Melanin-concentrating hormone

Overview: Melanin-concentrating hormone (MCH) receptors (provisional nomenclature, see Foord *et al*., 2005) are activated by an endogenous nonadecameric cyclic peptide identical in humans and rats (DFDMLRCMLGRVYRPCWQV) generated from a precursor (ENSG00000183395), which also produces neuropeptides EI and GE.

Nomenclature	MCH_1	MCH_2
Other names	SLC-1, GPR24	SLT, GPRv17
Ensembl ID	ENSG00000128285	ENSG00000152034
Principal transduction	$G_{q/11}$, $G_{i/o}$	$G_{q/11}$ (Hill *et al*., 2001); Mori *et al*., 2001; Rodriguez *et al*., 2001)
Rank order of potency	Human MCH > salmon MCH	Human MCH = salmon MCH (Hill *et al*., 2001)
Selective antagonists	SNAP7941 (9.2, Borowsky *et al*., 2002), ATC0175 (pIC_{50} 7.9-8.2, Chaki *et al*., 2005), T226296 (7.5, Takekawa *et al*., 2002)	–
Probes	[^{3}H]-MCH (Burgaud *et al*., 1997), [Phe^{13},[^{125}I]-Tyr^{19}]MCH (Burgaud *et al*., 1997), [^{125}I]-S36057 (0.04 nM, Audinot *et al*., 2001)	–

The MCH_2 receptor appears to be a non-functional pseudogene in rodents (Tan *et al*., 2002).

Abbreviations: **ATC0175**, *N*-(cis-4-{[4-(dimethylamino)quinazolin-2-yl]amino}cyclohexyl)-3,4-difluorobenzamide hydrochloride; **S36057**, 3-iodo-tyr-(8-amino-3,6-dioxyoctanoyl)MCH-(6-17); **SNAP7941**, (+)-methyl(4*S*)-3-([{3-(4-[3-{acetylamino}phenyl]-1-piperidinyl)propyl}amino] carbonyl)-4-(3,4-difluorophenyl)-6-(methoxymethyl)-2-oxo-1,2,3,4-tetrahydro-5-pyrimidinecarboxylate hydrochloride; **T226296**, (-)-*N*-[6-(dimethylamino)-methyl]-5,6,7,8-tetrahydro-2-naphthalenyl]-4′-fluoro[1,1′-biphenyl]-4-carboxamide

Further Reading

Foord SM, Bonner TI, Neubig RR, Rosser EM, Pin JP, Davenport AP *et al*. (2005). International Union of Pharmacology. XLVI. G protein-coupled receptor list. *Pharmacol Rev* **57**: 279–288.

Handlon AL, Zhou H (2006). Melanin-concentrating hormone-1 receptor antagonists for the treatment of obesity. *J Med Chem* **49**: 4017–4022.

Kemp EH, Weetman AP (2009). Melanin-concentrating hormone and melanin-concentrating hormone receptors in mammalian skin physiopathology. *Peptides* **30**: 2071–2076.

Luthin DR (2007). Anti-obesity effects of small molecule melanin-concentrating hormone receptor 1 (MCHR1) antagonists. *Life Sci* **81**: 423–440.

Pissios P, Bradley RL, Maratos-Flier E (2006). Expanding the scales: The multiple roles of MCH in regulating energy balance and other biological functions. *Endocr Rev* **27**: 606–620.

Rokosz LL, Hobbs DW (2006). Biological examination of melanin concentrating hormone receptor 1: multi-tasking from the hypothalamus. *Drug News Perspect* **19**: 273–286.

Saito Y, Nagasaki H (2008). The melanin-concentrating hormone system and its physiological functions. *Results Probl Cell Differ* **46**: 159–179.

Shimazaki T, Yoshimizu T, Chaki S (2006). Melanin-concentrating hormone MCH1 receptor antagonists: a potential new approach to the treatment of depression and anxiety disorders. *CNS Drugs* **20**: 801–811.

References

Audinot V *et al*. (2001). *Br J Pharmacol* **133**: 371–378.

Borowsky B *et al*. (2002). *Nat Med* **8**: 825–830.

Burgaud JL *et al*. (1997). *Biochem Biophys Res Commun* **241**: 622–629.

Chaki S *et al*. (2005). *J Pharmacol Exp Ther* **313**: 831–839.

Hill J *et al*. (2001). *J Biol Chem* **276**: 20125–20129.

Mori M *et al*. (2001). *Biochem Biophys Res Commun* **283**: 1013–1018.

Rodriguez M *et al*. (2001). *Mol Pharmacol* **60**: 632–639.

Takekawa S *et al*. (2002). *Eur J Pharmacol* **438**: 129–135.

Tan CP *et al*. (2002). *Genomics* **79**: 785–792.