

Product Data Sheet

Product Name: Troxerutin

Cat. No.: GC15933

Chemical Properties

Cas. No. 7085-55-4

Chemical Name 2-(3,4-bis(2-hydroxyethoxy)phenyl)-5-hydroxy-7-(2-hydroxyethoxy)-3-(((2S,3R,4S,5S,6R)-3,4,5-trihydroxy-6-(((2R,3R,4R,5R,6S)-3,4,5-trihydroxy-6-methyltetrahydro-2H-pyran-2-yl)oxy)methyl)tetrahydro-2H-pyran-2-yl)oxy)-4H-chromen-4-one

SMILES C[C@@](O1)([H])[C@@](O)([H])[C@](O)([H])[C@](O)([H])[C@]1([H])OC[C@]2([H])[C@](O)([H])[C@@](O)([H])[C@](O)([H])[C@](O)([H])[C@@](OC(C(C3=C(O)C=C(OCCO)C=C3O4)=O)=C4C5=CC(OCCO)=C(OCCO)C=C5)([H])O2

Formula C₃₃H₄₂O₁₉

M.Wt 742.68

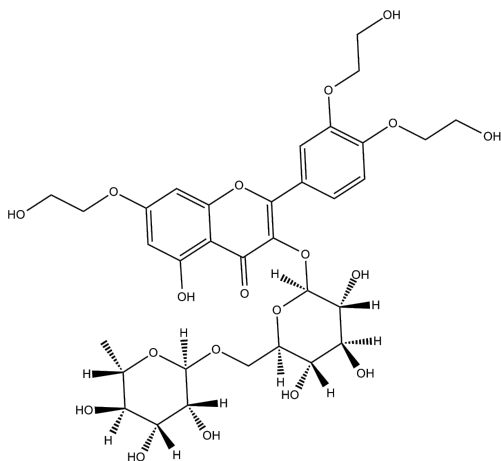
Solubility ≥ 74.3mg/mL in DMSO

Storage Store at -20°C

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



Protocol

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

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Cell experiment: The cells are plated at a density of 4×10^3 /well in a 96-well plate. At 70 to 80% confluence, the cells are treated with Troxerutin at concentrations ranging between 0 and 60 μ M for 24 h at 37°C. Subsequently, 10 μ L water soluble tetrazolium salt assay solution is added to each well and, following incubation for 30 min at 37°C, the optical density is measured at 490 nm using a reader. To examine Troxerutin mediated ROS protection, the cells are pretreated with Troxerutin at the following concentrations: 0, 5, 10 and 15 μ M for 8 h. Subsequently, 750 μ M H₂O₂ is added to each well. Following incubation for 24 h at 37°C, cell viability is evaluated using an Cell Viability Assay kit. The level of cell viability (%) is normalized to that of 0.1% dimethyl-sulfoxide (DMSO)-treated cells. Each experiment is repeated at least three times[1].

Animal experiment: Thirty two adult male Wistar rats weighing 250 to 300 grams are used in this study. The animals are randomly divided into four groups (n=8/each) as: group I: control (C), group II: control with Troxerutin (C+TXR), group III: diabetic (D), and group IV: diabetic with Troxerutin (D+TXR). The control rats are received the same amount of citrate buffer alone. Development of diabetes is confirmed by measuring blood glucose levels, 72 hours later. Animals with blood glucose levels higher than 16.65 mM (300 mg/dL) are considered diabetic and those with blood glucose levels lower than this value are excluded from the experiment. Troxerutin (150 mg/kg/day) is administered orally, once daily for four weeks. After 10 weeks of induction of diabetes, diabetic animals as well as the time-matched controls are killed and aortic samples are collected[3].

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- [1]. Lim KM, et al. Analysis of changes in microRNA expression profiles in response to the troxerutin-mediated antioxidant effect in human dermal papilla cells. Mol Med Rep. 2015 Aug;12(2):2650-60.
- [2]. Zhang Z, et al. Troxerutin Attenuates Enhancement of Hepatic Gluconeogenesis by Inhibiting NOD Activation-Mediated Inflammation in High-Fat Diet-Treated Mice. Int J Mol Sci. 2016 Dec 25;18(1). pii: E31.
- [3]. Badalzadeh R, et al. Beneficial effect of troxerutin on diabetes-induced vascular damages in rat aorta: histopathological alterations and antioxidation mechanism. Int J Endocrinol Metab. 2015 Apr 30;13(2):e25969.

Background

Troxerutin can also offer protection against DNA strand breaks and micronuclei formation induced by γ -radiation (GR), it enhances repair of DNA strand breaks induced by radiation. In lymphocytes, treatment with 1mM troxerutin significantly decreased the induction of micronuclei resulted from the exposure to 2 Gy γ -radiation by 41.26% [1].

GR can induce cellular damage and apoptosis. It can cause double-stranded and single-stranded breaks in the genomic DNA [2].

Under ex vivo condition of GR (2 Gy), DNA strand breaks were induced by the radiation. Treatment with troxerutin protected the human peripheral blood leucocytes from this GR effect. In the human lymphocytes, the micronuclei induction resulted from GR was significantly inhibited by troxerutin (1 mM) [1].

In mice, micronuclei formation in blood reticulocytes was significantly inhibited by the intraperitoneal administration of troxerutin (175 mg/kg) before and after whole body radiation exposure. 1 h prior to 4 Gy γ -radiation exposure, in bone marrow cells and blood leucocytes, the yield of DNA strand breaks was dose-dependently decreased by the administration of troxerutin at different doses (75, 125 and 175 mg/kg body weight). The dose-dependent protection was less pronounced in blood leucocytes than in bone marrow cells. In mice, 1 h prior or immediately after whole body irradiation, administration of troxerutin at 175 mg/kg body weight (i.p.) decrease the strand breaks depended on the post-irradiation interval [1].

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- [1]. Maurya DK, Balakrishnan S, Salvi VP, et al. Protection of cellular DNA from gamma-radiation-induced damages and enhancement in DNA repair by troxerutin. Mol Cell Biochem, 2005, 280(1-2):57-68.
- [2]. Chen YR, Meyer CF and Tan TH. Persistent Activation of c-Jun N-terminal Kinase 1 (JNK1) in γ Radiation-induced Apoptosis. J Biol Chem, 1996, 271(2): 631–634.

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