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Review

Endogenous Opiates and Behavior: 2015

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ABSTRACT

This paper is the thirty-eighth consecutive installment of the annual review of research concerning the endogenous opioid system. It summarizes papers published during 2015 that studied the behavioral effects of molecular, pharmacological and genetic manipulation of opioid peptides, opioid receptors, opioid agonists and opioid antagonists. The particular topics that continue to be covered include the molecular-biochemical effects and neurochemical localization studies of endogenous opioids and their receptors related to behavior, and the roles of these opioid peptides and receptors in pain and analgesia, stress and social status, tolerance and dependence, learning and memory, eating and drinking, drug abuse and alcohol, sexual activity and hormones, pregnancy, development and endocrinology, mental illness and mood, seizures and neurologic disorders, electrical-related activity and neurophysiology, general activity and locomotion, gastrointestinal, renal and hepatic functions, cardiovascular responses, respiration and thermoregulation, and immunological responses.

Contents

Abbreviations: Ach, acetylcholine; ACL, anterior cruciate ligament; ACTH, adrenocorticotrophic hormone; AMP, adenosine monophosphate; AMPK, 5′adenosine monophosphate-activated protein kinase; AS ODN, antisense oligonucleotide; BDNF, brain-derived neurotrophic factor; BEND, beta-endorphin; BFNA, beta-funaltrexamine; BNST, bed nucleus of the stria terminalis; Ca(2+), calcium; CART, cocaine and amphetamine-regulated transcript; CB, cannabinoid; CCK, cholecystokinin; CFA, complete Freund's adjuvant; ChAT, choline acetyltransferase; CO, carbon monoxide; COX, cyclooxygenase; C/P, caudate/putamen; CREB, Ca(2+)/cAMP responsive element binding protein; CRF, corticotropin factor; CSF, cerebrospinal fluid; DA, dopamine; DADL, D-Ala(2), D-Leu (5)-enkephalin; DAMGO, D-Ala(2), Nme(4), Gly-ol (5)-enkephalin; Delt, deltorphin; DOR, delta opioid receptor; DPDPE, D-Pen(2) D-Pen(5)-enkephalin; DREAM, downstream regulatory element antagonistic modulator; DRG, dorsal root ganglion; DYN, Dynorphin; Enk, enkephalin; Enk, enkephalin; ENT, ear nose and throat; EPSP, excitatory post-synaptic potential; ERK, extracellular regulated signal kinases; GI, gastrointestinal; GIRK, G-protein inwardly rectifying K+ channel subunit; GnRH, gonadotropin-releasing hormone; GPCR, G protein coupled receptor; HIV, human immunodeficiency virus; HR, heart rate; ICSS, intracranial self-stimulation; IL, interleukin; IPSC, inhibitory post-synaptic currents; K(+), potassium; KO, knockout; KNDy, kisspeptin-neurokinin B-dynorphin; KOR, kappa opioid receptor; LC, locus coeruleus; Lenk, leu-enkephalin; LH, leutinizing hormone; L-NAME, N(omega)-nitro-l-arginine methyl ester; LPS, lipopolysaccharide; LTP, long-term potentiation; M3G, morphine-3-glucuronide; M6G, morphine-6-glucuronide; MAP, mean arterial pressure; MAPK, mitogen-activated protein kinase; Menk, met-enkephalin; 6MAM, 6-monoacetylmorphine; MOR, mu opioid receptor; mPFC, medial prefrontal cortex; MPOA, medial preoptic area; MPTP, 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine; NAC, nucleus accumbens; NBNI, nor-binaltorphamine; NE, norepinephrine; NMDA, N-methyl-D-aspartate; NO, nitric oxide; NOS, nitric oxide synthase; NPY, neuropeptide Y; NSAID, non-steroidal anti-inflammatory drug; NTI, naltrindole; NTS, nucleus tractus solitarius; OPRD-1, delta opioid receptor gene; OPRM1, mu opioid receptor gene; OFQ/N, nociceptin; ORL-1, orphan receptor like receptor; 6-OHDA, 6-hydroxydopamine; PAG, periaqueductal gray; PBN, parabrachial nucleus; PCA, patient-controlled analgesia; PDYN, pro-dynorphin; Penk, pro-enkephalin; PKA, protein kinase A; PKC, protein kinase C; POMC, pro-opiomelanocortin; PTSD, post-traumatic stress disorder; PVN, paraventricular nucleus; QTL, quantitative trait loci; RVM, rostral ventromedial medulla; 5-HT, serotonin; SIV, simian immunodeficiency virus; SN, substantia nigra; SNP, single nucleotide polymorphism; SON, supraoptic nucleus; SP, substance P; STZ, streptozotocin; TH, tyrosine hydroxylase; THC, tetrahydrocannibinol; TMS, transmagnetic stimulation; TNF, tumor necrosis factor; TP, testosterone proprionate; TRPV1, transient receptor potential vanilloid subfamily member 1; VIP, vasoactive intestinal polypeptide; VTA, ventral tegmental area.

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