Cholecystokinin

Overview: Cholecystokinin receptors (nomenclature recommended by the NC-IUPHAR Subcommittee on CCK receptors, Noble *et al*., 1999) are activated by the endogenous peptides cholecystokinin (CCK)-4, CCK-8, CCK-33 and gastrin. There is evidence for species homologues of CCK_2 receptors distinguished by the relative affinities of the two stereoisomers of devazepide, *R*-L365260 and *S*-L365260, or by the differences in affinity of the agonist BC264 (Durieux *et al*., 1992).

Nomenclature	CCK_1	CCK_2
Other names	CCK_A	CCK_B, CCK_B/gastrin
Ensembl ID	ENSG00000163394	ENSG00000110148
Principal transduction	$G_{q/11}/G_s$	G_s
Rank order of potency	CCK-8 >> gastrin, des-CCK-8 > CCK-4	CCK-8 ≥ gastrin, des-CCK-8, CCK-4
Selective agonists	A71623, JMV180, GW5823	Desulfated CCK-8, gastrin, CCK-4, BC264, RB400
Selective antagonists	Devazepide (9.8), T0632 (9.6), SR27897 (9.2), IQM95333 (9.2), PD140548 (7.9–8.6), lorglumide (7.2)	YM022 (10.2), L740093 (10.0), GV150013 (9.3), RP73870 (9.3), L365260 (7.5–8.7), LY262691 (7.5)
Probes	[^{3}H]-Devazepide (0.2 nM)	[^{3}H]-Propionyl-BC264 (0.15 nM), [^{3}H]-PD140376 (0.2 nM), [^{3}H]-L365260 (2 nM), [^{3}H]- or [^{125}I]-gastrin (1 nM), [^{125}I]-PD142308 (0.25 nM)

A mitogenic gastrin receptor, which can be radiolabelled with [^{125}I]-gastrin-(1–17) and which appears to couple to the G_s family of G proteins, has been described in human colon cancer cells (Bold *et al*., 1994) and other cell lines (e.g. pancreatic AR42J and Swiss 3T3 fibroblasts, Seva *et al*., 1994; Singh *et al*., 1995).

Abbreviations: A71623, Boc-Trp-Lys(*O*-toluylaminocarbonyl)-Asp-(*N*Me)Phe-NH_2; **BC264**, Tyr(SO_3H)-gNle-mGly-Trp-(NMe)Nle-Asp-Phe-NH_2; **GV150013**, (+)-*N*-(1-[1-adamantane-1-methyl]-2,4-dioxo-5-phenyl-2,3,4,5-tetrahydro-1*H*-1,5-benzodiazepin-3-yl)-*N*′-phenylurea; **GW5823**, 2-[3-(1*H*-indazol-3-ylmethyl)-2,4-dioxo-5-phenyl-2,3,4,5-tetrahydrobenzo[*b*][1,4]diazepin-1-yl]-*N*-isopropyl-*N*-(methyoxyphenyl)acetamide; **IQM95333**, (4α*S*,5*R*)-2-benzyl-5[*N*-(*tert*-butoxycarbonyl)-L-Trp]amino-1,3-dioxoperhydropyrido[1,2-*c*]pyrimidine; **JMV180**, Boc-Tyr(SO_3H) Ahx-Gly-Trp-Ahx-Asp^{2}phenylethyl ester; **L365260**, 3*R*(+)-*N*-(2,3-dihydro-1-methyl-2-oxo-5-phenyl-1*H*-1,4-benzodiazepin-3-yl)-*N*′-(3-methylphenyl)urea; **L740093**, *N*-([3*R*]-5-[3-azabicyclo{3.2.2}nonan-3-yl]-2,3-dihydro-1-methyl-2-oxo-1*H*-1,4-benzodiazepin-3-yl)-*N*′-(3-methylphenyl)urea; **LY262691**, *trans*-*N*-(4-bromophenyl)-3-oxo-4,5-diphenyl-1-pyrrazolidinecarboxamide(3.3.1.1^{3,7}); **PD140376**, L-3-([4-aminophenyl]methyl)-*N*-(α-methyl-*N*-[{tricyclo(3.3.1.1D-Trp)-β-Ala; **PD140548**, *N*-(α-methyl-*N*-[{tricyclo(3.3.1.1L-Trp)-D-3-(phenylmethyl)-β-Ala; **PD142308**, iodinated PD140548; **RB400**, HOOC-CH_2-CO-Trp-NMe(Nle)-Asp-Phe-NH_2; **RP73870**, ([[(*RS*); **SR27897**, 1-([2-{4-(2-chlorophenyl)thiazole-2-yl}aminocarbonyl]indolyl)acetic acid; **T0632**, sodium (*S*)-3-(1-[2-fluorophenyl]-2,3-dihydro-3-[{3-isoquinolinyl}-carbonyl]amino-6-methoxy-2-oxo-1*H*-indole)propanoate; **YM022**, (*R*)-1-(2,3-dihydro-1-[2′-methylphenacyl]-2-oxo-5-phenyl-1*H*-1,4-benzodiazepin-3-yl)-3-(3-methylphenyl)urea

Further Reading

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