



GORDON C GUNN, MD, FACOG

CONCIERGE PERSONALIZED CARE
GYNECOLOGY • HORMONE THERAPY
INTEGRATIVE MEDICINE

LEPTINS – What Are They?

Leptin is a hormone that regulates appetite and metabolism to help the body maintain its weight. It is primarily produced in adipose (fat) cells in the body. The amount of leptin in the blood is directly connected to an individual's amount of body fat. If the individual adds body fat, leptin levels will increase. If an individual lowers body fat, the leptin level will decrease, as well.

When the body is functioning *normally*, excess fat cells will produce excessive leptin, which will trigger the hypothalamus (brain) to *lower* the appetite, allowing the body to dip into the fat stores to feed itself. Unfortunately, when someone is [obese](#) and has too much leptin circulating in the blood, a lack of sensitivity to the hormone occurs, a condition known as *leptin resistance*. This resistance blocks the sensation of being satisfied so an individual keeps eating. Result: a vicious cycle where excess caloric intake leads to the growth of more fat cells, which in turn further produces more leptin.

Elevated leptin levels ALSO hamper the body's ability to fight off infections, especially in the lungs and other body organs. High circulating leptin levels promote a low-grade inflammatory state throughout the body. (I have written extensively in my web articles about the role of chronic inflammation and its role in most of the chronic diseases affecting the health and mortality of humans.)

"The problem for people with obesity is that their leptin levels are *always high*, and that can affect their response to a COVID-19 infection," said Candida Rebello, PhD, RD, lead author of a recent study (*see Ref. below*). "If you have obesity, there are a number of underlying health issues that make it more difficult for you to fight off a COVID-19 infection," said John Kirwan, PhD, a co-author of the study. "Your entire body, including your lungs, may be inflamed. Your immune response is likely compromised, and your lung capacity reduced. Add in a virus that further weakens the body's ability to fight infection, that can limit the body's ability to control lung inflammation, and you have the recipe for disaster."

Many adverse health instances are seen where leptin *dissociates* from its strict role of maintaining the appetite and nutritional status between the body and the brain and no longer correlates with body fat levels:

- Leptin plays a critical role in the adaptive response to starvation.
- Leptin level is *decreased* after short-term [fasting](#) (24–72 hours), even when changes in fat mass (weight loss) are not observed.
- Serum level of leptin is *reduced* by [sleep deprivation](#).
- Leptin levels are paradoxically *increased* in [obesity](#).
- Leptin level is *increased* by [emotional stress](#).
- Leptin level is *reduced* by regular [physical exercise training](#).

- Leptin level is *increased* by insulin (Insulin Resistance, Metabolic Syndrome, Type II Diabetes).
- Leptin release is *increased* by adrenal steroids, (e.g. dexamethasone).
- In obese patients with obstructive sleep apnea, leptin level is *increased*, but *decreased* after the administration of continuous positive airway pressure. In non-obese individuals, however, restful sleep (i.e., 8 hours of unbroken sleep) can adjust leptin levels to normal.

Gordon C. Gunn, M.D.

Reference:

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