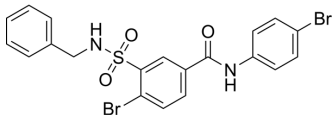
RS-1

Cat. No.:	HY-19793
CAS No.:	312756-74-4
Molecular Formula:	$C_{20}H_{16}Br_2N_2O_3S$
Molecular Weight:	524.23
Target:	RAD51; CRISPR/Cas9
Pathway:	Cell Cycle/DNA Damage
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 2 years -20°C 1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (190.76 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	1.9076 mL	9.5378 mL	19.0756 mL
5 mM	0.3815 mL	1.9076 mL	3.8151 mL
10 mM	0.1908 mL	0.9538 mL	1.9076 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 3 mg/mL (5.72 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 3 mg/mL (5.72 mM); Clear solution

BIOLOGICAL ACTIVITY

Description	RS-1 is a RAD51 activator, and also increases CRISPR/Cas9-mediated knock-in efficiencies.
IC_{50} & Target	RAD51[1], CRISPR/Cas9[2]
In Vitro	RS-1 is a RAD51 activator, stimulating binding of hRAD51 to DNA with K_d ranging from 48 nM to 107 nM in the presence of ATP or ADP and in the absence of a nucleotide cofactor, and such an effect is not via inhibiting its ATPase activity. RS-1 (20 μM) affects the length and helical pitch of hRAD51 protein-DNA complexes. RS-1 (0, 1, 5, 10, 15, 20, and 25 μM) stimulates strand assimilation activity of hRAD51. RS-1 (7.5 μM) promotes resistance of human cells to cross-linking chemotherapy[1]. RS-1 (0, 7.5, 15 μM) increases Cas9-mediated knock-in efficiencies in rabbit embryos[2].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Kinase Assay [1]

Briefly, 15 μL reaction volumes include a DNA strand exchange protein (0.8 μM) that is preincubated for 5 min at 37°C with 1 μM (nucleotide concentration) ^{32}P-labeled oligonucleotide 306.7 in a reaction buffer containing 20 mM Hepes (pH 7.5), 1 mM DTT, 2 mM nucleotide cofactor, and 1 mM $MgCl_2$ and various concentrations of RS-1. For experimental buffer conditions that included calcium, 1 mM $CaCl_2$ is present in addition to (in the case of hRAD51) or in the place of (in the case of RecA and scRAD51) the 1 mM $MgCl_2$. Conditions with scRAD51 additionally contains 110 nM scRAD54. After this initial binding reaction, 10 μL of 19.75 μM (base pair concentration) supercoiled homologuecontaining target plasmid DNA (pRS306) is next added along with sufficient magnesium acetate to give a final concentration of 10 mM[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- J Mol Med (Berl). 2019 Aug;97(8):1183-1193.

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REFERENCES

[1]. Jayathilaka K, et al. A chemical compound that stimulates the human homologous recombination protein RAD51. Proc Natl Acad Sci U S A. 2008 Oct 14;105(41):15848-53.

[2]. Song J, et al. RS-1 enhances CRISPR/Cas9- and TALEN-mediated knock-in efficiency. Nat Commun. 2016 Jan 28;7:10548.

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