

Product Data Sheet

Product Name: TRITC-dextran, MW 70000

Cat. No.: GC71440

Chemical Properties

Cas. No.

Formula M.Wt 70000

Solubility H₂O : 50 mg/mL (0.71 mM; Need ultrasonic) Storage Store at -20°C, protect from light

General tips For obtaining a higher solubility , please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.

Structure

TRITC-dextran, MW 70000

Protocol

Cell experiment [1]:

Cell lines HT29-MTX-E12 cells

Caution: Product has not been fully validated for medical applications. For research use only.

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HT29-MTX-E12 cells were cultured on 12mm polycarbonate Transwell filter inserts with a pore size of 0.4µm in complete medium. TRITC-Dextran (10µg/ml) Preparation Method were added to the apical compartment of HT29 monolayers. The tracers were dissolved in DMEM without phenol red, supplemented with 1% (vol/vol) FBS and antibiotics, and incubated at 37°C for 1–4h.

Reaction
Conditions 10µg/ml; 1–4h.

Applications The permeability of tight junctions of the cell monolayer was reflected by measuring the fluorescence intensity of TRITC-dextran in the lower chamber.

Animal experiment [2]:

Animal models Adult Fischer rats

A tail vein injection of 250µl of a 0.9% saline solution containing 10mg/ml Preparation Method TRITC-dextran was performed to analyze vascular perfusion in the regenerating tissue.

Dosage form 10mg/ml; 250µl; tail vein injection

Applications TRITC-dextran injection demonstrated enhanced perfusion into scaffold channels, indicating improved vascular connectivity to the systemic circulation.

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References:

- [1] Xia ZY, Luo C, Liu BW, et al. Shengui Sansheng Pulvis maintains blood-brain barrier integrity by vasoactive intestinal peptide after ischemic stroke. *Phytomedicine*. 2020 Feb;67:153158.
- [2] Hakim JS, Rodysill BR, Chen BK, et al. Combinatorial tissue engineering partially restores function after spinal cord injury. *J Tissue Eng Regen Med*. 2019 May;13(5):857-873.

Background

TRITC-dextran, MW 70000 is a fluorescently labeled dextran used for tracing and studying cellular processes such as endocytosis, exocytosis, and cell labeling. The maximum absorbed/emitted wavelength of TRITC-dextran is 550/571nm, which has high stability and resistance to photobleaching^[1]. TRITC-dextran is widely used in biological research to label cells or intracellular regions and monitor various biological activities^[2]. TRITC-dextran can also be used to label neurons and neural networks to further investigate the mechanisms of neurotransmitter release and transmission^[3]. In addition, TRITC-dextran can serve as a packaging material to modify the surface properties of nanoparticles^[4].

In vitro, TRITC-dextran (10µg/ml) is added to the upper chamber of Transwells seeded with HT29 cell monolayers in the lower chamber. After incubation at 37°C for 1–4 hours, the fluorescence intensity of TRITC-dextran in the lower chamber is measured to reflect the permeability of the tight junctions in the cell monolayer^[5]. TRITC-dextran (2mg/ml) is added to the upper chamber of Transwells seeded with brain microvascular endothelial cells (BMECs) in the lower chamber. The fluorescence intensity of TRITC-dextran in the BMECs is detected to evaluate the integrity of the blood-brain barrier (BBB)^[6].

In vivo, TRITC-dextran can be used to assess the hepatic microcirculation in rats. TRITC-dextran (500mg/kg) is administered to rats via intravenous injection. One minute after administration, the liver is excised to obtain tissue samples. The liver tissue is fixed in 20% formaldehyde solution, embedded in paraffin, and sectioned. After deparaffinization, hydration, and washing with phosphate-buffered saline (PBS), the sections are immediately mounted with a Fluor Mount/plus mounting medium containing water to observe the distribution of TRITC-dextran under a fluorescence microscope^[7]. TRITC-dextran can also be used to evaluate the vascular perfusion in regenerated tissue after spinal

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cord injury. Mice are intravenously injected with 250 μ L of a saline solution containing 10mg/mL TRITC-dextran. The amount of TRITC-dextran was quantitatively assessed by measuring the surface area of fluorescence in the field of view of the longitudinal image to detect vascular and systemic circulation^[8].

References:

- [1] Kirby J, Standfest M, Binkley J, et al. The dynamin inhibitor, dynasore, prevents zoledronate-induced viability loss in human gingival fibroblasts by partially blocking zoledronate uptake and inhibiting endosomal acidification. *J Appl Oral Sci.* 2024 Sep 30;32:e20240224.
- [2] Emura N, Sakurai N, Takahashi K, et al. OCT-4 expression is essential for the segregation of trophectoderm lineages in porcine preimplantation embryos. *J Reprod Dev.* 2016 Aug 25;62(4):401-8.
- [3] Chang P, Xu M, Zhu J, et al, Pharmacological Inhibition of Mitochondrial Division Attenuates Simulated High-Altitude Exposure-Induced Memory Impairment in Mice: Involvement of Inhibition of Microglia-Mediated Synapse Elimination. *CNS Neurosci Ther.* 2025 Jun;31(6):e70473.
- [4] Baek H, Yang SW, Kim MK, et al. Activation of Immune Responses Through the RIG-I Pathway Using TRITC-Dextran Encapsulated Nanoparticles. *Immune Netw.* 2024 Dec 24;24(6):e44.
- [5] Xia ZY, Luo C, Liu BW, et al. Shengui Sansheng Pulvis maintains blood-brain barrier integrity by vasoactive intestinal peptide after ischemic stroke. *Phytomedicine.* 2020 Feb;67:153158.
- [6] Choi AR, Jung MJ, Kim JH, et al. Co-treatment of Salinomycin Sensitizes AZD5363-treated Cancer Cells Through Increased Apoptosis. *Anticancer Res.* 2015 Sep;35(9):4741-7.
- [7] Tanaka M, Tanaka K, Masaki Y, et al. Intrahepatic microcirculatory disorder, parenchymal hypoxia and NOX4 upregulation result in zonal differences in hepatocyte apoptosis following lipopolysaccharide- and D-galactosamine-induced acute liver failure in rats. *Int J Mol Med.* 2014 Feb;33(2):254-62.
- [8] Hakim JS, Rodysill BR, Chen BK, et al. Combinatorial tissue engineering partially restores function after spinal cord injury. *J Tissue Eng Regen Med.* 2019 May;13(5):857-873.

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