Small Molecules

RS-1

HDR pathway enhancer;
Enhances RAD51

Catalog # 74092 10 mg
74094 25 mg

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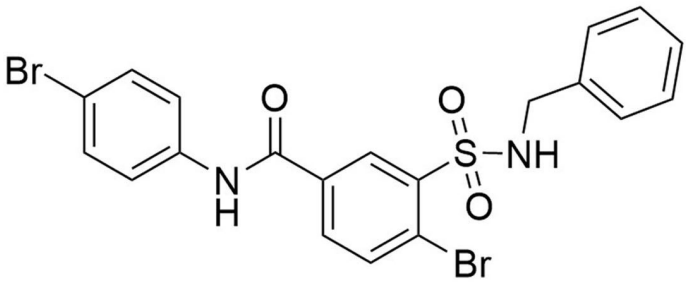
Product Description

RS-1 is an enhancer of RAD51, an enzyme that assists in the homology-directed repair (HDR) pathway of DNA double-strand breaks, and is reported to function by stabilizing the active form of RAD51 and by enhancing recombinogenic activity of the enzyme (Jayathilaka et al.). Via this mechanism, RS-1 can stimulate HDR, thereby enhancing precise HDR-dependent CRISPR-Cas9 genome editing in some cell lines (Pinder et al.; Song et al.).

Molecular Name:	RS-1
Alternative Names:	Not applicable
CAS Number:	312756-74-4
Chemical Formula:	$C_{20}H_{16}Br_2N_2O_3S$
Molecular Weight:	524.2 g/mol
Purity:	≥ 95%
Chemical Name:	3-(benzylsulfamoyl)-4-bromo-N-(4-bromophenyl)benzamide
Structure:	



Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect product from prolonged exposure to light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 35 mM · DMF ≤ 55 mM

For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 1.91 mL of DMSO.

Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application.

Compound has low solubility in aqueous media. For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

GENOME EDITING
· Promotes HDR, which is reported to enhance knock-in efficiency of CRISPR-Cas9 genome editing (Pinder et al.; Song et al.); however, these effects are cell type-specific and context-dependent (Xie et al.; Zhang et al.).
CANCER RESEARCH
· Stimulates the DNA-binding activity of RAD51 to promote cancer cell death and induce anti-tumor responses in a mouse xenograft tumor model (Mason et al.).

References

Jayathilaka K et al. (2008) A chemical compound that stimulates the human homologous recombination protein RAD51. Proc Natl Acad Sci USA 105(41): 15848–53.
Mason JM et al. (2014) The RAD51-stimulatory compound rs-1 can exploit the RAD51 overexpression that exists in cancer cells and tumors. Cancer Res 74(13): 3546–55.
Pinder J et al. (2015) Nuclear domain 'knock-in' screen for the evaluation and identification of small molecule enhancers of CRISPR-based genome editing. Nucleic Acids Res 43(19): 9379–92.
Song J et al. (2016) RS-1 enhances CRISPR/Cas9- and TALEN-mediated knock-in efficiency. Nat Commun 7(1): 10548.
Xie Z et al. (2017) Optimization of a CRISPR/Cas9-mediated knock-in strategy at the porcine Rosa26 locus in porcine foetal fibroblasts. Sci Rep 7(1): 3036.
Zhang J-P et al. (2017) Efficient precise knockin with a double cut HDR donor after CRISPR/Cas9-mediated double-stranded DNA cleavage. Genome Biol 18(1): 35.

Related Small Molecules

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This product is hazardous. Please refer to the Safety Data Sheet (SDS).