SCIENTIFIC REPORTS
nature research

OPEN

Author Correction: pK_a of opioid ligands as a discriminating factor for side effects

Published online: 04 March 2020

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Correction to: *Scientific Reports* https://doi.org/10.1038/s41598-019-55886-1, published online 18 December 2019

This Article contains a typographical error in the figure legend for Figure 5.

"Correlation between pK_a values of compounds with antinociception and side effects. (**A,B**) Antinociceptive effects as net $AUC_{(4–12\,\mu g/kg)}$ of PPT (negative values result from subtraction of pre-CFA baseline PPT) at 15 min after i.v. injection of NFEPP, FF3, FF6 and Fen in inflamed (**A**) and contralateral, noninflamed (**B**) paws. AUC values were derived from curves generated by use of n = 9 (NFEPP and FF3 from[3,15]), n = 8–10 (FF6, see also Fig. 3) and n = 19 (Fen) animals. (**C**) Constipation, as assessed by number of fecal boli 1 h after s.c. injection of agonists (30 μg/kg) in relation to the pK_a of the substance. Maximum and minimum numbers (with 95% confidence intervals) of boli in controls (vehicle-treated) are shown by the dashed line. Fen (n = 30) and controls (n = 34) (always included in all experiments) are averaged across all experiments; NFEPP (n = 11); FF3 (n = 12); FF6 (n = 10). (**D**) Locomotor activity as assessed by the total distance travelled during 30 min after s.c. injection of agonists (30 μg/kg) in relation to the pK_a of the substance. Maximum and minimum travelled distances (with 95% CI) in controls (vehicle-treated) are shown by the dashed line. Fen (n = 31) and controls (n = 34) (always included in all experiments) are averaged across all experiments; NFEPP (n = 10); FF3 (n = 12); FF6 (n = 10). Graphs show means ± SEM (where available)."

should read:

"Correlation between pK_a values of compounds with antinociception and side effects. (**A,B**) Antinociceptive effects as net $AUC_{(4–12\,\mu g/kg)}$ of PPT (negative values result from subtraction of pre-CFA baseline PPT) at 15 min after i.v. injection of NFEPP, FF3, FF6 and Fen in inflamed (**A**) and contralateral, noninflamed (**B**) paws. AUC values were derived from curves generated by use of n = 9 (NFEPP and FF3 from[3,15]), n = 8–10 (FF6, see also Fig. 3) and n = 19 (Fen) animals. (**C**) Constipation, as assessed by number of fecal boli 1 h after s.c. injection of agonists (30 μg/kg) in relation to the pK_a of the substance. The dashed line represents vehicle-treated controls (mean of 3 independent experiments). Fen (n = 30) and controls (n = 34) (always included in all experiments) are averaged across all experiments; NFEPP (n = 11); FF3 (n = 12); FF6 (n = 10). (**D**) Locomotor activity as assessed by the total distance travelled during 30 min after s.c. injection of agonists (30 μg/kg) in relation to the pK_a of the substance. The dashed line represents vehicle-treated controls (mean of 3 independent experiments). Fen (n = 31) and controls (n = 34) (always included in all experiments) are averaged across all experiments; NFEPP (n = 10); FF3 (n = 12); FF6 (n = 10). Graphs show means ± SEM (where available)."

Additionally, the Article contains errors in Reference 12 which was incorrectly given as:

Sun J., Chen S. R., Chen H., Pan H. L. mu-Opioid receptors in primary sensory neurons are essential for opioid analgesic effect on acute and inflammatory pain and opioid-induced hyperalgesia. *J Physiol* (2018)

The correct reference is listed below as ref. 1.

Reference

1. Sun, J., Chen, S. R., Chen, H. & Pan, H. L. mu-Opioid receptors in primary sensory neurons are essential for opioid analgesic effect on acute and inflammatory pain and opioid-induced hyperalgesia. *J Physiol* **597**, 1661–1675 (2018).

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