Product Data Sheet

Product Name: Peimisine
Cat. No.: GN10319

Chemical Properties

Cas. No.	19773-24-1
Chemical Name	3,9-bis(azepan-1-yl)-2,4,8,10-tetraoxa-3ж╦5,9ж╦5-diphosphaspiro[5.5]undecane 3,9-dioxide
SMILES	C1CCCN(CC1)P2(=O)OCC3(CO2)COP(=O)(OC3)N4CCCCCC4

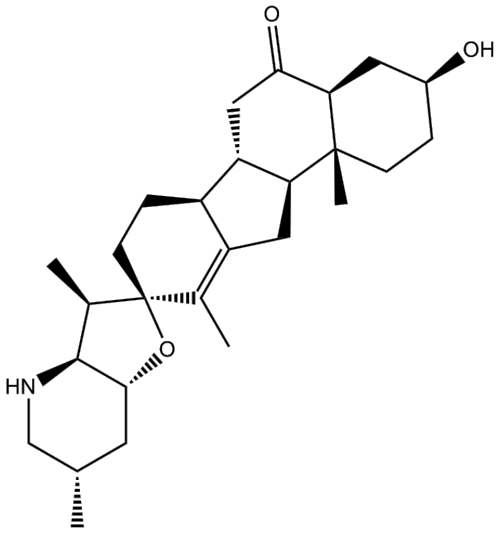
Formula	$C_{27}H_{41}NO_3$	M.Wt	427.31
Solubility	≥ 50mg/mL in DMSO with ultrasonic and warming	Storage	Store at 2-8°C, protect from light

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.

Caution: Product has not been fully validated for medical applications. For research use only.
Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Structure



Protocol

Cell experiment [1]:

Cell lines	BEAS-2B cells

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Preparation Method	BEAS-2B cells were stimulated with cigarette smoke extract (CSE) to induce oxidative stress injury. Cells were co-incubated with 0.5% CSE and peimisine (10, 20, and 40μM) for 24h and then the reactive oxygen species (ROS), malondialdehyde (MDA), superoxide dismutase (SOD) levels were measured using the kits and the level of 4-hydroxynonenal (4-HNE) was determined by enzyme-linked immunosorbent assay.
Reaction Conditions	10, 20 and 40μM; 24h
Applications	Peimisine reduced the ROS, MDA and 4-HNE content and restored the level of SOD.

Animal experiment [2]:

Animal models	Male C57BL/C mice
Preparation Method	Mice were received Peimisine (5 and 15mg/kg) via oral administration for 1 week before Dextran Sulfate Sodium (DSS) stimulation. All groups were subsequently treated with 2.5% DSS for 7 days to induce colitis. The disease activity index (DAI) was determined from days 0 to 7. DAI is the sum of scores for stool consistency, weight loss, and gross bleeding extent.
Dosage form	5 and 15mg/kg; 7d; p.o.
Applications	Peimisine significantly alleviated the disease signs of colitis induced by DSS.

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References:
[1] Liu C, Zhu X, Aga E, et al. Ebeiedinone and peimisine inhibit cigarette smoke extract-induced oxidative stress injury and apoptosis in BEAS-2B cells [J]. Cell stress & chaperones, 2024, 29(6): 697-708.
[2] Li Y, Yang X, Han J, et al. Peimisine ameliorates DSS-induced colitis by suppressing Jak-Stat activation and alleviating gut microbiota dysbiosis in mice [J]. The Journal of pharmacy and pharmacology, 2024, 76(5): 545-558.

Background

Peimisine is a kind of bioactive alkaloids found in *Fritillaria* bulbs which can inhibit angiotensin converting enzyme (ACE) activity with an IC_{50} of 526.5μM [1]. Peimisine has anti-acute lung injury effect and has obvious cytotoxicity against various tumor cells [2, 3].

Peimisine (10, 20 and 40μM; 24h) reduced the reactive oxygen species (ROS), malondialdehyde (MDA) and 4-hydroxynonenal (4-HNE) content and restored the level of superoxide dismutase (SOD) in cigarette smoke extract (CSE)-induced BEAS-2B cells; Peimisine (10, 20 and 40μM; 24h) significantly decreased the number of apoptotic cells and the cell apoptosis rate in CSE-induced BEAS-2B cells [4]. Peimisine (160μM; 24h) significantly upregulated the expression of ADRB2 and NOS3 and downregulated the expression of SRC and MMP2 in BEAS-2B cells stimulated with CSE [5].

Peimisine (5 and 15mg/kg; 7d; p.o.) significantly alleviated the disease signs of colitis C57BL/C mice; Peimisine (5 and 15mg/kg; 7d; p.o.) significantly downregulated the expression levels of CD68 and CD11b in colitis C57BL/C mice [6].

References:
[1] Oh H, Kang D G, Lee S, et al. Angiotensin converting enzyme (ACE) inhibitory alkaloids from Fritillaria ussuriensis [J]. Planta medica, 2003, 69(6): 564-565.
[2] Jin X, Gao X, Lan M, et al. Study the mechanism of peimisine derivatives on NF-κB inflammation pathway on mice with acute lung injury induced by lipopolysaccharide [J]. Chemical biology & drug design, 2022, 99(5): 717-726.
[3] Wang D, Jiang Y, Wu K, et al. Evaluation of antitumor property of extracts and steroidal alkaloids

from the cultivated Bulbus Fritillariae ussuriensis and preliminary investigation of its mechanism of action [J]. BMC complementary and alternative medicine, 2015, 15: 29.
[4] Liu C, Zhu X, Aga E, et al. Ebeiedinone and peimisine inhibit cigarette smoke extract-induced oxidative stress injury and apoptosis in BEAS-2B cells [J]. Cell stress & chaperones, 2024, 29(6): 697-708.
[5] Xian M, Xu J, Zheng Y, et al. Network pharmacology and experimental verification reveal the regulatory mechanism of Chuanbeimu in treating chronic obstructive pulmonary disease [J]. International journal of chronic obstructive pulmonary disease, 2024, 19: 799-813.
[6] Li Y, Yang X, Han J, et al. Peimisine ameliorates DSS-induced colitis by suppressing Jak-Stat activation and alleviating gut microbiota dysbiosis in mice [J]. The Journal of pharmacy and pharmacology, 2024, 76(5): 545-558.