



K48 Prevalence of Tetrahydrocannabinol in Oral Fluid Collected From Drivers in California

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After attending this presentation, attendees will be aware of the prevalence of marijuana in the oral fluid of California drivers. Attendees will appreciate the utility of oral fluid in traffic safety situations.

This presentation will impact the forensic science community by showing that oral fluid is a viable alternative to blood for the analysis of drugs in specimens taken from drivers.

Recent roadside surveys conducted in the United States have determined that cannabis is the most prevalent drug detected in drivers randomly stopped and voluntarily tested. The 2007 National Roadside Survey reported that 7.7% of nighttime weekend drivers tested positively for tetrahydrocannabinol (THC) in their oral fluid, indicating recent ingestion of cannabis.

This presentation will focus on data collected from drivers in various locations in California during 2010 and again in 2012.

In 2010, researchers attempted to recruit 1,784 drivers who were stopped at random during nighttime hours on Friday and Saturday evenings. Due to age or type of vehicle, 282 were not selected. Of the 1,502 eligible drivers, 297 either refused to be part of the survey, or only completed part of the process. In total, oral fluid was collected voluntarily from 900 drivers. Subjects were predominantly male (63.2%), White (60.5%), and had a median age of 29. A total of 14.4% of drivers tested positively for illegal drugs with 8.5% testing positively for THC. Only 1.3% of the drivers were positive for both THC and alcohol, a combination known to significantly increase the odds of traffic accidents. Compared to the 2007 National Survey, the percentage of marijuana positives in California drivers had increased overall (from 4.9% to 7.8%) and in three of the four comparable jurisdictions; only one showed a lower percentage of positive drivers in 2010. In 2010, the prevalence of cannabis varied throughout the state with Fresno showing the lowest prevalence of 4.3% and Eureka, Humboldt County, having the highest prevalence of drivers positive for marijuana, 18.3%. The concentration range for THC in oral fluid was 2 – 1284ng/mL; mean 199ng/mL; median 30ng/mL. Part of the impetus for the 2010 study was the potential for decriminalization of marijuana in California Proposition 19—also known as the Regulate, Control, and Tax Cannabis Act of 2010—which was on the ballot in November 2010. If it had been approved, the proposition would have legalized various marijuana-related activities in California (although not under federal law), allowing local governments to regulate these activities, permitting local governments to impose and collect marijuana-related fees and taxes, and authorizing various criminal and civil penalties. The ballot initiative was defeated 53.5% to 46.5%. However, medical marijuana is legal in California (Proposition 215, 1996) and as part of the survey, drivers were asked if they held a permit for its medical use. While only 36 drivers admitted to having permits for medical marijuana, 38.9% of them tested positively for THC, compared to 7.5% of those without permits. When controlled for driver age, race, and including jurisdiction as a random variable, drivers holding permits for medical marijuana were significantly more likely to test positively for THC than nonpermit holders.

In 2012, the California Study was repeated with data collected from nine locations including Anaheim (Orange County), Chula Vista (San Diego County), Eureka (Humboldt County), Fresno (Fresno County), Gardena (Los Angeles County), Ontario (San Bernardino County), Modesto (Stanislaus County), Redding (Shasta County), and San Rafael (Marin County). Four of the nine sites were the same as the 2010 study (Anaheim, Eureka, Fresno, and San Rafael). Researchers recruited over 1,000 drivers during weekend nighttime hours to provide oral fluid specimens voluntarily. Cannabis use throughout the state was again different, depending on geographical location.

The difference in marijuana prevalence in drivers between 2007, 2010, and 2012 will be presented. The effect of medical marijuana availability and potential decriminalization of marijuana in the state of California will be discussed.

Oral Fluid, Marijuana, Driving