

# Use of oral fluid drug tests at the roadside: the results of the Rosita-2 study.

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**AIM:** To evaluate the analytical performance and operational use of the on-site oral fluid drug testing devices at the roadside.

**METHODS:** The evaluation was carried out in six European countries (Belgium, Finland, France, Germany, Norway and Spain,) and four US states (Florida, Utah, Washington, Wisconsin). An oral fluid sample was taken and analysed at the roadside or in a police station. Nine different tests were evaluated. A blood sample was taken and another oral fluid sample was obtained with the Intercept (Orasure Technologies, Bethlehem, PA, USA). These samples were analysed by gas or liquid chromatography-(tandem) mass spectrometry for the different drugs.

**RESULTS:** 2605 evaluations were performed. The tests often malfunctioned and no result at all was obtained. The percentage of failures were 0% for Cozart RapiScan, 4% for Securetec Drugwipe, 6% for American Biomedica Oralstat, 9% for Dräger DrugTest, 26% for Varian OraLab, 32% for Lifepoint Impact, 38% for Branan Oratect 2nd generation (74% for the first generation), 39% for Sun Oraline and 47% for Ultimed Salivascreen.

The comparison between the onsite tests and the chromatographic methods showed that the sensitivity of the onsite tests for amphetamines was 79% (between 40% and 83% for the different devices), and the specificity was 94% (between 80% and 100%). For the benzodiazepines the sensitivity was 66% (between 33% and 69% for the different devices), and specificity 89% (between 85% and 94%). For the cannabinoids the sensitivity was 46% (between 0% and 74% for the different devices), and specificity 92% (between 70% and 100%). For cocaine sensitivity was 77% (between 0% and 97% for the different devices), and specificity 94% (between 91% and 100%). Finally for the opiates the sensitivity was 61% (between 51% and 100% for the different devices), and specificity 99% (between 86% and 100%). The evaluation of the operational aspects of the use of oral fluid drug tests by the police showed that the sampling method was acceptable for the Drugwipe and the DrugTest.

There were some problems with Oratect, Lifepoint and Oraline and it was very problematic with OraLab and Salivascreen. The sampling and testing procedure was considered too complicated with DrugTest and RapiScan. Reading of the results was difficult for Drugwipe (particularly for cannabis) and Oraline. The police preferred an electronic reader. The use of these tests was difficult in rainy or cold weather. With certain systems the sampling process could be manipulated by the subject. Very compact and lightweight tests were much appreciated. The duration of the procedure was acceptable for some, but too lengthy for others.

**DISCUSSION:** the reliability of oral fluid drug tests must be improved. More than half of the samples that were positive for tetrahydrocannabinol were not detected by the onsite tests.

**CONCLUSION:** the onsite oral fluid drug tests are not reliable enough. The sensitivity for most drugs, particularly cannabis, must be improved.

**KEYWORDS:** *Oral fluid, Roadside, Narcotics, Drugs of abuse, Saliva, Blood*

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