

S58-2 Behavioral pharmacology to elucidate the mechanisms for pain-induced aversion

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Pain consists of sensory discriminative and negative affective components. Although the neural systems responsible for the sensory component of pain have been studied extensively, the neural basis of the affective component is not well understood. Recently, behavioral studies using conditioned place aversion (CPA) tests have successfully elucidated the neural circuits and mechanisms underlying the negative affective component of pain. Excitotoxic lesions of the anterior cingulate cortex (ACC), central amygdaloid nucleus, basolateral amygdaloid nucleus (BLA) or bed nucleus of the stria terminalis (BNST) suppressed intraplantar formalin-induced aversive responses. Glutamatergic transmission within the ACC and BLA via NMDA receptors was shown to play a critical role in the affective component of pain. In the BNST, especially its ventral part, noradrenergic transmission via β -adrenergic receptors was demonstrated as important for pain-induced aversion. Because persistent pain is frequently associated with psychological and emotional dysfunction, studies of the neural circuits and the molecular mechanisms involved in the affective component of pain may have considerable clinical importance in the treatment of chronic pain.