Abstract

The antinociceptive effects of highly selective mu (DAMGO), delta (DPDPE) and kappa (U-50488 and U-69593) opioid agonists were evaluated following intraperitoneal (i.p.) administration in the naked mole-rat. A hot plate test set at 60 °C was used as a nociceptive test and the latency to the stamping of the right hind paw (response latency) was used as the end-point. DAMGO (5–10 mg/kg) and DPDPE (2.5–5 mg/kg) caused a naloxone-reversible significant decrease in the mean response latency. Subcutaneous injection of naloxonazine (20 mg/kg) 24 h prior to the administration of DAMGO (5 mg/kg) also blocked the reduction in the response latency observed when DAMGO was injected alone. On the contrary, U-50488 (2.5–5 mg/kg) or U-69593 (0.08 or 0.1 mg/kg) caused a naloxone-reversible significant increase in the mean response latency. These results showed that activation of mu or delta receptors caused hyperalgesia, whereas activation of kappa receptors caused antinociception in the hot plate test in naked mole-rat. This suggests that mu and delta receptors modulate thermal pain in a different way than kappa receptors in the naked mole-rat. It is not possible at the moment to point out how they modulate thermal pain as little is known about the neuropharmacology of the naked mole-rat.