Increased Circulating Betatrophin Concentrations in Patients with Type 2 Diabetes

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Background
Betatrophin has recently been described as a key hormone to stimulate beta-cell mass expansion in response to insulin resistance and obesity in mice.

Aim
To test the hypothesis of a betatrophin deficiency in patients with type 2 diabetes.

Material and methods
Fasting betatrophin concentrations were measured by ELISA in plasma of 27 Type 2 diabetes patients and 18 age, gender and BMI-matched non-diabetic controls. The participants were characterized by weight, height, waist-and hip circumference and ratio, blood pressure, blood lipids, P-creatinine, fP-glucose, HbA1c, fC-peptide and family history of diabetes.

Results
Plasma betatrophin concentrations were 639±66 pg/ml in controls, but approximately 40% higher in the patients with type 2 diabetes (893±80 pg/ml; P<0.05). Betatrophin concentrations correlated positively to HbA1c (Fig). In the control group, betatrophin concentrations also increased with age. All diabetes patients and controls were insulin resistant with mean insulin resistance in both groups well exceeding 2 and the insulin sensitivity being less than 50%.

Inputting fP-glucose and fC-peptide values into the HOMA2 model assessed the beta-cell function, insulin sensitivity and insulin resistance.

Conclusion
There is no obvious betatrophin deficiency to substitute in patients with Type 2 Diabetes

Correlation between betatrophin and age in non-diabetic patients (A) and HbA1c in patients with type 2 diabetes (B) and in all study participants (C).