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## **Seminar**

# **L-Cysteine, Hydrogen Sulfide, and Insulin Signaling in Diabetes**

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Diabetes has become an epidemic and remains a major public health issue worldwide. Diabetic patients have lower blood levels of L-cysteine (LC). Supplementation with cysteine-rich proteins (whey protein and  $\alpha$ -lactoalbumin), LC, or N-acetyl cysteine (NAC) has been shown to lower glycemia in diabetic animal studies. However, the molecular mechanism by which LC increases glucose utilization and lowers glycemia is not known. The primary object of my study is to discover the mechanisms by which L-cysteine (LC) supplementation lowers insulin resistance and improves glucose homeostasis in diabetes. Our study demonstrated that LC supplementation regulates insulin signaling cascade (PI3K/PTEN/PIP3/AKT/GLUT4), improves glucose metabolism, and reduces the secretion of pro-inflammatory cytokines in high glucose treated cells. Signal silencing studies demonstrate that the beneficial effect of LC on glucose metabolism is mediated via the formation of hydrogen sulfide, a novel signaling molecule. The long-term goal is to discover a relatively low-cost dietary supplement that could be used as an adjuvant therapy for the population at risk for diabetes and its associated complications.

***Wednesday, Oct 22nd 2014***

***4:00 PM (Tea/Coffee at 3:30 PM)***

***Seminar Hall, TCIS***