Comparison of the concentrations of drugs in saliva collected by two sampling methods (Varian® OraLab and Statsure® Saliva Sampler)

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Objective: To determine the influence of saliva sampling methods on drug concentrations.

Methods: Saliva was obtained from 249 subjects (who had given informed consent) by Varian OraLab and Statsure Saliva?Sampler. OraLab consists of foam-tipped saliva collector. The sponge contains an acid that stimulates salivation. Statsure consists of a collector with a blue indication when 1ml of saliva is collected. After sampling, the collector is transferred to a tube that contains 1ml of buffer. Saliva was analysed with UPLC-MSMS.

Results: For all the drugs, the concentrations in the saliva collected with OraLab are 50-70% compared to Statsure, except for morphine (80%) and codeine (92%). Possible explanations are: a buffer could explain a better extraction recovery with Statsure (particularly THC); the stimulation of salivation by an acid in OraLab could also explain the lower concentrations.

Drug	COC	BE	THC	AMP	6-AM	MOR	COD
Median concentration Statsure (ng/ml)	44.3	81.5	27.4	252.9	67.8	178.8	58.7
Median concentration OraLab (ng/ml)	17.7	31.1	12.1	310.4	24.7	131.0	41.7
* Regression:							
Slope	0.54	0.51	0.68	0.68	0.50	0.80	0.92
Intercept	- 2.41	- 5.91	- 2.38	2.85	- 1.02	- 6.17	- 11.08
R	0.62	0.83	0.90	0.83	0.80	0.82	0.61

COC: cocaine, BE: benzoylecgonine, THC: tetrahydrocannabinol, AMP: amphetamine, 6-AM: 6-acetylmorphine, MOR: morphine, COD: codeine

Conclusions: The correlation coefficients are relatively low (0.61-0.90). For all drugs, the concentrations measured in the saliva collected by OraLab are lower. This could have consequences for the determination of legal cut-offs.