Product Data Sheet

Product Name: Epithalon
Cat. No.: GC38102

Chemical Properties

Cas. No.	307297-39-8		
Formula	$C_{14}H_{22}N_4O_9$	M.Wt	390.35
Solubility	Soluble in DMSO	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	Epithalon		

Protocol

Cell experiment [1]:

Cell lines	NB7 neuroblastoma cells
Preparation Method	NB7 neuroblastoma cells were cultured in standard RPMI1640 medium containing 10% fetal calf serum, 5% penicillin/streptomycin, and 5% L-glutamine. The cells were grown in 30ml of the medium in 175cm^2 flasks at 37°C in 5% (v/v) CO_2 to 70% confluency. After that, the culture medium was replaced by serum-free medium, and the following testing agents were added: vilon and Epithalon to a final concentration of 50nM. The cells were maintained either in standard conditions or at hypoxic concentrations (1% O_2) for 24h and were collected for analysis of Neprilysin and Insulin-degrading enzyme expression.

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Reaction Conditions	50nM; 24h
Applications	Epithalon treatment prevented the decrease in neprilysin and insulin-degrading enzyme expression induced by hypoxia in NB7 neuroblastoma cells.

Animal experiment [2]:

Animal models	HER-2/neu transgenic FVB/N mice
Preparation Method	HER-2/neu transgenic FVB/N mice were housed in a specific pathogen-free (SPF) animal house maintained at 23°C with a 12h light/dark cycle and free access to water and food. Transgenic mice (n=80) were randomly divided into 3 groups. Control animals received monthly subcutaneous injections of 0.1ml 0.9% NaCl for 5 consecutive days starting from the 2nd month of life. Group 1 and 2 mice were subcutaneously injected with Epithalon and Vilon (1μg), respectively. The whole experiment lasted for 6 months, and the development of breast tumors was estimated weakly by palpation.
Dosage form	1μg; 5 times a week for 6 months; s.c.
Applications	Epithalon treatment suppressed tumor growth and extended the lifetime in mice.

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References:
[1] Kozina L S, Kochkina E G, Nalivaeva N N, et al. The effects of vilon and epithalon peptides on the expression of neprilysin and insulin-degrading enzyme in human neuroblastoma NB7 cells under normal and hypoxic conditions[J]. Neurochemical Journal, 2008, 2(1): 69-71.
[2] Anisimov V N, Khavinson V K, Alimova I N, et al. Epithalon decelerates aging and suppresses development of breast adenocarcinomas in transgenic her-2/neu mice[J]. Bulletin of Experimental Biology and Medicine, 2002, 134(2): 187-190.

Background

Epithalon is a tetrapeptide that induces telomerase activity and telomere elongation[1]. Epithalon can penetrate through the cell membrane and enter the nucleus, where Epithalon increases the transcriptional levels of Nestin and GAP43[2]. Epithalon has been widely used to stimulate evening melatonin production and normalize circadian rhythms of cortisol production in old monkeys[3].

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In vitro, Epithalon treatment at 0.01μg/ml for 7 days significantly upregulated the expression of neurogenesis-related genes and the synthesis of β-tubulin III and Doublecortin in human gingival mesenchymal stem cells (hGMSCs)[4]. Treatment with 50nM Epithalon for 24h significantly prevented the decrease in neprilysin and insulin-degrading enzyme expression induced by hypoxia in NB7 neuroblastoma cells[5]. Treatment with 400ng/ml Epithalon for 24h significantly alleviated UV-induced oxidative stress and increased the expression of SOD-1, NQO1, and CATALASE genes in dermal fibroblasts[6].

In vivo, Epithalon treatment via oral administration at a dose of 100μg/day for one month significantly improved the transport properties of the small intestine in aged rats and promoted active glucose accumulation in the proximal and distal segments of the small intestine[7]. Epithalon (1μg) administered subcutaneously five times a week for six months significantly suppressed tumor growth in female transgenic FVB/N mice carrying the breast cancer gene HER-2/neu[8].

References:
[1] Khavinson V K, Bondarev I E, Butyugov A A. Epithalon peptide induces telomerase activity and telomere elongation in human somatic cells[J]. Bulletin of Experimental Biology and Medicine, 2003, 135(6): 590-592.
[2] Araj S K, Brzezik J, Mądra-Gackowska K, et al. Overview of Epitalon—Highly Bioactive Pineal Tetrapeptide with Promising Properties[J]. International Journal of Molecular Sciences, 2025, 26(6): 2691.
[3] Khavinson V K, Konovalov S S, Yuzhakov V V, et al. Modulating effects of epithalamin and epithalon on the functional morphology of the spleen in old pinealectomized rats[J]. Bulletin of Experimental Biology and Medicine, 2001, 132(5): 1116-1120.
[4] Khavinson V, Diomede F, Mironova E, et al. AEDG peptide (Epitalon) stimulates gene expression and protein synthesis during neurogenesis: possible epigenetic mechanism[J]. Molecules, 2020, 25(3): 609.
[5] Kozina L S, Kochkina E G, Nalivaeva N N, et al. The effects of vilon and epithalon peptides on the expression of neprilysin and insulin-degrading enzyme in human neuroblastoma NB7 cells under normal and hypoxic conditions[J]. Neurochemical Journal, 2008, 2(1): 69-71.
[6] Gutop E O, Linkova N S, Kozhevnikova E O, et al. AEDG Peptide Prevents Oxidative Stress in the Model of Induced Aging of Skin Fibroblasts[J]. Advances in Gerontology,

2022, 12(2): 143-148.
[7] Khavinson V K, Egorova V V, Timofeeva N M, et al. Effect of Vilon and Epithalon on glucose and glycine absorption in various regions of small intestine in aged rats[J]. Bulletin of Experimental Biology and Medicine, 2002, 133(5): 494-496.
[8] Anisimov V N, Khavinson V K, Alimova I N, et al. Epithalon decelerates aging and suppresses development of breast adenocarcinomas in transgenic her-2/neu mice[J]. Bulletin of Experimental Biology and Medicine, 2002, 134(2): 187-190.

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