



ROLE OF LEPTIN IN TREATING METABOLIC DISORDERS



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ABSTRACT: Leptin (LEP) is a protein product encoded by obese gene which was located on chromosome number 7. It is circulating hormone produced by the adipose tissue primarily. It helps to regulate body weight by sending signals to arcuate nucleus present in hypothalamus of the brain. Leptin also known as satiety or starvation hormone. Mutations of gene encoding leptin becomes morbidly obese, infertile, hyperphagic, hypothermic and diabetic. It serves as an adiposity signal to inform the brain the adipose tissues mass in a negative feedback loop regulating food intake. Leptin also plays an important role in angiogenesis, immune modulation, fertility, cognition and bone formation. By enhancing or inhibiting leptin's activities *in-vivo* may have potential benefits.

Introduction : Leptin plays a key role in burning of triglycerides and appetite control, energy expenditure. It controls appetite by crossing BBB and binds with receptors present in hypothalamus then helps to decrease the desire to eat through JAK/STAT pathway. It also travels through nervous system and stimulate fatty tissues to burn of fat and calories. It helps to treat type 2 Diabetes, Coronary heart diseases, Alzheimer's, regulating menstrual disorders, placental functions and it is crucial for embryonic progress, angiogenesis.



Too much leptin

- In some obese people brain doesn't respond to leptin they keep eating, a concept known as leptin resistance which is similar to insulin resistance in type 2 diabetes
- LEP resistance is produced due to altered LEP transport across BBB by forming complex with C-reactive peptide produced from liver
- C-peptide complexation of LEP increases with age which results in LEP resistance.
- Body fat is proportional to LEP levels
 - Excess LEP leads to IUGR, PCOS, recurrent miscarriage, Gestational DM, pre eclampsia.

Sources: some natural sources of LEP are leafy vegetables, fruits & protein rich foods like nuts, fishes, meat, eggs, cheese. MYALEPTA for congenital obesity & NEUROTEZ for Alzheimer's disease.

Conclusion: Many studies showed that the significant role of leptin in many physiological function. But, only few drugs are available in the market. Leptins are better choice for people having multi morbidities. Leptin may be a better choice for multiple comorbidities instead of multiple drug therapy for single disease. There is a need for development of biotechnology derived leptin products like insulin. Finally concluding that it requires further more in depth research to establish leptin as a biomarker for pathologies

References: <https://www.urhormones.info/hormone/leptin/>
<https://images.app.goo.gl/WqvEFfAZtTVBsfTS6>
<https://images.app.goo.gl/vorWnopniVaR562T8>

Too little leptin

- It is a rare condition called congenital LEP deficiency in which body can't produce LEP due to LEP receptor deficiency & mutation in LEP gene.
- Absence of LEP makes the body think it doesn't have fat and results in uncontrolled food leads to childhood obesity.
- LEP deficiency can be treated by its supplements
 - Delayed puberty, decreased immunity, fertility, blood pressure.

