Abstract. Regular users of marijuana (cannabis sativa) were given smoked and orally administered marijuana, a placebo, or alcohol. They were unable to distinguish between smoked marijuana and the tetrahydrocannabinol-free placebo. The oral administration of tincture of cannabis produced primarily dysphoric symptoms and was similar to alcohol in this respect. The smoked marijuana altered pulse rate, time estimation, and EEG, but had no effect on a measure of field dependence or on a digit symbol substitution task. Both drugs appeared to be mild intoxicants in a laboratory setting. Consideration of the dose, prior experience with drugs, setting, and possible cross tolerance of marijuana and alcohol are important in evaluating the significance of the clinical effects.

Key-Words: Cannabis (Marijuana) — Alcohol — Psychopharmacology — Placebos — Drug Abuse.

Introduction

Although there is a wealth of folklore on the behavioural phenomena associated with marijuana (cannabis sativa) intoxication, there has been very little systematic inquiry into its neurophysiologic and behavioral consequences since the studies done in the late 30's and early 40's (Mayor's Report, 1954; Ames, 1958). Recently, Clark (1968) and Weil (1968) published the results of studies with cannabis plant material


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given to experienced and inexperienced users. They found impaired performance on simple intellectual and psychomotor tasks, dose related in some instances, but with marked individual differences. Weil’s study raised questions that deserve further investigation. It suggests that chronic users can sample and rate marijuana to estimate relative potency of plant material. However, his study and others reported differences in drug effects on subjective state and performance with naive, as compared to experienced, users. The experienced users gave evidence of having developed “some sort of pharmacologic sensitization”. That is, they were more susceptible to the subjective effects and less apt to show decrements in performance on perceptual-motor tasks. Weil also suggested that there were differences between ingested and smoked marijuana with the latter appearing to be an “mild intoxicant” and the former causing more powerful “LSD-like effects”.

Route of administration, human bio-assay techniques, and the effects of a subject’s previous drug history on response, are important issues; both to the clinician who is working with marijuana users and to the investigator attempting to design an experiment. This report describes some of our preliminary findings that pertain to these issues.

The subjective effects of marijuana include intensified sensory perception and an altered sense of time, spatial relations, and body image. The power to focus concentration is altered. We selected an array of tests which gave promise of tapping various aspects of these subjective changes. We also attempted to measure the subjective state with a drug effects questionnaire.

We used five treatment conditions comparing the effects of extract of cannabis, smoked material both active and placebo, an oral placebo, and alcohol. Subjects were unaware of the drug sequence. Alcohol was included because alcohol and marijuana are often compared. The folklore concerning alcohol effects on behaviour is as extensive as that on the casual observations and introspective impressions of marijuana. For example, it is often said that the effects of marijuana are easily suppressed, more so than the effects of alcohol. The drugs also have in common the fact that they are both socially used and condemned by large segment of our society.

Methodology

Subjects. The main group of subjects were ten heavy users of marijuana. They were recruited from the stream of volunteers who appeared after it became known we were studying the drug. We interviewed many subjects, eliminating those with obvious psychiatric disorders and extreme eccentricity. The ten selected were all male and between the ages