

PA502X**Mouse Adiponectin (biologically active) - Purified****Alternate names:**

30 kDa adipocyte complement-related protein, ACDC, ACRP30, ADIPOQ, APM1, Adipocyte, Adipocyte complement-related 30 kDa protein, Adipose most abundant gene transcript 1 protein, C1q and collagen domain-containing protein, GBP28, Gelatin-binding protein

Quantity:

0.1 mg

Concentration:

0.5 mg/ml

Background:

Adiponectin, also referred to as Acrp30, AdipoQ and GBP-28, is a recently discovered 244 aminoacid protein, the product of the apM1 gene, which is physiologically active and specifically and highly expressed in adipose cells. The protein belongs to the soluble defence collagen superfamily; it has a collagen-like domain structurally homologous with collagen VIII and X and complement factor C1q-like globular domain. Adiponectin forms homotrimers, which are the building blocks for higher order complexes found circulating in serum. Together, these complexes make up approximately 0.01% of total serum protein. Adiponectin receptors AdipoR1 and AdipoR2 have been recently cloned; AdipoR1 is abundantly expressed in skeletal muscle, whereas AdipoR2 is predominantly expressed in the liver. Paradoxically, adipose tissue-expressed adiponectin levels are inversely related to the degree of adiposity. Adiponectin concentrations correlate negatively with glucose, insulin, triglyceride concentrations, liver fat content and body mass index and positively with high-density lipoproteincholesterol levels, hepatic insulin sensitivity and insulin-stimulated glucose disposal. Adiponectin has been shown to increase insulin sensitivity and decrease plasma glucose by increasing tissue fat oxidation. Of particular interest is that low adiponectin serum levels predict type 2 diabetes independent of other risk factors. Adiponectin also inhibits the inflammatory processes of atherosclerosis suppressing the expression of adhesion and cytokine molecules in vascular endothelial cells and macrophages, respectively. This adipokine plays a role as a scaffold of newly formed collagen in myocardial remodelling after ischaemic injury and also stimulates angiogenesis by promoting cross-talk between AMP-activated protein kinase and Akt signalling in endothelial cells. Low serum adiponectin levels are found in patients with coronary artery disease. Moreover, high circulating levels of adiponectin are associated with decreased risk of myocardial infarction, independent of other factors. Altogether, adiponectin has the potential to become a clinically relevant parameter to be measured routinely in subjects at risk for type 2 diabetes, atherosclerosis and the metabolic syndrome.

Uniprot ID:[Q60994](#)**NCBI:**[NP_033735.3](#)**GeneID:**[11450](#)**Species:**

Mouse

Source:

HEK293 cells, Human embryonic kidney cell line.

Format:	State: Lyophilized (0.4µm filtered) purified protein Purity: >98% as determined by densitometric image analysis Buffer System: 0.05M Phosphate buffer, 0.075M NaCl, pH 7.4 Reconstitution: Add deionized water to prepare a working stock solution of approximately 0.5 mg/ml and let the lyophilized pellet dissolve completely.
Applications:	ELISA. Western Blot. Cell culture and/or animal studies. Other applications not tested. Optimal dilutions are dependent on conditions and should be determined by the user.
Description:	Mouse Adiponectin AA Sequence: EDDVTTTEEL APALVPPPKG TCAGWMAGIP GHPGHNGTPG RDGRDGTGPE KGEKGDAGLL GPKGETGDVG MTGAEGPRGF PGTGPRKGEF GEAAAYMYRSA FSVGLETRVT VNPVPIRFTK IFYNQNHVD GSTGKFYCNV PGLYYFSYHI TVYMKDVKVS LFKKDKAVLF TYDQYQEKNV DQASGSVLLH LEVGDQVWLQ VYGDGDHNL YADNVNDSTF TGFLLYHDTN DYKDDDDK Biological Activity: Full-length adiponectin has been shown to activate AMP-activated protein kinase in hepatocyte. It can also activate AMPK in HepG2 human hepatocytes at the concentration of as low as 1.0 µg/ml. In vitro gluconeogenesis assay in primary rat hepatocytes was performed, showing the murine adiponectin derived from mammalian cells can inhibit glucose production.
Add. Information:	Product is not sterile! Please filter the product by an appropriate sterile filter before using it in the cell culture.
Storage:	Store lyophilized (preferably in a desiccator) at -20°C and in aliquots at -80°C. Reconstituted antibody can be stored at 4°C for a limited period of time; it does not show decline in activity after two weeks at 4°C. Avoid repeated freezing and thawing. Shelf life: one year from despatch.
Product Citations:	Originator or purchased from resellers: 1. Xu A, Yin S, Wong L, Chan KW, Lam KS. Adiponectin ameliorates dyslipidemia induced by the human immunodeficiency virus protease inhibitor ritonavir in mice. <i>Endocrinology</i> . 2004 Feb;145(2):487-94. Epub 2003 Oct 30. PubMed PMID: 14592951. 2. Berner HS, Lyngstadaas SP, Spahr A, Monjo M, Thommesen L, Drevon CA, et al. Adiponectin and its receptors are expressed in bone-forming cells. <i>Bone</i> . 2004 Oct;35(4):842-9. PubMed PMID: 15454091. 3. Shore SA, Terry RD, Flynt L, Xu A, Hug C. Adiponectin attenuates allergen-induced airway inflammation and hyperresponsiveness in mice. <i>J Allergy Clin Immunol</i> . 2006 Aug;118(2):389-95. Epub 2006 May 30. PubMed PMID: 16890763. 4. Medoff BD, Okamoto Y, Leyton P, Weng M, Sandall BP, Raher MJ, et al. Adiponectin deficiency increases allergic airway inflammation and pulmonary vascular remodeling. <i>Am J Respir Cell Mol Biol</i> . 2009 Oct;41(4):397-406. doi: 10.1165/rcmb.2008-0415OC. Epub 2009 Jan 23. PubMed PMID: 19168697. 5. Teoh H, Quan A, Bang KW, Wang G, Lovren F, Vu V, et al. Adiponectin deficiency promotes endothelial activation and profoundly exacerbates sepsis-related mortality. <i>Am J Physiol Endocrinol Metab</i> . 2008 Sep;295(3):E658-64. doi:

- 10.1152/ajpendo.90384.2008. Epub 2008 Jul 15. PubMed PMID: 18628355.
6. Wang Y, Lam KS, Xu JY, Lu G, Xu LY, Cooper GJ, et al. Adiponectin inhibits cell proliferation by interacting with several growth factors in an oligomerization-dependent manner. *J Biol Chem*. 2005 May 6;280(18):18341-7. Epub 2005 Feb 25. PubMed PMID: 15734737.
7. Wang Y, Lam JB, Lam KS, Liu J, Lam MC, Hoo RL, et al. Adiponectin modulates the glycogen synthase kinase-3beta/beta-catenin signaling pathway and attenuates mammary tumorigenesis of MDA-MB-231 cells in nude mice. *Cancer Res*. 2006 Dec 1;66(23):11462-70. PubMed PMID: 17145894.
8. Conde J, Gomez R, Bianco G, Scotece M, Lear P, Dieguez C, et al. Expanding the adipokine network in cartilage: identification and regulation of novel factors in human and murine chondrocytes. *Ann Rheum Dis*. 2011 Mar;70(3):551-9. doi: 10.1136/ard.2010.132399. Epub 2011 Jan 7. PubMed PMID: 21216818.
9. Nakanishi K, Takeda Y, Tetsumoto S, Iwasaki T, Tsujino K, Kuhara H, et al. Involvement of endothelial apoptosis underlying chronic obstructive pulmonary disease-like phenotype in adiponectin-null mice: implications for therapy. *Am J Respir Crit Care Med*. 2011 May 1;183(9):1164-75. doi: 10.1164/rccm.201007-1091OC. Epub 2011 Jan 14. PubMed PMID: 21239691.

General Readings:

1. Berg AH, Combs TP, Scherer PE. ACRP30/adiponectin: an adipokine regulating glucose and lipid metabolism. *Trends Endocrinol Metab*. 2002 Mar;13(2):84-9. PubMed PMID: 11854024.
2. Okamoto Y, Kihara S, Ouchi N, Nishida M, Arita Y, Kumada M, et al. Adiponectin reduces atherosclerosis in apolipoprotein E-deficient mice. *Circulation*. 2002 Nov 26;106(22):2767-70. PubMed PMID: 12451000.
3. Yamauchi T, Kamon J, Minokoshi Y, Ito Y, Waki H, Uchida S, et al. Adiponectin stimulates glucose utilization and fatty-acid oxidation by activating AMP-activated protein kinase. *Nat Med*. 2002 Nov;8(11):1288-95. Epub 2002 Oct 7. PubMed PMID: 12368907.
4. Chen H, Montagnani M, Funahashi T, Shimomura I, Quon MJ. Adiponectin stimulates production of nitric oxide in vascular endothelial cells. *J Biol Chem*. 2003 Nov 7;278(45):45021-6. Epub 2003 Aug 27. PubMed PMID: 12944390.
5. Waki H, Yamauchi T, Kamon J, Kita S, Ito Y, Hada Y, et al. Generation of globular fragment of adiponectin by leukocyte elastase secreted by monocytic cell line THP-1. *Endocrinology*. 2005 Feb;146(2):790-6. Epub 2004 Nov 4. PubMed PMID: 15528304.
6. Wang Y, Xu A, Knight C, Xu LY, Cooper GJ. Hydroxylation and glycosylation of the four conserved lysine residues in the collagenous domain of adiponectin. Potential role in the modulation of its insulin-sensitizing activity. *J Biol Chem*. 2002 May 31;277(22):19521-9. Epub 2002 Mar 23. PubMed PMID: 11912203.
7. Matsuda M, Shimomura I, Sata M, Arita Y, Nishida M, Maeda N, et al. Role of adiponectin in preventing vascular stenosis. The missing link of adipo-vascular axis. *J Biol Chem*. 2002 Oct 4;277(40):37487-91. Epub 2002 Jul 22. PubMed PMID: 12138120.
8. Kobayashi H, Ouchi N, Kihara S, Walsh K, Kumada M, Abe Y, et al. Selective suppression of endothelial cell apoptosis by the high molecular weight form of adiponectin. *Circ Res*. 2004 Mar 5;94(4):e27-31. Epub 2004 Jan 29. PubMed PMID: 14752031.
9. Pajvani UB, Du X, Combs TP, Berg AH, Rajala MW, Schulthess T, et al. Structure-

function studies of the adipocyte-secreted hormone Acrp30/adiponectin. Implications for metabolic regulation and bioactivity. *J Biol Chem.* 2003 Mar 14;278(11):9073-85. Epub 2002 Dec 20. PubMed PMID: 12496257.

10. Berg AH, Combs TP, Du X, Brownlee M, Scherer PE. The adipocyte-secreted protein Acrp30 enhances hepatic insulin action. *Nat Med.* 2001 Aug;7(8):947-53. PubMed PMID: 11479628.

11. Xu A, Wang Y, Keshaw H, Xu LY, Lam KS, Cooper GJ. The fat-derived hormone adiponectin alleviates alcoholic and nonalcoholic fatty liver diseases in mice. *J Clin Invest.* 2003 Jul;112(1):91-100. PubMed PMID: 12840063.

12. Yamauchi T, Kamon J, Waki H, Terauchi Y, Kubota N, Hara K, et al. The fat-derived hormone adiponectin reverses insulin resistance associated with both lipodystrophy and obesity. *Nat Med.* 2001 Aug;7(8):941-6. PubMed PMID: 11479627.

Pictures:

12% SDS-PAGE separation of Mouse Adiponectin 1. M.W. marker - 14, 21, 31, 45, 66, 97 kDa 2. reduced and heated sample, 5µg/lane 3. non-reduced and non-heated sample, 5µg/lane

