# Effects of the kappa-opioid receptor agonist U-50,488 on morphine-induced place preference conditioning in the developing rat

[C A Bolanos](https://pubmed.ncbi.nlm.nih.gov/?term=Bolanos+CA&cauthor_id=8982712)[1](https://pubmed.ncbi.nlm.nih.gov/8982712/#affiliation-1), [G M Garmsen](https://pubmed.ncbi.nlm.nih.gov/?term=Garmsen+GM&cauthor_id=8982712), [M A Clair](https://pubmed.ncbi.nlm.nih.gov/?term=Clair+MA&cauthor_id=8982712), [S A McDougall](https://pubmed.ncbi.nlm.nih.gov/?term=McDougall+SA&cauthor_id=8982712)

## Abstract

The ability of the kappa-opioid receptor agonist trans-(+/-)- 3,4-dichloro-N-methyl-N-[2-(1-pyrrolidinyl)-cyclohexyl]-benzeneacetamide methanesulfonate (U-50,488) to modulate morphine-induced reward was assessed in preweanling (10- and 17-day-old) and periadolescent (35-day-old) rats using the conditioned place preference paradigm. Conditioning and testing were conducted in a three compartment chamber, with each end compartment having its own distinct tactile and odor cues (almond or lemon). An abbreviated conditioned place preference procedure was used in which rats received two saline-odor pairings on the first conditioning day, and two saline- or morphine-odor pairings on the second day. In some experiments, rats were given U-50,488 (2-10 mg/kg, s.c.) 30 min prior to being conditioned with morphine (0.1-8 mg/kg, i.p.). On the third day, rats were allowed free access to the entire chamber for 900 s and compartment preferences were determined. Similar to adult rats, morphine (0.5 mg/kg) was consistently able to induce conditioned place preferences in the two preweanling age groups. This effect was attenuated by kappa-opioid receptor agonist pretreatment, as U-50,488 not only enhanced the locomotor activity of 10- and 17-day-old rats, but it blocked the morphine-induced place preference conditioning of these younger animals. In contrast, periadolescent (35-day-old) rats did not exhibit morphine-induced place preferences, nor did they show enhanced locomotor activity after U-50,488 treatment; however, using the same procedure, a different group of similarly aged rats showed conditioned preference produced by 20 mg/kg cocaine (i.p.). Therefore, these results suggest that reward processes are functionally mature in the preweanling rat (at least by 10 days of age), but that periadolescent rats are generally unresponsive to mu- and kappa-opioid drugs.