SANTA CRUZ BIOTECHNOLOGY, INC.

HSV-1 Thymidine Kinase (vL-20): sc-28038

BACKGROUND

Herpes Simplex virus type 1 thymidine kinase (HSV-1 TK) phosphorylates thymidine (dT) to thymidine monophosphate (dTMP), playing a key role in reactivation from the latency and replication phases of herpes simplex viruses. The antiviral agents acyclovir and ganciclovir act as substrates for HSV-1 TK, but not related human kinases, with cytotoxic consequences. Thus, transfecting tumor cells with adenoviral or retroviral vectors containing HSV-1 TK confers a specific susceptibility to the drugs. This mechanism provides the basis for "suicide gene therapy", which correlates with improved survival in *in vitro* and *in vivo* studies.

REFERENCES

1. Tong, X.W., et al. 1997. Human epithelial ovarian cancer xenotransplants into nude mice can be cured by adenovirus-mediated thymidine kinase gene therapy. Anticancer Res. 17: 811-813.
2. Marveggio, S., et al. 1997. 9-(2-Hydroxypropyl)adenine: a novel fraudulent substrate of HSV-1-thymidine kinase. An interdisciplinary study. First International Electronic Conference on Synthetic Organic Chemistry (ECSOC-1), www.mdpi.org/ecsoc/
3. Fecci, P.E., et al. 2002. Viruses in the treatment of brain tumors. Neuroimaging Clin. N. Am. 12: 553-570.
4. Anton, M., et al. 2004. Coexpression of herpesviral thymidine kinase reporter gene and VEGF gene for noninvasive monitoring of therapeutic gene transfer: an *in vitro* evaluation. J. Nucl. Med. 45: 1743-1746.
5. Miyagawa, M., et al. 2004. PET of cardiac transgene expression: comparison of two approaches based on herpesviral thymidine kinase reporter gene. J. Nucl. Med. 45: 1917-1923.
6. Choi, S.R., et al. 2005. SPECT imaging of herpes simplex virus type1 thymidine kinase gene expression by [(123)I]FIAU(1). Acad. Radiol. 12: 798-805.
7. Cho, S.Y., et al. 2005. Evaluation of (76)Br-FBAU as a PET reporter probe for HSV-1 TK gene expression imaging using mouse models of human glioma. J. Nucl. Med. 46: 1923-1930.

SOURCE

HSV-1 Thymidine Kinase (vL-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of HSV-1 Thymidine Kinase.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-28038 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

HSV-1 Thymidine Kinase (vL-20) is recommended for detection of HSV-1 Thymidine Kinase by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048.

SELECT PRODUCT CITATIONS

1. Duan, R., et al. 2008. Acyclovir-resistant corneal HSV-1 isolates from patients with herpetic keratitis. J. Infect. Dis. 198: 659-663.
2. Mingaleeva, R.N., et al. 2009. Study of transactivation effect on transcription by Tat-TAR-system of human immunodeficiency virus type 1 (HIV-1) in non-lymphoid cells HEK293 and Calu-1. Mol. Gen. Mikrobiol. Virusol. 11-15.
3. Chin, L.W., et al. 2010. Anti-herpes simplex virus effects of berberine from *Coptidis rhizoma*, a major component of a Chinese herbal medicine, Ching-Wei-San. Arch. Virol. 155: 1933-1941.
4. Jin, K., et al. 2010. Transgenic ablation of doublecortin-expressing cells suppresses adult neurogenesis and worsens stroke outcome in mice. Proc. Natl. Acad. Sci. USA 107: 7993-7998.
5. Mingaleeva, R.N., et al. 2010. Comparative analysis of herpes simplex virus thymidine kinase gene expression potentiation via HIV-1 Tat-TAR-system and cancer-specific promoters in $p53^{+}$ and $p53^{-}$ cells. Mol. Biol. 44: 507-514.

RESEARCH USE

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

PROTOCOLS

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