Semaglutide	**Common Name**	Semaglutide acetate salt		
	CAS Number	910463-68-2	**Molecular Weight**	4113.57754
	Density	N/A	**Boiling Point**	N/A
	Molecular Formula	$C^{187}H^{291}N^{45}O^{59}$	**Melting Point**	N/A
	MSDS	N/A	**Flash Point**	N/A

Semaglutide acetate salt Biological Activity

Description	Semaglutide, a long-acting GLP-1 analogue, is a glucagon-like peptide-1 (GLP-1) receptor agonist that can be used in the treatment of type 2 diabetes.
Related Catalog	Signaling Pathways >> GPCR/G Protein >> Glucagon Receptor Research Areas >> Metabolic Disease
Target	GLP-1 receptor[1].
In Vitro	Semaglutide has two amino acid substitutions compared to human GLP-1 (Aib8, Arg34) and is derivatized at lysine 26. The GLP-1R affinity of Semaglutide is 0.38±0.06 nM[1]. Semaglutide is a GLP-1 analogue with 94% sequence omology to human GLP-1[3.
In Vivo	The plasma half-life of Semaglutide is 46h in mini-pigs following i.v. administration and semaglutide has an MRT of 63.6h after s.c. dosing to mini-pigs[1]. Semaglutide improves 1-methyl-4-phenyl-1,2,3,6- tetrahydropyridine (MPTP)-induced motor impairments. In addition, Semaglutide rescues the decrease of tyrosine hydroxylase (TH) levels, alleviates the inflammation response, reduces lipid peroxidation, inhibits the apoptosis pathway, and also increases autophagy- related protein expression, to protect dopaminergic neurons in the substantia nigra and striatum. Moreover, the long-acting GLP-1 analogue semaglutide is superior to liraglutide in most parameters[2]. Semaglutide lowers blood glucose by stimulating the

	release of insulin and also lowers body weight[3].
Animal Admin	Mice[2] Male C57BL/6 mice 10 weeks old (20-25 g) are used throughout the study. Mice are randomized divided into six groups (n=12 per group) (i) control group treated with saline alone; (ii) liraglutide group treated with saline and liraglutide (25 nmol/kg ip. once daily for 7 days); (iii) Semaglutide group treated with saline and Semaglutide (25 nmol/kg ip. once daily for 7 days), (iv) MPTP group treated with MPTP alone (once daily 20 mg/kg ip. for 7 days); (v) MPTP (once daily 20 mg/kg ip. for 7 days) followed immediately by liraglutide treated group (25 nmol/kg ip. once daily for 7 days). (vi) MPTP (20 mg/kg ip. once daily for 7 days) followed immediately by Semaglutide treated group (25 nmol/kg ip. Once daily for 7 days). At the end of drug treatments, measure the behavioral changes, neuronal damage, inflammatory markers, and other biomarkers[2].
References	[1]. Marso SP, et al. Semaglutide and Cardiovascular Outcomes in Patients with Type 2 Diabetes. N Engl J Med. 2016 Nov 10;375(19):1834-1844. [2]. Zhang L, et al. Neuroprotective effects of the novel GLP-1 long acting analogue semaglutide in the MPTP Parkinson's disease mouse model. Neuropeptides. 2018 Oct;71:70-80. [3]. Dhillon S, et al. Semaglutide: First Global Approval. Drugs. 2018 Feb;78(2):275-284.