Melanocortin

Overview: Melanocortin receptors (provisional nomenclature, see Foord *et al*., 2005) are activated by members of the melanocortin family (MSH – α, β and γ forms – δ form is not found in mammals) and adrenocorticotrophin (ACTH). Endogenous antagonists include agouti and agouti-related protein (AGRP).

Nomenclature	MC_1	MC_2	MC_3	MC_4	MC_5
Other names	–	ACTH receptor	–	–	–
Ensembl ID	ENSG00000141037	ENSG00000185231	ENSG00000124089	ENSG00000166603	ENSG00000176136
Principal transduction	G_s	G_s	G_s	G_s	G_s
Rank order of potency	α-MSH > β-MSH ≥ ACTH, γ-MSH	ACTH	γ-MSH, β-MSH ≥ ACTH, α-MSH	β-MSH ≥ α-MSH, ACTH > γ-MSH	α-MSH ≥ β-MSH ≥ ACTH > γ-MSH
Selective agonists	–	–	D-Trp^8-γ-MSH (Grieco *et al.* (2000)	THIQ (Van Der Ploeg *et al*., 2002)	–
Selective antagonists	–	–	–	HS014 (8.5, Schiöth *et al*., 1998), MBP10 (Bednarek *et al*., 2001)	–
Probes	[^{125}I]-NDP-MSH	[^{125}I]-ACTH-(1–24)	[^{125}I]-NDP-MSH, [^{125}I]-SHU9119	[^{125}I]-NDP-MSH, [^{125}I]-SHU9119	[^{125}I]-NDP-MSH

Polymorphisms of the MC_1 receptor have been linked to variations in skin pigmentation. Defects of the MC_2 receptor underlie familial glucocorticoid deficiency. Polymorphisms of the MC_4 receptor have been linked to obesity (Chagnon *et al*., 1997).

Abbreviations: HS014, *cyc*(*S*–*S*)-(Ac-Cys^{11},D-Nal^{14},Cys^{18},Asp-NH_2)β-MSH-(11-22); **MBP10**, cyclo(6β→10ε)(succinyl(6)-D-(2′)Nal^7-Arg^8-Trp^9-Lys^{10})-NH_2; **NDP-MSH**, [Nle^4,d-Phe^7]α-MSH; **SHU9119**, Ac-Nle-Asp-His-d-Nal^2-Arg-Trp-Lys-NH_2; **THIQ**, *N*-([3R]-1,2,3,4-tetrahydroisoquinolinium-3-ylcarbonyl)-(1R)-1-(4-chlorobenzyl)-2-(4-cyclohexyl-4-[1*H*-1,2,4-triazol-1ylmethyl]piperidin-1-yl)-2-oxoethylamine

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