

VAPORIZATION AS A SMOKELESS CANNABIS DELIVERY SYSTEM: A PILOT STUDY

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INTRODUCTION: The Institute of Medicine report published in 1999 suggested that although marijuana may have potential therapeutic value, smoking was not a desirable delivery system for cannabis. A 6-day “proof of concept” pilot study was proposed to investigate vaporization using the Volcano device as an alternative means of delivery of inhaled Cannabis sativa, to characterize preliminary pharmacokinetic and pharmacodynamic effects and to determine whether it may be an appropriate system for use in clinical effectiveness studies.

METHODS: Eighteen healthy subjects were recruited and admitted to the inpatient ward of the General Clinical Research Center (GCRC) at San Francisco General Hospital to investigate the delivery of cannabinoids by vaporization of marijuana compared to marijuana smoked in a standard cigarette. One dose (1.7, 3.4 or 6.8% tetrahydrocannabinol) and delivery system (smoked marijuana cigarette or vaporization system) was randomly assigned for each of the six study days. The primary endpoint was the comparison of plasma concentrations of delta-9tetrahydrocannabinol (THC), cannabidiol, cannabinol, and metabolites, including 11-OH-THC resulting from inhalation of cannabis after vaporization vs smoking. Expired carbon monoxide was measured to evaluate whether the vaporizer reduces exposure to gaseous toxins as a secondary endpoint. We also evaluated physiologic and neuropsychologic effects and queried patients for their preference of blinded dose day and delivery method. Adverse events were collected.

RESULTS: 21 participants were enrolled to obtain the 18 who completed the 6-day inpatient study. 15 men and 3 women, mean age 30 years, were included in the final analysis. The plasma THC concentrations are still being determined at this time. Results will be available in September. 14 participants preferred vaporization, 2 smoking and 2 reported no preference. While still blinded with regard to dose, 8 participants selected the day they received 3.4% THC (7 vaporized, 1 smoked) as their most preferred treatment day; 4 selected the day they received 6.8% THC via vaporization and 6 had no treatment day preference. No adverse events were observed.

CONCLUSION: Vaporization of cannabis is a safe mode of delivery. The determination of plasma THC levels and comparison of clinical effects to smoked cannabis will provide information on the effectiveness of this delivery system. Participants had a clear preference for vaporization over smoking as a delivery system for the cannabis used in this trial.

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