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Currently, oral fluid appears to be the most advantageous matrix for roadside testing of the impaired driver. Poland joins the countries that introduced 'per se' law for amphetamines, cannabis, opiates and cocaine. There are also recommendations concerning roadside saliva immunochemical drug testing by policemen at checkpoints and in a case of accidents.

AIM: Therefore five rapid point-of-collection saliva drug testing devices were evaluated for their ability to meet the manufacturers product information, the proposed SAMHSA cutoffs and the practical usability at roadside testing.

METHODS: The following products were made available for the evaluation: Cozart RapiScan 5-Panel Drug Test (THC), Drugwipe® 5 and Drugwipe® II (single-test for benzodiazepines) by Securetec, Multi-Drug One Step Multi-Line Screen Test Device by Acon Laboratories, Smart-Clip Multidrug by Envitec and OralStat® by American Bio Medica Corporation. Human oral fluid was pooled from drug-free subjects and fortified with known quantities of drug(s) or metabolite(s). The same oral fluid specimen was used as negative control, for spiking with the target drug(s) and for preparing a multipoint calibration curve for GC-MS, LC-MS/MS or LC-MS. A lowest concentration used for amphetamine, THC, cocaine morphine and nordiazepam was 100, 25, 50, 40 and 50 ng/mL, and for MDMA, THCCOOH, BZE and estazolam was 100, 25, 100 and 10 ng/mL. The next cutoff concentration increased at intervals of 50 or 100 %. Drug-free, spiked oral fluid samples and Medidrug® reference saliva were used to test these devices in comparison to GC-MS or LC-MS methods.

RESULTS: The performance of tested devices (RapiScan, Drugwipe, Multi-Drug One Step, SmartClip and OralStat) was quite variable. The ability to accurately and reliably detection of the used analytes was dependent on the individual device. All devices performed well for detection of amphetamine with sensitivity (SE), specificity (SP) and efficiency (EF) ranged 53-100, 85-100 and 62-100 %, respectively. Four of them were well for opiates (SE, 54-100; SP, 100 and EF, 100 %) and cocaine (SE, 53-100; SP, 100 and EF, 60-100 %). Three devices performed for the detection of nordiazepam (SE, 40-100; SP, 100 and EF, 67-94 %). Two were enough well for MDMA with performance characteristics of SE, 50-67; SP 100 and EF, 80%. Only one (OralStat) allowed us to detect THC at the concentration of 25 ng/mL Then SE, SP and EF were 67, 100 and 81%.

CONCLUSIONS: Some devices performed well for analysis of some drug classes but poorly for others.

KEYWORDS: *Oral fluid, Drugs of abuse, Five devices*

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