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Voluntary ingestion of buprenorphine in mice

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Abstract

*Buprenorphine is a widely used analgesic for laboratory rodents. Administration of the drug in a desirable food item for voluntary ingestion is an attractive way to administer the drug non-invasively. However, it is vital that the animals ingest the buprenorphine-food-item mix as desired. The present study investigated how readily female and male mice (*Mus musculus*) of two different strains consumed buprenorphine mixed in a commercially available nut paste (Nutella®), and whether variation between genders and strains would affect the subsequent serum concentrations of buprenorphine. Buprenorphine at different concentrations mixed in Nutella® was given to male and female C57BL/6 and BALB/c mice in a complete cross-over study. Pure Nutella® or buprenorphine (1.0–3.0 mg kg^{-1} bodyweight [bw]) mixed in 10 g kg^{-1} bw Nutella® were given to the mice at 1500h. The mice were video recorded until the next morning, when blood was collected by submandibular venipuncture. The concentration of buprenorphine in the Nutella® mix did not affect the duration of ingestion in any of the groups. However, female mice consumed the Nutella® significantly faster than males. Repeated exposure significantly reduced the start time of voluntary ingestion, but not the duration of eating the mixture. These differences did not however affect the serum concentration of buprenorphine measured 17 h post administration.*

Keywords: *analgesia, animal welfare, buprenorphine, mice, refinement, voluntary ingestion*