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DATASHEET

Sulforhodamine 101 (SR101)

Product overview

Name	Sulforhodamine 101 (SR101)
Cat No	HB0838
Biological description	**Overview**

Sulforhodamine 101 (SR101) is a red fluorescent dye which is water-soluble and non-fixable.

It is a preferential astrocyte marker both in vitro and in vivo and is frequently used in neurophysiological experiments. It also labels oligodendrocytes.

The exact uptake mechanism of SR101 is unclear. It is thought that SR-101 is taken up by astrocytes and diffuses through the astrocyte syncytium via gap junctions.

Uses and applications

The dye is commonly used for in vivo brain imaging and allows in vivo imaging of oligodendrocytes. It may be applied topically to the exposed cortex or administered via injection.

The dye has a wide range of applications. For example, it is often used to identify astrocytes, to counterstain astrocytes and has been extensively used with calcium-sensitive dyes to distinguish calcium signals derived from neurons and astrocytes.

Caution and care

Care should be taken when using the dye as it is not as specific for astrocytes as initially reported and as the dye labels oligodendrocytes, it cannot be assumed that all SR101 labelled cells are astrocytes.

The dye also differs in staining intensity depending on the brain region being investigated (it does not label astrocytes in brainstem slices as strongly or specifically as in the hippocampus or cortex).

SR101 also has effects on excitatory neuronal activity and can induce cortical seizure-like activity.

Hülsmann et al (2017) recommend that to minimize excitatory side effects, SR101 concentrations should be kept as low as possible or the labelling procedure could be carried out after the experiment.

If possible, researchers should carry out additional measures to confirm specificity of SR101 staining in their experiments (e.g. electrophysiological whole-cell recordings of SR101-labeled cells and post hoc IHC).

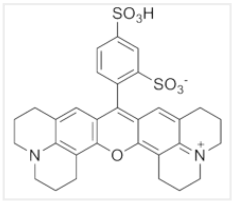
Biological action	Dyes & stains
Purity	>98%
Description	Red fluorescent dye. Preferential astrocyte marker. Also labels oligodendrocytes.

Images

Solubility & Handling

Storage instructions	+4°C
Solubility overview	Soluble in water (50 mM), and in DMSO (50 mM)
Storage of solutions	Prepare and use solutions on the same day if possible. Store solutions at -20°C for up to one month if storage is required. Equilibrate to RT and ensure the solution is precipitate free before use.
Shipping Conditions	Stable for ambient temperature shipping. Follow storage instructions on receipt.
Important	This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use

Chemical Data

Chemical name	9-(2,4-Disulfophenyl)-2,3,6,7,12,13,16,17-octahydro-1H,5H,11H,15H-xantheno[2,3,4-ij:5,6,7-ij]diquinolizin-18-ium inner salt
Molecular Weight	606.71
Chemical structure	
Molecular Formula	$C_{31}H_{30}N_2O_7S_2$
CAS Number	60311-02-6
PubChem identifier	122180
SMILES	C1CC2=C3C(=C4C(=C2)C(=C5C=C6CCC[N+]7=C6C(=C5O4)CCC7)C8=C(C=C(C=C8)S(=O)(=O)O)S(=O)(=O)[O-])CCCN3C1
InChiKey	COIVODZMVVUETJ-UHFFFAOYSA-N
MDL number	MFCD00012407
Excitation	586 nM
Emission	606 nM

References

https://www.ncbi.nlm.nih.gov/pubmed/15782150

Nimmerjahn et al (2004) Nat Methods 1(1)
PubMedID 15782150

Limitations of Sulforhodamine 101 for Brain Imaging.

Hülsmann et al (2017) Front Cell Neurosci. 28
PubMedID 28293173

Sulforhodamine 101, a widely used astrocyte marker, can induce cortical seizure-like activity at concentrations commonly used.

Rasmussen et al (2016) Sci Rep. 26
PubMedID 27457281

In vivo imaging of oligodendrocytes with sulforhodamine 101.

Hill et al (2014) Nat Methods 11(11)
PubMedID 25357236

In Vivo Two Photon Imaging of Astrocytic Structure and Function in Alzheimer's Disease.

Kelly et al (2018) Front Aging Neurosci 19

PubMedID 30072889