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ProductInformation

ANTI-LEPTIN
Developed in Rabbit, Affinity Isolated Antibody

Product Number **L 3410**

Product Description

Anti-Leptin is developed in rabbit using a synthetic peptide Val-Pro-Ile-Gln- Lys-Val-Gln-Asp-Asp-Thr-Lys-Thr-Leu-Ile-Lys-Thr-Ile-Val-Thr conjugated to KLH with glutaraldehyde as immunogen. The peptide corresponds to the N- terminal domain of human and mouse leptin, amino acid residues 22-40. Affinity isolated, antigen specific antibody is obtained by immunospecific purification which removes essentially all rabbit serum proteins, including immunoglobulins, which do not specifically bind to leptin.

Anti-Leptin reacts specifically with leptin. By immunoblotting, the antibody detects a single leptin band at 16 kDa. Staining of the leptin band is specifically inhibited with the leptin peptide (amino acid residues 22-40).The antibody also detects leptin by ELISA and immunohistochemistry. Reactivity has been observed with recombinant human and mouse leptin.

Leptin (also termed OB, the product of the ob gene) is a 16 kDa, 146 amino acid, non-glycosylated polypeptide.[1] It is primarily produced and secreted by the mature adipocyte. Leptin is expresed in white adipose tissue, certain fetal tissues, the placenta and the ovary. It is absent or expressed at extremely low levels in other adult tissues. The human leptin molecule is translated as a 167 amino acid polypeptide, with the first 21 a.a. residues cleaved as a single peptide. Human leptin is 85% identical to mouse leptin and 84% identical to rat leptin, while mouse and rat exhibit 96% identity in their leptin molecules.[1] Leptin is a circulating cytokine that has pleiotypic effects on nutrient intake, thermogenesis, metabolism, glucose homeostasis, reproduction and hematopoiesis.[1,2,3] Leptin is hypothesized to be a "satiety factor", because the absence of this factor is associated with hyperphagia and obesity in ob/ob mice. It appears that leptin is involved in appetite regulation, due to the fact that leptin injection into ob/ob mice reduces their food intake and ultimately their body weight. However, studies have demonstrated that its effects must be more complicated than simple appetite suppression.

For example, lean mice when injected with leptin lose considerable weight, yet only marginally reduce their appetite. In addition, human obesity is often associated with increased blood leptin levels. This suggests that either a leptin insensitivity ("leptin resistance") develops, or that leptin's effects are more diverse than the simple description of "satiety factor" would warrant.[4] Leptin acts through discrete receptors (Ob-R's) and distant targets to create a feedback loop for body weight regulation. With respect to the "satiety center", or target of leptin action, the hypothalamus has received a great deal of attention, since the ventromedial hypothalamus as well as the hypothalamic arcuate and dorsomedial nuclei are all involved in leptin's effects. Indeed, high-affinity leptin-binding receptors have been detected in the hypothalamus. However, variants are also reported in the liver, kidney, choroid plexus and insulin-producing pancreatic β-cells. Also, the leptin system may contribute to early hematopoiesis. Since, at least in the mouse, a novel hematopoietin receptor found on very primitive hematopoietic cell populations has been tentatively identified as being a leptin receptor isoform.[5] Involvement of leptin in the regulation of the neuroendocrine system during starvation was recently proposed.[6] Antibodies reacting specifically with leptin may be useful tools in nutritional physiology and obesity research, by enabling the detection and measurement of leptin secretion and levels in normal situations and in disorders of body weight.

Reagents

The product is supplied as an affinity isolated antibody in 0.01M phosphate buffered saline, pH 7.4, containing 1% BSA and 15 mM sodium azide as a preservative.

Protein concentration is approximately 1 mg/ml by E_{280} prior to the addition of BSA.

Precautions and Disclaimer

Due to the sodium azide content a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

Storage/Stability
For continuous use, store at 2-8 °C for up to one month. For extended storage freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

Product Profile
A minimum working dilution of 1:5,000 is determined by immunoblotting using a recombinant human leptin.

A minimum working dilution of 1:1,000 is determined by ELISA using a recombinant human and mouse leptin.

A minimum working dilution of 1:500 is determined by immunohistochemistry using protease-digested, formalin-fixed, paraffin-embedded human placenta sections.

Note: In order to obtain best results and assay sensitivity in different techniques and preparations we recommend determining optimal working dilutions by titration test.

References

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2. Yu, W. H., et al., Proc. Natl. Acad. Sci. USA, **94**, 1023 (1997).
3. Gainsford, T., et al., Proc. Natl. Acad. Sci. USA, **93**, 14564 (1996).
4. Filer, J.S., Proc. Natl. Acad. Sci. USA, **94**, 4242 (1997).
5. Cioffi, J.A., et al., Nature Med., **2**, 585 (1996).
6. Ahima, R.S., et al., Nature, **382**, 250 (1996).

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