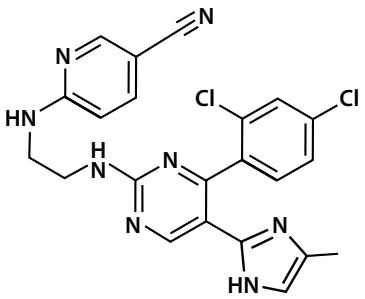
Miltenyi Biotec

StemMACS™ CHIR99021

2 mg	130-103-926
5×2 mg	130-104-172

Contents

1. Description

Components	StemMACS™ CHIR99021. A selective small molecule GSK3 inhibitor
Size	2 mg; 5×2 mg
Product format	Off-white solid
Molecular weight	465.34
CAS number	252917-06-9
Systematic name	6-[[2-[[4-(2,4-dichlorophenyl)-5-(5-methyl-1*H*-imidazol-2-yl)-2 pyrimidinyl]amino]ethyl]amino]-3-pyridinecarbonitrile
Molecular formula	$C_{22}H_{18}Cl_2N_8$
Structure	
Purity	>98% by LC/MS
Solubility	Soluble in DMSO (up to 100 mM upon warming).
Storage	Store powder at –20 °C. After reconstitution, store aliquots at –20 °C. Protect from light.
Quality control	Purity and identity of StemMACS CHIR99021 were determined by LC/MS. Cell culture compatibility was tested on pluripotent stem cell cultures.

1.1 Background information

StemMACS™ CHIR99021 is a highly selective inhibitor of glycogen synthase kinase 3 (GSK-3), a crucial regulator of the Wnt signaling pathway. The aminopyridine CHIR99021 inhibits both GSK-3 isoforms, GSK-3α (IC50 10 nM) and GSK-3β (IC50 6.7 nM). Unlike other GSK-3 inhibitors, it does not cross-react with cyclin-dependent kinases (CDKs). Activation of Wnt signaling via CHIR99021-mediated GSK-3 inhibition is widely used to modulate pluripotent stem cell differentiation and self-renewal.

2. Protocol

2.1 Preparation of stock solution

Effective concentrations of StemMACS CHIR99021 for cell culture applications range from 0.1 µM to 15 µM. A 10 mM stock solution in DMSO will be appropriate for most applications and can be prepared as follows:

1. Reconstitute the entire vial contents by adding 429.8 µL of pure DMSO. Warm to 37 °C for 3–5 minutes to facilitate solubilization.

   ▲ **Note:** The vial may have turned upside down during transportation. Gently tap prior to reconstitution to collect all powder at the bottom of the vial.

2. Prepare appropriate aliquots and store at –20 °C. Avoid repeated freeze-thaw cycles.

   ▲ **Note:** The DMSO concentration in culture should not exceed 0.5 %. Stock solutions of alternate concentration can be prepared using the following table. Add the solvent directly to the vial, it will hold up to 4 mL.

Desired stock	1 mM	2 mM	5 mM	10 mM	20 mM
Volume of DMSO to add	Dilute 1:10 from a 10 mM stock	2149 µL	859.6 µL	429.8 µL	214.9 µL

2.2 Use in cell culture

1. Thaw aliquots at 37 °C as needed.
2. To avoid precipitation, prewarm the cell culture media prior to adding the reconstituted compound.
3. Mix and filter the supplemented media through a 0.2 µm low-protein binding filter.

All protocols and data sheets are available at **www.miltenyibiotec.com.**

Warranty

The products sold hereunder are warranted only to be free from defects in workmanship and material at the time of delivery to the customer. Miltenyi Biotec GmbH makes no warranty or representation, either expressed or implied, with respect to the fitness of a product for a particular purpose. There are no warranties, expressed or implied, which extend beyond the technical specifications of the products. Miltenyi Biotec GmbH's liability is limited to either replacement of the products or refund of the purchase price. Miltenyi Biotec GmbH is not liable for any property damage, personal injury or economic loss caused by the product.

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