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Leptin acts as a biomarker that senses the nutritional states of obesity and hunger in children and young people.**Milton Enrique Londoño-Lemos***Colombian Center for Research in Basic and Medical Sciences, CCICBM of the Seven Scientific Foundation, Bogotá D.C, Colombia C.P. 11131.*

Leptin is a hormone, a 167 aa protein which was discovered by Dr. Jeffrey M. Friedman, is released by adipocytes in proportion to fat mass. Leptin acts on the sensor of hunger and its reduction in signaling in the arcuate nucleus of the cerebral hypothalamus induces hyperphagia for the extent of body weight, obesity, and fat mass in humans. Obesity is a result of the dysfunction of the leptin receptor which is found in adipose tissue which is known as Hyperleptinemia. Lower levels of the circulating soluble leptin receptor are found in obese humans, which also may lead to decreased leptin action. Obesity also creates endoplasmic reticulum stress in the hypothalamus, which reduces leptin signaling. Many possible factors may impair transport of leptin across the BBB. One of the most findings is that triglycerides, which are elevated in obesity, inhibit this transport. Hypertriglyceridemia occurs in starvation states as well, giving evolutionary merit to triglyceride induced leptin resistance. Thus relative leptin deficiency is seen in states of partial lipodystrophy, eating disorders such as anorexia nervosa, and / or exercise-induced energy deficiency. At the level of infants obesity in childhood is accompanied by the development of dyslipidemia, hypercholesterolemia, hyperleptinemia and hypertension. In the opposite case, that is Hypoleptinemia is a predictor of mortality in children undergoing treatment for Children with severe acute malnutrition (SAM) and a leptin cut-off of <35 pg / ml was suggested. Bartz et al. showed that inpatient mortality was associated with low levels of high molecular weight adiponectin, hypoleptinemia. Very low leptin concentration has previously been reported as a biomarker of mortality in hospitalized Ugandan children undergoing treatment for SAM. The cut-off of leptin <35 pg / ml, had high positive predictive value but low sensitivity for subsequent death in our study and children with low leptin levels died earlier. This means that leptin acts as a biomarker that senses the states of obesity or hyperleptinemia and malnutrition. Several factors at a nutritional, metabolic, hormonal and physiological level (such as the sleep-wake cycle) positively or negatively influence leptin to function as a sensor. For example, shorter sleep duration was associated with lower leptin in adolescent males is consistent with the results of laboratory studies of young adult males. So its permanent hypothalamic signaling allows normal functioning to mediate both obesity and malnutrition states.

Biography

Chemist (Q) with studies completed in Pharmacy, Master in Chemical Sciences (UNAM-MX) and Doctor of Science in the specialty of Pharmacology (CINVESTAV-MX), he has two Post-doctorates in Medicinal Bioinorganic Chemistry at UNAM of Mexico. He is president and legal representative of the Seven Scientific Foundation (www.fundacion7.com) and leader of the Research Group or GrupLAC of MINCIENCIAS research group called CICBM. He work for an English company making formulations of anti-aging nutraceutical supplements and coordinating the manufacture of the products and he recently work at ENAGO as Journal Selection Assistant (JSA) and Peer Review (PR).