AKT1 Protein, Human (sf9, His)

Cat. No.:	HY-P74421
Synonyms:	RAC-alpha serine/threonine-protein kinase; PKB; RAC-PK-alpha; AKT1; RAC
Species:	Human
Source:	Sf9 insect cells
Accession:	P31749 (M1-A480)
Gene ID:	207
Molecular Weight:	Approximately 57 kDa

PROPERTIES

Biological Activity	No Kinase Activity.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 μm filtered solution of 50 mM Tris, 100 mM NaCl, 3 mM DTT, 0.5 mM PMSF, 5% Glycerol, pH 8.0. Normally 5 % - 8 % trehalose, mannitol and 0.01% Tween 80 are added as protectants before lyophilization.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	AKT1 Protein, a member of the AKT kinase family alongside AKT2 and AKT3, plays a pivotal role in regulating diverse cellular processes such as metabolism, proliferation, cell survival, growth, and angiogenesis. Functioning through serine and/or threonine phosphorylation of numerous downstream substrates, AKT1 is implicated in the modulation of over 100 reported substrate candidates, demonstrating its multifaceted nature. Notably, it orchestrates the insulin-induced translocation of the SLC2A4/GLUT4 glucose transporter, impacting glucose uptake. Furthermore, AKT1 governs glucose storage as glycogen by phosphorylating GSK3A and GSK3B, inhibiting their kinase activity. Its involvement in various pathways includes mediating insulin-stimulated protein synthesis through the mTORC1 signaling pathway and regulating the FOXO factors, impacting cellular localization. AKT1 also influences NF-kappa-B-dependent gene transcription and positively regulates CREB1 activity, contributing to the transcription of pro-survival genes. Additionally, AKT1 exhibits a role in lipid metabolism by phosphorylating ATP citrate lyase (ACLY) and activates the 3B isoform of cyclic nucleotide phosphodiesterase (PDE3B), resulting in reduced cyclic AMP levels and inhibition of lipolysis. Beyond these functions, AKT1 is implicated in cell migration, adhesion assembly and disassembly, placental development, and diverse cellular responses to growth factors, including platelet-derived growth factor (PDGF), epidermal growth factor (EGF), insulin, and insulin-like growth factor I (IGF-

I). The recent discovery of its role in the SPATA13-mediated regulation of cell migration and adhesion adds to the complexity of its functions, highlighting AKT1's central role in cellular homeostasis and responsiveness to environmental cues.

Caution: Product has not been fully validated for medical applications. For research use only.

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