Vaspin

- Visceral adipose tissue – derived serpin A12 (vaspin), also named OL-64, an adipocytokine, is structurally a member of the serine protease family.
- Serpins are the most diverse family of protease inhibitors. Their typical structural feature is the core domain composed from 3 beta-sheets and 9 alpha-helixes.
- The inhibitory activity of vaspin has not been described up to now, but its reactive site loop is typical for this proteinase family. Human Vaspin protein is composed of 395 amino acids and has a molecular weight of approximately 45.2 kDa and predicted pI 9.26.
- The cDNA was first isolated from white adipose tissue of Otsuka Long-Evans Tokushima Fatty (OLETF) rats. Vaspin mRNA expression is specific for visceral adipose tissues and it is also found circulating in the serum.
- The level of serum vaspin increased with age up to the peak of obesity, body weight and insulin resistance in OLETF rats and decreases with worsening of diabetes. Vaspin expression is missing in the diabetes-resistant lean rats, LETO, in comparison to OLEFT rats, animal model of metabolic syndrome. Expression was also absent in the subdermal, brown fatty tissue and other non-adipose tissues in OLEFT rats. These findings lead to the conclusion that the target tissue for insulin sensitising effect of vaspin is white adipose tissue. In humans, elevated serum concentration of vaspin is associated with obesity and impaired insulin sensitivity.
- In patients with type 2 diabetes the correlation between increased vaspin levels and BMI and decreased insulin sensitivity has not been observed. Vaspin expression decreased when diabetes worsened and its levels normalised when insulin or pioglitazone was administered.