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AKT (Isoforms 1,2,3) Inhibitory Peptide Set

Catalog No **IMG-2007**

Content: **Akt (Isoforms 1,2,3) Inhibitor peptide: 2 x 1 mg (lyophilized)**
DRQIKIWFQNRRMKWKKAVTDHPDRLWAWEKF
(AKT sequence is underlined). Molecular weight: 4214.

Control peptide: 2 x 1 mg (lyophilized)
DRQIKIWFQNRRMKWKK
Molecular weight: 2361

Species Reactivity: Human

Storage: The solid product is stable in the dessicator at room temperature for year. However, we recommend storing dessicated at -20°C.

Form: White Solid

Application: Inhibition of Akt kinase activity.

Inhibitory Mechanism: Functions as a TCL1 PH decoy by binding to Akt.

Solubility: Solubilize the peptides prior to use by making 5 mM PBS* stock solutions (please see **Preparation of 5 mM Stock Solutions**). The stock solutions are stable at -20°C for 6-8 months. Avoid repeated freeze/thaw cycles. For multiple uses, we suggest aliquoting the stock solution prior to freezing.

Background

Akt is a protein kinase that plays a central role in inhibiting apoptosis through promoting cell survival. Activated Akt functions by phosphorylating downstream targets in survival signaling pathways. TCL1 (a proto-oncogene underlying human T cell prolymphocytic leukemia) interacts with Akt through an N-terminal pleckstrin homology (PH) domain and functions as an Akt kinase co-activator. This inhibitory peptide contains a sequence (AVTDHPDRLWAWEKF) corresponding to the A strand of human TCL1 that interacts with Akt. [1] The peptide binds to the PH domain of Akt and inhibits Akt1, Akt2, and Akt3 kinase activity.

The Akt (Isoforms 1,2,3) inhibitory peptide also contains a protein transduction (PTD) sequence (DRQIKIWFQNRRMKWKK) derived from antennapedia which renders the peptide cell permeable.[2] The control peptide consists of only the PTD sequence.

Preparation of 5 mM Stock Solutions

PBS* is added directly to the vials to prepare the stock solutions. ***Note:*** *Bring the solution to room temperature and quick spin the tubes before opening the caps.*

Akt (Isoforms 1,2,3) Inhibitor Peptide: 1 mg of

DRQIKIWFQNRRMKWKKAVTDHPDRLWAWEKF

Add 47.6 ul of PBS* to the vial to make a 5 mM stock solution. Mix by vortexing. Aliquot and store at -20°C or -80°C. Avoid repeated freeze thawing.

Control Peptide: 1 mg of DRQIKIWFQNRRMKWKK

Add 84.8 ul PBS* to the vial. Mix by vortexing. Aliquot and store at 20°C or -80°C. Avoid repeated freeze thawing.

***Recipe for 1X PBS:**

1. Dissolve the following in 800ml distilled H_2O.
   8g of NaCl
   0.2g of KCl
   1.44g of Na_2HPO_4
   0.24g of KH_2PO_4
2. Adjust pH to 7.5 with HCl.
3. Adjust volume to 1L with additional distilled H_2O.
4. Sterilize by autoclaving

Usage:

The inhibitor peptide is to block Akt1, Akt2, and Akt3 kinase activity. Optimal peptide concentrations and incubation times vary between model systems and should be determined empirically by users. A 100 uM final concentration may be a useful starting point. Please refer to Hiromura et al (2004) for additional information about how the inhibitor peptide has been used to block Ak1, Akt2 and Akt3 kinase activity.

Reference:

1. Hiromura M, F Okada, T Obata, D Auguin, T Shibata, C Roumestand, M Noguchi.Inhibition of Akt kinase activity by a peptide spanning the βA strand of the proto-oncogene TCL1. *J. Biol. Chem.* 279:53407-5341 (2004).

2. Derossi D, AH Joliot, G Chassaings, A Prochiantz. The Third Helix of the Antennapedia Homeodomain Translocates through Biological Membranes. *J Biol Chem*. 269:10444-10450 (1994).