

Cannabis (Marijuana) — Effects on Human Behavior and Performance

REFERENCE: Huestis MA: Cannabis (Marijuana) — Effects on human behavior and performance; *Forensic Sci Rev* 14:15–60; 2002.

ABSTRACT: Cannabis is one of the oldest and most commonly abused drugs in the world. Recently, tremendous advances have been made in our understanding of the endogenous cannabinoid system with the identification of cannabinoid receptors, cannabinoid receptor antagonists, endogenous neurotransmitters, metabolic enzymes, and reuptake mechanisms. These advances have helped us to elucidate the mechanisms of action of cannabis and the side effects and toxicities associated with its use. In addition, potential therapeutic applications are being investigated for the use of smoked cannabis and synthetic THC (dronabinol). Most workplace, military, and criminal justice positive urine drug tests are due to the use of cannabis. In addition, alternative matrices, including saliva, sweat, and hair, are being utilized for monitoring cannabis use in treatment, employment, and criminal justice settings. Experimental laboratory studies have identified cognitive, physiological, and psychomotor effects following cannabis. Epidemiological studies reveal that cannabis is the most common illicit drug world-wide in impaired drivers, and in motor vehicle injuries and fatalities. Driving simulator studies also indicate performance impairment following cannabis use; however, the results of open- and closed-road driving studies and of culpability studies do not consistently document increased driving risk. Clearly a combination of ethanol and cannabis use significantly increases risks. This article reviews the pharmacokinetics and pharmacodynamics of cannabis and places special emphasis on the effects of cannabis on complex tasks such as driving and flying.

KEY WORDS: cannabinoids, cannabis, driving, hair, impairment, marijuana, oral fluid, performance, plasma, sweat, tetrahydrocannabinol, urine, whole blood.
