinforcing the interest of further investigation of saliva composition for the diagnostic of pre-diabetic condition, ultimately allowing an early intervention and eventually the prevention of disease development.

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