Progress in Brain Research: Volume 105, 1995, Pages 263-271:Chapter 25 Cholecystokinin octapeptide (CCK-8): a negative feedback control mechanism for opioid analgesia

Publisher Summary

The opioids can be administered exogenously or released endogenously. To accelerate the release of endogenous opioids, acupuncture or electroacupuncture (EA) stimulation can be used that has been documented to be powerful means of activating the release of opioid peptides in the central nervous system (CNS). The chapter presents evidence to substantiate the following hypotheses: exogenously administered cholecystokinin octapeptide (CCK-8) produces a dose-dependent blockade of morphine analgesia and EA analgesia, the blockade of CCK receptors induces a potentiation of opioid analgesia, the blockade of CCK function produces a reversal of opioid tolerance; morphine and EA stimulation accelerate the release of CCK-8 from the CNS, an increased release of CCK-8 results in a change in the tissue content of CCK, followed by an accelerated biosynthesis including the enzymatic processing of the precursor protein and the transcription of the CCK gene, and transfer of foreign CCK gene into the CNS tilts the opioid/CCK balance, resulting in a suppression of the opioid activities that could be shown in more than one physiological system simultaneously. CCK-8 is a neuropeptide with potent opioid antagonistic activity, which serves as a negative feedback mechanism controlling the over functioning of exogenously administered or endogenously released opioids.