Novel Depots of Buprenorphine Prodrugs Have A Long-acting Antinociceptive Effect

曾劍英

Liu KS;Tzeng JI;Chen YW;Huang KL;Kuei CH;Wang JJ

摘要

Abstract

An analgesic with a prolonged duration may be desirable in patients with long-lasting pain. In this study, we evaluated the antinociceptive effects and durations of action of three novel depots of buprenorphine esters buprenorphine propionate, enanthate, and decanoate given by IM injection, in rats. The pharmacokinetic profiles of buprenorphine in blood after IM injection of these depots were also evaluated. Antinociception was evaluated using the plantar test. Buprenorphine concentrations in blood were assayed using high-performance liquid chromatography. We found that the traditional form of buprenorphine HCl (in saline) produced a dose-related antinociceptive effect. A dose of 0.6 μmol/kg buprenorphine HCl (in saline) produced a significant antinociceptive effect lasting 5 h. The same dose of buprenorphine base, propionate, enanthate, and decanoate (in oil) also produced a significant antinociceptive effect with longer durations of action of 26, 28, 52, and 70 h, respectively. The pharmacokinetic studies demonstrated that all the buprenorphine esters were prodrugs of buprenorphine. We conclude that the novel depots of buprenorphine prodrugs: buprenorphine propionate, enanthate, and decanoate produced a long-acting antinociceptive effect after IM injection in rats.