



Catalog Number:	MC11019	Product Type:	Small Molecule
Bio-Activity:	Sigma-1 Ligand/Neuroprotective/restorative	CAS #:	346688-38-8
Research Categories:	Neuroscience	Chemical Name:	4-(3-(Methylsulfonyl)phenyl)-1-propylpiperidine
Solubility:	Soluble in DMSO (>25 mg/mL)	Molecular Formula:	C15H23NO2S
Purity:	> 98%	Molecular Weight:	281.41
Format:	Powder	Ship Temp:	Ambient
Storage:	Room Temperature		

Application Notes

Description/Data:

Pridopidine is being considered as a potential treatment for Huntington's disease, Parkinson's disease, and schizophrenia, because of its locomotor stabilizing and antipsychotic-like effects (1,2). Without leading to catalepsy, it can reverse both hypo- and hyperdopaminergia depending on local dopamine concentrations. This effect of pridopidine is granted to functional dopamine D2 antagonism with fast on/off kinetics ("dopamine stabilizer") (3). Recent studies has suggested pridopidine is more of a potent sigma-1 ligand than a D2 ligand (4,5). Pridopidine also exhibits neuroprotective/restorative effects (6,7) and ameliorates central features of amyotrophic lateral sclerosis pathology (8) in a sigma-1-mediated manner.

References:

- 1) Pettersson et al., (2010), Synthesis and Evaluation of a Set of 4-Phenylpiperidines and 4-Phenylpiperazines as D2 Receptor Ligands and the Discovery of the Dopaminergic Stabilizer 4-[3-(Methylsulfonyl)phenyl]-1-propylpiperidine (Huntexil, Pridopidine, ACR16); *J.Med.Chem.* 53 2510
- 2) Natesan et al., (2006), The dopamine stabilizers (S)-(-)-(3-methanesulfonylphenyl)-1-propyl-piperidine [(-)-OSU6162] and 4-(3-methanesulfonylphenyl)-1-propyl-piperidine (ACR16) show high in vivo D2 receptor occupancy, antipsychotic-like efficacy, and low potential for motor side effects in the rat; *J.Pharmacol.Exp.Ther.* 318 810
- 3) Dyhring et al.(2010), The dopaminergic stabilizers pridopidine (ACR16) and (-)-OSU6162 display dopamine D(2) receptor antagonism and fast receptor dissociation properties; *Eur.J.Pharmacol.* 628 19

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- 4) Sahlholm et al., (2015), Pridopidine selectively occupies sigma-1 rather than dopamine D2 receptors at behaviorally active doses; *Psychopharmacology (Berl)* 232 3443
- 5) Sahlholm et al. (2013), The dopamine stabilizers ACR16 and (-)-OSU6162 display nanomolar affinities at the σ -1 receptor; *Mol.Psychiatry* 18 12
- 6) Francardo et al. (2019), Pridopidine Induces Functional Neurorestoration Via the Sigma-1 Receptor in a Mouse Model of Parkinson's Disease; *Neurotherapeutics* epub ahead of print
- 7) Ryskamp et al. (2017), The sigma-1 receptor mediates the beneficial effects of pridopidine in a mouse model of Huntington disease; *Neurobiol.Dis.* 97(Pt A) 46
- 8) Ionescu et al. (2019), Targeting the Sigma-1 Receptor via Pridopidine Ameliorates Central Features of ALS Pathology in a SOD1G93A Model; *Cell Death Dis.* 10 210

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