

## Adiponectin Shows Potential in Blocking Obesity-Related Carcinogenesis

ScienceDaily (Oct. 24, 2010) — A research team from Emory University School of Medicine investigated the role between adiponectin and leptin in obesity-related carcinogenesis. Their findings, published in the November issue of *Hepatology*, suggest that the protein hormone adiponectin has potential for inhibiting the oncogenic actions of leptin, namely in hepatocellular carcinoma (HCC), and could offer a promising therapy for the disease.

Obesity is on the rise and is associated with increased risk and progression of a number of cancers including colon, prostate, breast, and liver cancers. The World Health Organization declared obesity one of the greatest public health challenges of the 21st century and projects that by 2015, more than 700 million adults will be obese. In the U.S., the Centers for Disease Control and Prevention (CDC) estimates roughly 72.5 million adults are considered obese -- having a body mass index (BMI) greater than 30.

Obese populations have higher circulating levels of leptin, the protein hormone that controls appetite, but lower concentrations of adiponectin which regulates glucose levels and the breakdown of fatty acids. Understanding the these hormones play a role in obesity-related cancers and the vast number of individuals who are at risk, Neeraj K. Saxena, Ph.D. and colleagues investigated the protective effect of adiponectin and its impact on leptin in HCC.

"Our study presents important clinical implications since HCC has the highest increased risk associated with obesity compared to other cancers such as prostate, kidney, colon, and stomach," commented Dr. Saxena. Using human cell-lines, mice models of HCC, and tissue microarray researchers determined the antagonistic role of adiponectin on the cancer-causing actions of leptin.

The authors found that adiponectin treatment inhibited leptin-induced proliferation, invasion, and migration of HCC cells. Treatment with adiponectin also slowed leptin-induced HCC tumor growth in vivo. Further analysis showed that leptin expression correlated positively with HCC proliferation and nonalcoholic steatohepatitis (NASH). Adiponectin expression had an inverse correlation with tumor size, and a direct correlation to disease-free survival in human HCC tumor samples.

"Taken together our results suggest an attractive molecular strategy employing adiponectin analogues for potential therapy of metastatic HCC," concluded Dr. Saxena. "With the prevalence of obesity in the U.S., our study could significantly improve overall survival for a vast number of obese liver cancer patients by using adiponectin to inhibit growth, invasion, and migration of HCC cells."