PKB alpha [GST-tagged]

Kinase and Substrate

Alternate Names: AKT1, RAC-alpha serine/threonine-protein kinase, RAC-PK-alpha

Cat. No.	**66-0018-050**	Quantity:	50 µg
Lot. No.	**30297**	Storage:	-70˚C

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NOT FOR USE IN HUMANS

CERTIFICATE OF ANALYSIS Page 1 of 2

Background

PKB alpha (AKT1) is one of three closely related serine/threonine-protein kinases (AKT1, AKT2 and AKT3) which may be alternatively named PKB α, PKB β, and PKB γ, respectively. Together, they regulate many processes including metabolism, proliferation, cell survival, growth and angiogenesis. This is mediated through serine and/or threonine phosphorylation of a range of downstream substrates (Kumar *et al.*, 2013). Cloning of the gene was first described by Staal *et al.* (1987). PKB alpha is a member of the most frequently activated proliferation and survival pathway in cancer. The activation of PKB alpha is driven by membrane localization, which is in turn initiated by the binding of the pleckstrin homology (PH) domain to phosphatidylinositol-3,4,5-trisphosphate or phosphatidylinositol-3,4-bisphosphate, followed by phosphorylation of the regulatory amino acids serine 473 (Ser-473) and threonine 308 (Thr-308) on PKB alpha (Kumar and Purohit, 2013). PKB alpha seems to have a crucial but passive role in oncogenesis and acts as an indirect intermediary between mutated upstream regulatory proteins and downstream signalling molecules (Kumar and Purohit, 2013). PKB alpha is involved in the phosphorylation of members of the FOXO factors (Forkhead family of transcription factors), leading to binding of 14-3-3 proteins and cytoplasmic localisation (Rena *et al.*, 1999). Unregulated activation of the PKB pathway is a prominent feature

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Physical Characteristics

Species: human

Source: *E. coli*

Quantity: 50 µg

Concentration: 7.3 mg/ml

Formulation: 50 mM Tris/HCl pH7.5, 0.1 mM EGTA, 150 mM NaCl, 0.1% ß-Mercaptoethanol, 270 mM sucrose, 0.03% Brij-35, 1 mM Benzamidine, 0.2 mM PMSF

Molecular Weight: ~44.2 kDa

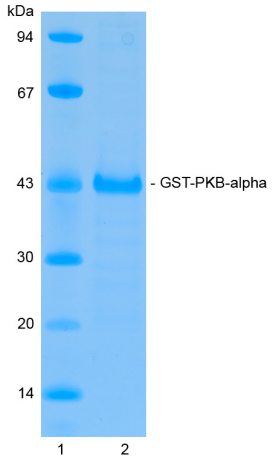
Purity: >95% by InstantBlue™ SDS-PAGE

Stability/Storage: 12 months at -70˚C; aliquot as required

Protein Sequence: Please see page 2

Quality Assurance

Purity:
4-12% gradient SDS-PAGE
InstantBlue™ staining
Lane 1: MW markers
Lane 2: 2.5 µg GST-PKB alpha



Protein Identification:
Confirmed by mass spectrometry.

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Dundee, Scotland, UK

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Email: sales.support@ubiquigent.com

UK HQ and TECHNICAL SUPPORT
International: +44 (0) 1382 381147 (9AM-5PM UTC)
US/Canada: +1-617-245-0020 (9AM-5PM UTC)
Email: tech.support@ubiquigent.com

Email **services@ubiquigent.com** for enquiries regarding compound profiling and/or custom assay development services.

Lot-specific COA version tracker: v1.0.0

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Background

Continued from page 1

of many human cancers and PKB alpha is overexpressed or activated in all major cancers. For these reasons, PKB alpha is considered an attractive target for cancer therapy (Wang *et al.*, 2011).

References:

Kumar A and Purohit R (2013) Cancer associated E17K mutation causes rapid conformational drift in AKT1 pleckstrin homology (PH) domain. *PLoS One* **8**, e64364.

Kumar A, Rajendran V, Sethumadhavan R and Purohit R (2013) AKT kinase pathway: a leading target in cancer research. *Scientific World Journal* **2013**, 756134.

Rena G, Guo S, Cichy SC, Unterman TG and Cohen P (1999) Phosphorylation of the transcription factor forkhead family member FKHR by protein kinase B. *J Biol Chem* **274**, 17179-17183.

Staal SP (1987) Molecular cloning of the akt oncogene and its human homologues AKT1 and AKT2: amplification of AKT1 in a primary human gastric adenocarcinoma. *Proc Natl Acad Sci U S A* **84**, 5034-5037.

Wang P, Zhang L, Hao Q and Zhao G (2011) Developments in selective small molecule ATP-targeting the serine/threonine kinase Akt/PKB. *Mini Rev Med Chem* **11**, 1093-1107.

Physical Characteristics

Continued from page 1

Protein Sequence:

MSPILGYWKIKGLVQPTRLLLEYLEEKYEEH
LYERDEGDKWRNKKFELGLEFPNLPYYIDGD
VKLTQSMAIIRYIADKHNMLGGCPKERAEISM
LEGAVLDIRYGVSRIAYSKDFETLKVDFL
SKLPEMLKMFEDRLCHKTYLNGDHVTHPD
FMLYDALDVVLYMDPMCLDAFPKLVCFK
KRIEAIPQIDKYLKSSKYIAWPLQGWQATFG
GGDHPPKSDLVPRGSPEF***M***SDVAIVKEGWLH
KRGEYIKTWRPRYFLLKNDGTFIGYKERPQD
VDQREAPLNNFSVAQCQLMKTERPRPNTFI
IRCLQWTTVIERTFHVETPEEREEWTTAIQT
VADGLKKQEEEEMDFRSGSPSDNSGAEEMEVS
LAKPKHRVTMNE

Tag (**bold text**): N-terminal GST
Protease cleavage site: Thrombin (LVPR▼GS)
PKB alpha (regular text): Start ***bold italics*** (amino acid residues 1-149.
Accession number: NP_001014431

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Lot-specific COA version tracker: v1.0.0