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Publication date:
2017

Citation for published version (APA):

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Download date: 18. Oct. 2019
Fentanyl blood concentration and anti-nociceptive effect of a transdermal fentanyl formulation (Recuvyra) in male adult Sprague Dawley rats

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Recuvyra, a transdermal fentanyl formulation for dogs, has shown to be able to sustain effective analgesia for four days. Such a drug would be welcome in rodent analgesia in order to avoid stress related to repeated parenteral administration. For this reason six rats were dosed with 0.014 mg/kg transdermal fentanyl (Recuvyra). The study included an untreated control group (n=6). All animals were exposed to the Hargreaves thermo-analgesic plantar test after 1, 2 & 3 days and blood was sampled after 2, 4, 8, 24, 48 & 72 hours.

Results & conclusion

After 18 hrs. the plasma fentanyl concentration was below the threshold of 1.4 ng/ml and negligible below 0.3 ng/ml after 48 & 72 hrs. There was no statistical significance in the thermic latencies between the test- and control rats in the Hargreaves test. Only mild side effects (pica eating) in the test group were observed within the first eight hours after administration. We concluded that transdermal fentanyl (Recuvyra) did not have the expected extended-release effect in rats.