**Brief report : a case of Tramadol overdose. Extracorporeal Life Support and Hemoperfusion as life-saving treatment**

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**Diagnostic testing**

To quantify the charcoal cartridge’s efficacy in removing Tramadol, Tramadol concentration was measured in patient’s blood before and after the cartridge at 1 and 3 hours from HP start and at the end of the treatment (6 hours).

Tramadol removal was calculated by the equation 1

E= [(Cin- Cout)/Cin]

E is extraction ratio, Cin is in let line cartridge drug concentration and Cout is outlet cartridge line drug concentration.

Blood samples were collected into EDTA dipotassium salt tubes. Plasma was obtained by centrifugation at 1670 × g at 4 °C for 10 min. To 100 μL aliquots of plasma, 600 μL of acetonitrile, 100 μL of IS solution (50 ng/mL), and 20 μL of 28 % ammonia solution were added into a microtube. After 30 min on a vortex mixer, the mixtures were stored at −35 °C for 30 min and ultrasonicated for 30 min. The mixtures were centrifuged at 17,900 × g at 4 °C for 20 min, and then 750 μL of the supernatant was evaporated to dryness by rotary vacuum evaporation without heating. The residues were reconstituted with 150 μL of mixture containing methanol and 0.15 % formic acid in water (1:1, v/v). After 30 min on a vortex mixer, the mixtures were ultrasonicated for 30 min. The mixtures were centrifuged at 17,900 × g at 4 °C for 20 min. Tramadol in human plasma were separated using LC system (UFLCXR, Shimadzu Corporation, Kyoto, Japan).