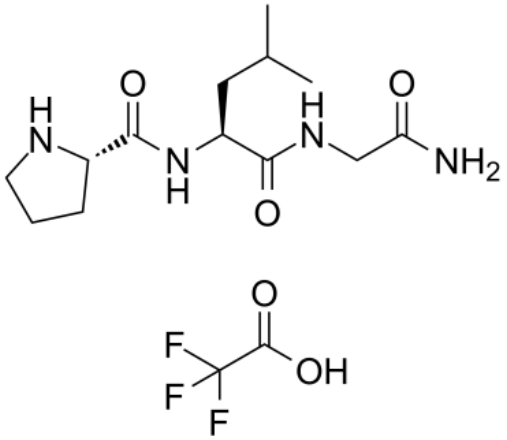
Product Data Sheet

Product Name: MIF-1 TFA
Cat. No.: GC61955

Chemical Properties

Cas. No.	35240-69-8		
Formula	$C_{15}H_{25}F_3N_4O_5$	M.Wt	398.38
Solubility	DMSO : 125 mg/mL (313.77 mM)	Storage	-20°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.		

Structure



Protocol

Cell experiment [1]:	
Cell lines	SH-SY5Y cells

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Preparation Method	SH-SY5Y cells were cultured in DMEM medium supplemented with 10% fetal bovine serum, at 37°C in an incubator with 5% CO_2. Sixteen hours after serum starvation, the cells were treated with MIF-1 TFA (10ng/ml for different time intervals (0, 1, 2, and 3h). c-Fos expression was measured.
Reaction Conditions	10ng/ml; 0, 1, 2, and 3h
Applications	MIF-1 TFA enhanced the c-Fos expression in SH-SY5Y cells in a time-dependent manner.
Animal experiment [2]:	
Animal models	Sprague-Dawley albino rats
Preparation Method	Pregnant Sprague-Dawley albino rats were kept at constant environmental and nutritional conditions at room temperature with a 12h/12h light/dark cycle and allowed free access to standard laboratory food and water throughout the experiment. Rat pups were treated i.p. once each day from birth for 32 days, with the diluent, consisting of saline (0.9%) plus saline containing tartaric acid (0.5%) and acetic acid (0.5mM); or spiroperidol (1mg/kg); or MIF-1 TFA (1mg/kg); or spiroperidol plus MIF-1 TFA. Rat pups were weaned at 4 weeks and killed at 8 weeks by decapitation. Striata were dissected from each brain for analysis.
Dosage form	1mg/kg/day; 32 days; i.p.
Applications	MIF-1 TFA attenuated spiroperidol-induced impairment of development of striatal dopamine D2 receptors in rats.

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

[1] Khan R S, Yu C, Kastin A J, et al. Brain Activation by Peptide Pro-Leu-Gly-NH2 (MIF-1)[J]. International journal of peptides, 2010, 2010(1): 537639.

[2] Bhagwanth S, Mishra R K, Johnson R L. Development of peptidomimetic ligands of Pro-Leu-Gly-NH2 as allosteric modulators of the dopamine D2 receptor[J]. Beilstein journal of organic chemistry, 2013, 9(1): 204-214.

Background

MIF-1 TFA is an antibiotic with melanin synthesis inhibitory activity that strongly inhibits melanin formation[1]. MIF-1 TFA activates the dopamine D2 receptor, regulating dopamine neurotransmission within the central nervous system and enhancing the behavioral effects of levodopa[2]. MIF-1 TFA has been widely used to promote the development of dopamine D2 receptors in the rat striatum[3].

In vitro, MIF-1 TFA treatment (10ng/ml) for 1 hour increased the expression of c-Fos in SH-SY5Y cells and regulated the pERK and pSTAT3 pathways[4].

In vivo, a single intravenous injection of MIF-1 TFA (10μg) resulted in an increase in the expression of c-Fos in the mouse brain 4 hours later[4].

References:

[1] Ishihara Y, Oka M, Tsunakawa M, et al. Melanostatin, a new melanin synthesis inhibitor production, isolation, chemical properties, structure and biological activity[J]. The Journal of Antibiotics, 1991, 44(1): 25-32.

[2] Bhagwanth S, Mishra R K, Johnson R L. Development of peptidomimetic ligands of Pro-Leu-Gly-NH2 as allosteric modulators of the dopamine D2 receptor[J]. Beilstein journal of organic chemistry, 2013, 9(1): 204-214.

[3] Saleh M I, Kostrzewa R M. MIF-1 attenuates spiroperidol alteration of striatal dopamine D2 receptor ontogeny[J]. Peptides, 1989, 10(1): 35-39.

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[4] Khan R S, Yu C, Kastin A J, et al. Brain Activation by Peptide Pro-Leu-Gly-NH2 (MIF-1)[J]. International journal of peptides, 2010, 2010(1): 537639.