ALTERED NEUROADAPTATION IN OPIATE DEPENDENCE AND NEUROGENIC INFLAMMATORY NOCICEPTION IN α CGRP DEFICIENT MICE

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α CGRP is expressed in a variety of cell types in both central and peripheral nervous system[1]. Among its various functions, it is involved in the complex process of pain signaling[2,3]. Yet, the precise contribution of α CGRP is still unclear.

Using α CGRP deficient mice (-/-), we show that the lack of α CGRP underlies an attenuated response to chemical pain and inflammation[4]. In other words, α CGRP is critical for the production and, possibly, the transmission of pain signals associated with neurogenic inflammation. Furthermore, α CGRP -/- mice present a reduction in the antinociceptive response to morphine, indicating a modulatory role (agonist) of α CGRP in opioid pathways[5]. In contrast, the antinociceptive response to nicotine is potentiated, showing a negative modulation of nAChR function by this neuropeptide[4]. Thus, α CGRP has a complex role in the modulation of analgesic drug pathways.

Moreover, α CGRP -/- mice do not show changes in morphine self-administration and tolerance, but display a marked decrease in morphine withdrawal signs[4]. We suggest that α CGRP may influence the contribution of peripheral signals to the aversive emotional state occurring in the opiate dependence syndrome.

Taken together, these results show that α CGRP plays a critical role in mediating both chemical inflammatory pain and sensitivity to morphine withdrawal. Antagonists of α CGRP may thus offer novel therapeutics for the treatment of pain and drug addiction.

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