Abstract

BACKGROUND—Vaspin was identified as an adipokine with insulin-sensitizing effects, which is predominantly secreted from visceral adipose tissue in a rat model of type 2 diabetes. We have recently shown that vaspin mRNA expression in adipose tissue is related to parameters of obesity and glucose metabolism. However, the regulation of vaspin serum concentrations in human obesity and type 2 diabetes is unknown.
OBJECTIVE AND AIM OF THE WORK— This study was designed to study the circulating level of vaspin in obesity, prediabetes and T2DM compared with healthy control subjects, illustrate the correlations between vaspin level and BMI, age, gender and metabolic parameters in those patients. And investigate the role of vaspin level in the prediction of progression of obesity into T2DM.

RESEARCH DESIGN AND METHODS— For the measurement of vaspin serum concentrations, we developed an enzyme-linked immunosorbent assay (ELISA). Using this ELISA, we assessed circulating vaspin in 79 subjects including 20 obese, 20 prediabetic or impaired glucose tolerance (IGT) and 23 with type 2 diabetes in addition to 16 healthy control subjects (NGT). The analysis included the parameters of glycemic control indices, lipid profile and anthropometric measurements (BMI). In addition, traditional anti-atherogenic ratios were calculated.

RESULTS— Vaspin serum concentrations were significantly higher in obese and prediabetic subjects. There was no difference in circulating vaspin between individuals with NGT and type 2 diabetes but elevated only in early stage of diabetes. Circulating vaspin significantly correlated with age in obese group and its level was found to be higher in obese with IGT than obese with NGT. And were significantly higher in female compared with male in obese and NGT subjects. Moreover, vaspin concentration decreased with increase duration of diabetes. The association between vaspin and lipid profile need further investigation.

CONCLUSIONS— Vaspin is a novel adipokine that has insulin sensitizing effects and its high level in these cases suggests that vaspin can play an important role in the amelioration of obesity and metabolic disorders. It may represent a compensatory mechanism associated with obesity, severe insulin resistance, and type 2 diabetes. It is hoped that the findings of the present study provide an impetus for the identification of the substrate leading to the development of antiprotease inhibitor therapy, which could facilitate the improvement of insulin sensitivity in this metabolic syndrome. Also the high level of vaspin in obesity may indicate that these obese patients may be more susceptible to develop diabetes in the future. Thus, vaspin can be used as a novel biomarker for insulin resistance syndrome.

Key words — Vaspin, Type 2 diabetes, obesity, impaired glucose tolerance.

Published in:
Hanaa Beskaless Atya Ahmed, "Vaspin Concentration in Obesity, Impaired glucose tolerance and Type 2 Diabetes", (M.Sc. thesis), Biochemistry and Molecular Biology Department– Faculty of Pharmacy – Helwan University – Cairo – Egypt (2011).

Author:

Ordered list of degrees:

- **Secondary Stage:** year 2001
- **BSc.:** Year 2006. Bachelor of Pharmaceutical Sciences; Cumulative Grade: “Excellent with Honors”, Ranked 7th, (Faculty of Pharmacy, Helwan University), May 2006.
- **MSc.:** Year 2011. Master Degree of Biochemistry & Molecular Biology “Vaspin Concentration in Obesity, Impaired glucose tolerance and Type 2 Diabetes”, (Faculty of Pharmacy, Helwan University), Nov. 2011.

Academic experience:

- **Instructor & demonstrator**, Department of Biochemistry & Molecular Biology, Faculty of Pharmacy, Helwan University, Mar. 2007 - Nov. 2011.

- Working at National Institute for Diabetes and Endocrinology "NIDE" in the field of clinical research for obtaining master degree in pharmaceutical sciences (Biochemistry&Molecular Biology), 2009.

- **Assistant lecturer of Biochemistry & Molecular Biology**, Department of Biochemistry & Molecular Biology, Faculty of Pharmacy, Helwan University, Egypt. “Since Nov. 2011”.

Research interests:

- Clinical biochemistry -Molecular biology
- Tumor markers applications -Stem cell clinical applications
Awards & Honors:

- Helwan University award as a Privileged student of the college in 2006.