

PRODUCT INFORMATION



Akt1 (human, recombinant)

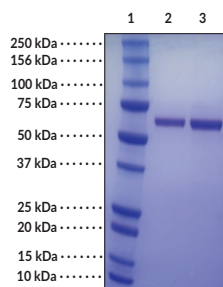
Item No. 10011209

Overview and Properties

Synonyms: PKBa, Protein Kinase Ba, RAC- α Serine/threonine-protein Kinase, RAC-PK- α
Source: Active recombinant N-terminal His-tagged Akt1 expressed in insect cells
Amino Acids: 1-480 (full length)
Uniprot No.: P31749
Molecular Weight: 60.3 kDa
Storage: -80°C (as supplied)
Stability: ≥ 1 year
Purity: *batch specific* ($\geq 95\%$ estimated by SDS-PAGE)
Supplied in: 50 mM HEPES, pH 8.0, with 150 mM sodium chloride, 1 mM DTT, and 10% glycerol
Protein Concentration: *batch specific* mg/ml
Activity: *batch specific* U/ml
Specific Activity: *batch specific* U/mg
Unit Definition: One unit is defined as the amount of enzyme required to produce 1 nmol of ADP per minute at 25°C in 20 mM HEPES, pH 7.4, with 50 mM sodium chloride, 10 mM magnesium chloride, 1 mM EGTA, 0.02% Triton X-100, and 12 μ M Crosstide substrate.

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

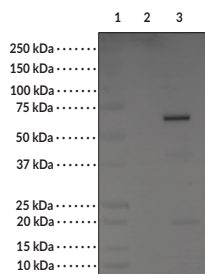
Images



Lane 1: MW Markers
Lane 2: Akt1 (2 μ g)
Lane 3: Akt1 (4 μ g)

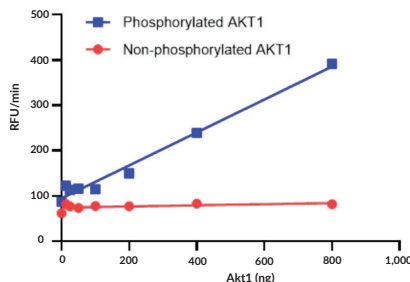
SDS-PAGE Analysis of Akt1.

Representative gel image shown; actual purity may vary between each batch.



Lane 1: MW Markers
Lane 2: Non-phosphorylated Akt1
Lane 3: Phosphorylated Akt1

Phosphorylation of S473 was confirmed by probing Western blot with an anti-Akt1 phospho S473 polyclonal antibody. Phosphorylation at this site (among others) is required for full activity.



Akt1 activity was determined using a coupled-kinase assay. HRP readily combines with hydrogen peroxide, a by-product, and this complex is detected by 10-acetyl-3,7-dihydroxyphenoxazine (ADHP) (Item No. 10010469), thereby allowing Akt1 activity to be monitored by measuring the increase in fluorescence.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

Akt1, also known as protein kinase Ba (PKBa), is a serine/threonine kinase belonging to the AGC kinase family and one of three Akt isoforms in mammals.^{1,2} Akt kinases function downstream of activated tyrosine kinases and PI3K to regulate a variety of cellular processes, including cell size, growth, proliferation, and survival, as well as genome stability, glucose metabolism, and neovascularization.² Akt1, like Akt2 and Akt3, is composed of an N-terminal pleckstrin homology (PH) domain, which binds to phosphatidylinositol-(3,4,5)-triphosphate (PIP₃) and phosphatidylinositol-(3,4)-diphosphate (PIP₂), a kinase domain, and a C-terminal regulatory hydrophobic motif. It is ubiquitously expressed and is the primary isoform in endothelial cells.³ Akt1 is activated *via* recruitment to the plasma membrane, which is mediated by the interaction of the Akt1 PH domain with PI3K-generated PIP₃ and PIP₂, and subsequent phosphorylation at threonine 308 and serine 473.² Increased Akt1 kinase activity has been found in tumor tissue isolated from patients with prostate, breast, and ovarian cancers.⁴ Cayman's Akt1 (human, recombinant) protein was phosphorylated by recombinant 3-phosphoinositide-dependent kinase 1 (PDK1) and can be used for enzyme activity assays.

References

1. Dummler, B. and Hemmings, B.A. Physiological roles of PKB/Akt isoforms in development and disease. *Biochem. Soc. Trans.* **35(Pt 2)**, 231-235 (2007).
2. Bellacosa, A., Kumar, C.C., Di Cristofano, A., *et al.* Activation of AKT kinases in cancer: Implications for therapeutic targeting. *Adv. Cancer Res.* **94**, 29-86 (2005).
3. Manning, B.D. and Cantley, L.C. AKT/PKB signaling: Navigating downstream. *Cell* **129(7)**, 1261-1274 (2007).
4. Sun, M., Wang, G., Paciga, J.E., *et al.* AKT1/PKBa kinase is frequently elevated in human cancers and its constitutive activation is required for oncogenic transformation in NIH3T3 cells. *Am. J. Pathol.* **159(2)**, 431-437 (2001).

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