Product Data Sheet

Product Name: PLGA(75:25)(poly(lactic-co-glycolic acid))
Cat. No.: GC30049

Chemical Properties

Cas. No.	34346-01-5		
SMILES	O=C(O)C(C)OC(CO[H])=O.[x].[y]		
Formula	$(C_5H_8O_5)n$	M.Wt	10000-20000
Solubility	DMSO : 100 mg/mL ;chloroform : 16.67 mg/mL ;Water : < 0.1 mg/mL (insoluble)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ 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

Protocol 1 (Synthesis of PLGA@ Icaritin)[1]

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1.PLGA-PEG copolymers (PEG2000) were prepared by melt polymerization under vacuum using stannous octoate [stannous 2-ethylhexanoate] as a catalyst. PLGA and PEG2000 (0.77 g) (45%/w) were heated to 140℃ in a bottleneck flask under a nitrogen atmosphere for complete melting. (The molar ratio of DL-lactide to glycolide was 3:1 in PLGA)2.Stannous octoate [0.05% (w/w)] was added, and the temperature of the reaction mixture was increased to 180℃. This temperature was maintained for 4 h. Polymerization was performed under vacuum.3.The copolymer was recovered by dissolution in methylene chloride, followed by precipitation in ice-cold diethyl ether. After 24 h, PLGA-PEG was purified by washing with ethanol and drying under vacuum.4.Icaritin (0.5 mg) was dissolved in 500 μL dimethyl sulfoxide and mixed with 5 mg of PLGA-PEG in the drug solution.5.The drug-polymer mixture was added dropwise to 10 mL of deionized water while stirring and stirred for 24 h at room temperature in a beaker.6.PLGA@Icaritin was obtained, dialyzed to remove the organic solvent, and freeze-dried.

1. This protocol only provides a guideline, and should be modified according to your specific needs.

References:

[1]. Xiao Y, Yao W, et,al. Icaritin-loaded PLGA nanoparticles activate immunogenic cell death and facilitate tumor recruitment in mice with gastric cancer. Drug Deliv. 2022 Dec;29(1):1712-1725. doi: 10.1080/10717544.2022.2079769. PMID: 35635307; PMCID: PMC9176696.

Background

PLGA(poly (lactic-co-glycolic acid)) is made by random polymerization of two monomers: lactic acid and glycolic acid. It is a degradable functional polymer organic compound with good biocompatibility, non-toxic, and good cystforming and film forming properties. It is widely used in pharmaceutical, medical engineering materials and modern industrial fields[1,2].

PLGA@Icaritin nanoparticles (NPs) dramatically suppressed cell growth, induced Lactic dehydrogenase (LDH) leakage, arrested more GC cells at G2 phase, and inhibited the

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invasion and metastasis of GC cells, compared to free icaritin. In addition, PLGA@Icaritin could help generate dozens of reactive oxygen species (ROS) within GC cells, following by significant mitochondrial membrane potentials (MMPs) loss and excessive production of oxidative-mitochondrial DNA (Ox-mitoDNA)[3].

References:

[1]. Gentile P, Chiono V, et,al. An overview of poly(lactic-co-glycolic) acid (PLGA)-based biomaterials for bone tissue engineering. Int J Mol Sci. 2014 Feb 28;15(3):3640-59. doi: 10.3390/ijms15033640. PMID: 24590126; PMCID: PMC3975359.
[2]. Sadat Tabatabaei Mirakabad F, Nejati-Koshki K, et,al.PLGA-based nanoparticles as cancer drug delivery systems. Asian Pac J Cancer Prev. 2014;15(2):517-35. doi: 10.7314/apjcp.2014.15.2.517. PMID: 24568455.
[3]. Xiao Y, Yao W, et,al.Icaritin-loaded PLGA nanoparticles activate immunogenic cell death and facilitate tumor recruitment in mice with gastric cancer. Drug Deliv. 2022 Dec;29(1):1712-1725. doi: 10.1080/10717544.2022.2079769. PMID: 35635307; PMCID: PMC9176696.