

Insulin Sensitivity or Resistance in Type 2 Diabetes Mellitus with Obesity

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Type 2 diabetes mellitus, a state of hyperglycemia associated with beta cell dysfunction or insulin action on target cells. This state is often mediated or sustained by obesity linked inflammatory cytokines. Tumor necrosis factor-alpha (TNF- α), most important inflammatory cytokine plays critical role in the pathogenesis of type 2 diabetes mellitus as evidenced from higher circulating levels of TNF- α in type 2 diabetes mellitus compared to controls [1,2] and its negative influence on insulin secretion and insulin sensitivity in type 2 diabetes mellitus [1,3]. Positive association of TNF- α with insulin secretion in subjects with impaired glucose regulation [4] indicates its causal relationship beta-cell dysfunction, insulin resistance or sensitivity. In obese subjects with type 2 diabetes mellitus, we observed stronger and graded relationship between TNF- α and obesity [3].

It is well established that in response to inflammation, biosynthesis of inflammatory molecules are stimulated [5] which are common in obese subjects [6]. Higher TNF- α may downregulate the genes that encodes proteins/factors required for normal insulin action and involved in negative regulation of an insulin-sensitizing nuclear factor, modulation of insulin signaling pathway or induction of free fatty acids [7].

Thus management of obesity and obesity-mediated inflammation or its mediators like TNF- α may help in reduction of burden and hazards related diabetes or its complications.

References

1. Hossain M, Faruque O, Kabir G, Khan I, Sikdar D, et al. (2012) Association of serum tumor necrosis factor- α and interleukin-6 with insulin secretion and insulin resistance in subjects with type 2 diabetes in a Bangladeshi population. *S Afr J Diabetes Vasc Dis* 9.
2. Swaroop JJ, Rajarajeswari D, Naidu JN (2012) Association of TNF- α with insulin resistance in type 2 diabetes mellitus. *Indian J Med Res* 135: 127-130.
3. Biswas S, Kamaluddin SM, Saiedullah M, Rahman M, Islam M, et al. (2014) Association of circulating fasting TNF- α with hyperglycemia is stronger than with body mass index in newly diagnosed Bangladeshi type 2 diabetic subjects. *J Diabetes Metab* 5: 429.
4. Hossain M, Faruque MO, Kabir G, Hassan N, Sikdar D, et al. (2010) Association of serum TNF- α and IL-6 with insulin secretion and insulin resistance in IFG and IGT subjects in a Bangladeshi population. *International J Diab Mellitus* 2: 165-168.
5. Park JS, Arcaroli J, Yum HK, Yang H, Wang H, et al. (2003) Activation of gene expression in human neutrophils by high mobility group box 1 protein. *Am J Physiol Cell Physiol* 284: C870-879.
6. Gregor MF, Hotamisliqil GS (2011) Inflammatory mechanism in obesity. *Annu Rev Immunol* 29: 415-445.
7. Chen QI, Pekala Philip H (2000) Tumor necrosis factor - alpha induced insulin resistance in adiposites (44471). *PSEBM* 223: 128-135.

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