

Product Data Sheet

Product Name: GRGDSP TFA

Cat. No.: GC34265

Chemical Properties

Cas. No.

SMILES Gly-Arg-Gly-Asp-Ser-Pro

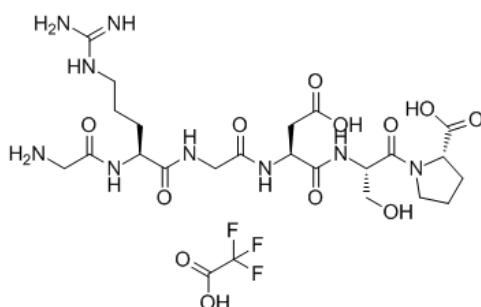
Formula $C_{24}H_{38}F_3N_9O_{12}$ M.Wt 701.61

Solubility Water : 125 mg/mL (178.16 mM) 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

Cell experiment [1]:

Cell lines Rabbit synovial cells

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

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Preparation Method Rabbit synovial cells were cultivated in RPMI-1640 medium supplemented with 10% heat-inactivated fetal bovine serum (FBS), 100units/ml penicillin, and 100mg/ml streptomycin at 37°C in an incubator with 5% CO₂. Cells were seeded in a 12-well plate at a density of 2×10⁵ cells/well for 24h. Cells were treated with 5mM GRGDSP TFA and serum-free medium. After 48h of treatment, the cell viability was determined.

Reaction
Conditions 5mM; 48h

Applications GRGDSP TFA treatment significantly inhibited cell viability of rabbit synovial cells.

Animal experiment [2]:

Animal models Male Wistar rats

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Male Wistar rats (180-220g) were maintained in a controlled environment at $22\pm 3^{\circ}\text{C}$ and 60% relative humidity under a 12h light/dark cycle, and were given free access to standard rodent nutrition and water. Walker-256 tumor tissue was recovered from a propagation animal 10 days after subcutaneous implantation and cut into small cubes approximately 2mm^3 in volume. The rats were anesthetized, the abdominal wall was opened, and a small subcapsular incision was made on the left lateral lobe of the liver. The tumor fragment was gently placed into the pocket and covered with a small piece of a cotton swab on the liver surface. The abdominal wall was subsequently closed. Using a binocular operative microscope, a PE-10 polyethylene microcatheter (inner diameter 0.28mm, outer diameter 0.61mm) was retrogradely inserted via the gastroduodenal artery into the hepatic artery. The therapeutic agents were mixed and then injected into the hepatic artery within 20min. Each group received treatment according to the following protocols: Group A (GRGDSP TFA + TACE; $n = 9$): 0.05ml mitomycin (1mg/ml) + 0.1ml GRGDSP TFA (2.5mg/ml) + 0.05ml lipiodol + ligation of the proper hepatic artery; Group B (TACE alone; $n = 8$): 0.05ml mitomycin (1 mg/ml) + 0.05ml lipiodol + ligation of the proper hepatic artery; Group C (normal saline; $n = 9$): 0.2ml 0.9% NaCl. Twelve days after interventional therapy, MRI examination was again performed, and the post-treatment volume of the hepatic tumor (V2) was measured.

Dosage form

2.5mg/ml (0.1ml) for once; hepatic artery administration

Applications

GRGDSP TFA treatment significantly inhibited combined with TACE inhibited the hepatic carcinoma growth in rats.

References:

- [1] Matsuki K, Sasho T, Nakagawa K, et al. RGD peptide-induced cell death of chondrocytes and synovial cells[J]. Journal of Orthopaedic Science, 2008, 13(6): 524-532.
- [2] Qian J, Yin J, Liang H, et al. Experimental study on transarterial administration of GRGDSP TFA combined with transarterial chemoembolization in rats with hepatic carcinoma[J]. Cardiovascular and interventional radiology, 2008, 31(2): 377-382.

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Background

GRGDSP TFA, a synthetic linear RGD peptide, is an integrin inhibitor [1]. GRGDSP TFA can induce cells to become round and activate matrix metalloproteinase-2 (MMP-2), thereby increasing the levels of membrane-bound precursors and active forms of MMP-1 and MMP-2 [2]. GRGDSP TFA has been used to modify the surface of cardiovascular implants such as vascular grafts to promote endothelialization [3].

In vitro, GRGDSP TFA treatment (5mM) for 48h significantly inhibited the viability of rabbit chondrocytes and synovial cells, accompanied by an increase in Caspase-3 activity[4]. 10nM of GRGDSP TFA treatment for 24 hours significantly promoted the migration of human foreskin fibroblasts (HFF)[5].

In vivo, GRGDSP TFA treatment via administration (1mg/kg/day) at the injured site for 14 days significantly delayed the remyelination in Dhh^{cre/+};Ninj2^{fl/fl} mice and reduced motor coordination and locomotion in mice [6]. A single arterial infusion of 0.25mg of GRGDSP TFA combined with transarterial chemoembolization (TACE) inhibited the invasive growth and metastasis of tumor cells in rats with hepatic carcinoma within 12 days[7].

References:

- [1] Qian J, Oppermann E, Tran A, et al. Transarterial administration of integrin inhibitor loaded nanoparticles combined with transarterial chemoembolization for treating hepatocellular carcinoma in a rat model[J]. World Journal of Gastroenterology, 2016, 22(21): 5042.
- [2] Teti A, Farina A R, Villanova I, et al. Activation of MMP-2 by human GCT23 giant cell tumour cells induced by osteopontin, bone sialoprotein and GRGDSP TFA peptides is RGD and cell shape change dependent[J]. International journal of cancer, 1998, 77(1): 82-93.
- [3] Patel S, Tsang J, Harbers G M, et al. Regulation of endothelial cell function by GRGDSP TFA peptide grafted on interpenetrating polymers[J]. Journal of Biomedical Materials Research Part A: An Official Journal of The Society for Biomaterials, The Japanese Society for Biomaterials, and The Australian Society for Biomaterials and the Korean Society for Biomaterials, 2007, 83(2): 423-433.
- [4] Matsuki K, Sasho T, Nakagawa K, et al. RGD peptide-induced cell death of chondrocytes and synovial cells[J]. Journal of Orthopaedic Science, 2008, 13(6): 524-532.
- [5] Knapp D M, Helou E F, Tranquillo R T. A fibrin or collagen gel assay for tissue cell chemotaxis: assessment of fibroblast chemotaxis to GRGDSP TFA[J]. Experimental cell research, 1999, 247(2):

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543-553.

[6] Sun Y, Chen X, Yue C, et al. Ninj2 regulates Schwann cells development by interfering laminin-integrin signaling[J]. Theranostics, 2022, 12(17): 7307.

[7] Qian J, Yin J, Liang H, et al. Experimental study on transarterial administration of GRGDSP TFA combined with transarterial chemoembolization in rats with hepatic carcinoma[J]. Cardiovascular and interventional radiology, 2008, 31(2): 377-382.

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