

VRK1 (m): 293T Lysate: sc-124592

BACKGROUND

Human vaccinia-related kinases 1 and 2 (VRK1/2) are NLS-containing, serine/threonine poxvirus-related kinases that are similar to casein kinase I family members. These VRK kinases phosphorylate transcription factors related to stress responses, such as p53. As an upstream regulator of p53, VRK1 is capable of phosphorylating phosphatase, casein, Histone 2b and Myelin basic protein. VRK1 colocalizes with ATF-2 in the nucleus and can form a stable complex. VRK1 phosphorylates ATF-2 mainly on Thr 73, stabilizing the ATF-2 protein and increasing its intracellular level. VRK1 phosphorylates human p53 in Thr 18 and disrupts p53-MDM2 interaction *in vitro*. VRK1 phosphorylates c-Jun in Ser 63 and Ser 73 *in vitro* (the same residues targeted by the N-terminal kinase of c-Jun (JNK)), and activates c-Jun-dependent transcription.

REFERENCES

1. Hunter, T. 1995. Protein kinases and phosphatases: the yin and yang of protein phosphorylation and signaling. *Cell* 80: 225-236.
2. Nezu, J., et al. 1997. Identification of two novel human putative serine/threonine kinases, VRK1 and VRK2, with structural similarity to vaccinia virus B1R kinase. *Genomics* 45: 327-331.
3. Lopez-Borges, S. and Lazo, P.A. 2000. The human vaccinia-related kinase 1 (VRK1) phosphorylates Threonine-18 within the MDM2 binding site of the p53 tumour suppressor protein. *Oncogene* 19: 3656-3664.
4. Nichols, R.J., et al. 2004. Characterization of three paralogous members of the mammalian vaccinia related kinase family. *J. Biol. Chem.* 279: 7934-7946.
5. Boyle, K.A., et al. 2004. Members of a novel family of mammalian protein kinases complement the DNA-negative phenotype of a vaccinia virus ts mutant defective in the B1 kinase. *J. Virol.* 78: 1992-2005.
6. Sevilla, A., et al. 2004. Human vaccinia-related kinase 1 (VRK1) activates the ATF-2 transcriptional activity by novel phosphorylation on Thr 73 and Ser 62 and cooperates with JNK. *J. Biol. Chem.* 279: 27458-27465.
7. Sevilla, A., et al. 2004. c-Jun phosphorylation by the human vaccinia-related kinase 1 (VRK1) and its cooperation with the N-terminal kinase of c-Jun (JNK). *Oncogene* 23: 8950-8958.
8. Vega, F.M., et al. 2004. p53 Stabilization and accumulation induced by human vaccinia-related kinase 1. *Mol. Cell. Biol.* 24: 10366-10380.

CHROMOSOMAL LOCATION

Genetic locus: Vrk1 (mouse) mapping to 12 F1.

PRODUCT

VRK1 (m): 293T Lysate represents a lysate of mouse VRK1 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

APPLICATIONS

VRK1 (m): 293T Lysate is suitable as a Western Blotting positive control for mouse reactive VRK1 antibodies. Recommended use: 10-20 µl per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.