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Quantitative determination of dihydroetorphine in rat plasma and brain by liquid chromatography-tandem mass spectrometry

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The extraordinarily strong analgesic dihydroetorphine (DHE) was registered as one of the most strictly controlled narcotic drugs by the United Nations in 1999. However, an effective detection method for DHE in biological samples has not yet been established. We developed a quantitative method for assay of DHE in rat plasma and brain by liquid chromatography-tandem mass spectrometry equipped with an ionspray interface. A 0.5-ml volume of plasma and brain homogenate spiked with buprenorphine (internal standard) was purified by the solid-phase extraction column Bond Elute Certify. DHE produced numerous weak fragment ions by collision induced dissociation. Therefore, collision energy was utilized to decompose the interferences, and the protonated molecular ion was used for both precursor and product ion monitoring. As a result of the method validation, the dynamic concentration range was determined as 0.05-10 ng/ml. DHE in these samples was stable for 2 months at -4℃ and for 24 h at ambient temperatures. Using the present method, DHE was detected in rat plasma and brain tissue after intravenous injection (0.5 μg/kg).