

Analysis of paraquat in postmortem specimens of a paraquat-related death by HPLC

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AIMS: A simple and fast high performance liquid chromatography (HPLC) method with photodiode array detector (PDA) was developed for the quantification of paraquat (1,1'-dimethyl-4,4'-dipyridinium dichloride) in biological specimens (blood, bile, liver and kidney tissues) of a post-mortem case.

METHODS: To 1 ml aliquot of sample (blood, bile or tissues), 40 μ L of 1.0 mg/ml edrophonium (internal standard) solution was added, followed by the addition of 2 ml protein precipitation solution (5% zinc sulphate solution). The contents were then vortex mixed and centrifuged. The supernatant layers were removed and dried under N_2 at 60 C

RESULTS: The presented method has a limit of detection of at least 0.1 μ g/ml of paraquat in blood and a limit of quantification of 0.2 μ g/ml. The calibrations were linear up to 20 μ g/ml in blood and 20 μ g/g in tissues, with correlation coefficients greater than 0.99. Applying the method to the postmortem specimens, the amounts of paraquat found were 4.4 μ g/ml, 5.4 μ g/ml and 6.5 μ g/ml in blood, liver and kidney specimens respectively. Paraquat was also detected in the bile specimen.

CONCLUSION: The method presented is simple and selective, and is capable of screening and quantifying paraquat in various postmortem specimens (such as blood, bile, liver and kidney tissues).

KEYWORDS: *Paraquat, HPLC, Postmortem specimens*

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