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SOFT, Boston, MA, USA

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A suspected drug facilitated crime investigated by hair analysis

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Introduction: An elderly man was attempted murdered by his girlfriend. After eating a meal the man suddenly felt drowsy and lay down. Shortly thereafter, the girlfriend attacked him with a knife but he managed to escape. Since the girlfriend was a trained nurse and was prescribed several drugs due to her status as a terminal cancer patient (for several years) the police contacted the Forensic Chemistry Laboratory on suspicion of a drug facilitated crime one week after the incident.

Objective: Segmented hair analysis was applied to identify the use of drugs in a drug facilitated crime case with delayed sample collection.

Methods: A hair sample was taken from the man one month after the incident. The hair was cut into three segments, washed, dissolved and analyzed for drugs and drugs of abuse by UPLC/TOF and LC/MS/MS. Positive findings were confirmed by UPLC/MS/MS. A preserved blood-alcohol sample taken two hours after the incident was later recovered for further forensic analysis. Similar analyses of the blood sample were performed.

Results: Findings in hair and whole blood.

	Hair (ng/mg)			Blood (mg/kg)
	(0-1.5 cm)	(1.5-3.0 cm)	(3.0-4.5 cm)	
Morphine	0.29	0.06	0.06	0.085
Diazepam	0.053	0.038	0.055	0.17
Desmethyldiazepam	0.084	0.022	0.032	0.068
Zopiclone	0.02	0.01	0.02	0
Lidocaine	29	54	74	0.16
Monoethylglycinxylylid	0.24	0.34	0.49	0.021

The finding of drugs in the inner hair segment (0-1.5 cm) was consistent with the drugs found in the blood sample. The high level of morphine in blood and hair was remarkable since morphine was only prescribed to his girlfriend. The low levels of zopiclone, diazepam and its metabolite desmethyldiazepam in hair concur with a small intake of these drugs within a 4½ month period as reported by the man. The origin of lidocaine was unknown.

Conclusion: The case illustrates that hair is a valuable forensic specimen in situations where natural processes have eliminated the drug from typical biological specimens because of delayed sample collection. It was possible to verify the findings of the hair analysis with a recovered blood sample taken from the victim shortly after the incident.

Keywords: Hair, Drug facilitated crime, Opioid

