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ProductInformation

SGK2, Active
Human, recombinant, expressed in *E. coli*

Product Number **S 7570**
Storage Temperature: -70 °C

Synonym: Serum/Glucocorticoid-Regulated Kinase 2

Product Description

SGK2 is a member of the serum- and glucocorticoid-induced kinases (SGK) which are serine-threonine kinases and belong to the "AGC" kinase subfamily, which includes protein kinases A, G, and C. The SGK2 catalytic domain is most similar to protein kinase B (PKB).[1] SGK1 was originally identified as a glucocorticoid-sensitive gene and, subsequently, the homologous kinases SGK2 and SGK3 have been cloned. They are products of distinct genes, which are differentially expressed and share 80% identity in their catalytic domains.[2] SGK2, like SGK1 and SGK3, is stimulated by insulin and insulin-like growth factor-1 (IGF-1), and has been shown to enhance Na^+/K^+-ATPase activity in a variety of cells.[3] In addition, SGK2 mimics the function of SGK1 and SGK3 and participates in the regulation of renal epithelial Na^+ channel ENaC activity.[4]

SGK2 is activated by phosphorylation in response to signals that stimulate PI3-kinase by a large number of extracellular signals.[5] Phosphorylation of SGK2 is mediated by PDK1 and other unidentified protein kinases. The substrate specificity of SGK isoforms superficially resembles that of PKB in that serine or threonine residues lying in R-X-R-X-X-S/T sequences are phosphorylated.[6] However, evidence is emerging that SGKs and PKB phosphorylate distinct proteins and have different functions *in vivo*. In particular, SGKs play an important role in activating certain potassium, sodium, and chloride channels, suggesting an involvement in the regulation of processes such as cell survival, neuronal excitability, and renal sodium excretion. Sustained high levels of SGK protein and activity may contribute to conditions such as hypertension and diabetic nephropathy.[7]

The product is active recombinant, full-length human SGK2 containing an N-terminal GST tag. It is supplied at a concentration of approximately 100 µg/mL in 50 mM Tris-HCl, pH 7.5, 150 mM NaCl, 0.25 mM DTT, 0.1 mM EGTA and 30% glycerol.

Purity: ≥ 75% (SDS-PAGE)

Molecular weight: ~66 kDa

Specific Activity: ≥ 100 units/mg protein (Bradford). Please refer to the Certificate of Analysis for the lot-specific activity.

Unit Definition: One unit will incorporate one nanomole of phosphate into the Akt/SGK substrate peptide (RPRAATF) per minute at 30 °C at pH 7.2 using a final concentration of 50 µM [^{32}P] ATP.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation instructions

For maximum product recovery, after thawing, centrifuge the vial before removing the cap

Storage/Stability

Stable for at least 12 months when stored as undiluted stock at –70 °C. After initial thawing, store in smaller, working aliquots at –70 °C. Use the working aliquots immediately upon thawing. Avoid repeated freeze-thaw cycles to prevent denaturing of the protein. Do not store in a frost-free freezer.

References:

1. Lang, F. and Cohen, P., Regulation and physiological roles of serum- and glucocorticoid-induced protein kinase isoforms., Sci STKE. **108,** RE17 (2001).
2. Kobayashi, T., et al., Characterization of the structure and regulation of two novel isoforms of serum- and glucocorticoid-induced protein kinase., Biochem. J., **344**, 189-197 (1999).
3. Henke, G., et al., Activation of Na^+/K^+-ATPase by the serum and glucocorticoid-dependent kinase isoforms., Kidney Blood Press. Res. **25,** 370-374 (2002).

4. Friedrich, B., et al., The serine/threonine kinases SGK2 and SGK3 are potent stimulators of the epithelial Na^+ channel α,β,γ-ENaC. Pflugers Arch. **445**, 693-696 (2003).
5. Tong, Q., et al., Regulation of Na^+ transport by aldosterone: signaling convergence and cross talk between the PI3-K and MAPK1/2 cascades., Am. J. Physiol. Renal Physiol. **286,** F1232-1238 (2004).
6. Palmada M, et al., Negative charge at the consensus sequence for the serum- and glucocorticoid-inducible kinase, SGK1, determines pH sensitivity of the renal outer medullary K^+-channel, ROMK1., Biochem. Biophys. Res. Commun. **307,** 967-472 (2003).
7. Lang, F., et al., Regulation of channels by the serum and glucocorticoid-inducible kinase - implications for transport, excitability and cell proliferation., Cell Physiol. Biochem. **13,** 41-50 (2003).

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