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CLINICAL STUDIES WITH MARIHUANA  
AND DEXTROAMPHETAMINE  
COMBINATION

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## ABSTRACT

Studies in mice indicated that delta-9-tetrahydrocannabinol (THC) significantly enhanced methamphetamine induced locomotor activity. The effect was dose related with maximal interaction for THC at an i.p. dose of 15 mg/kg. To investigate the possibility of marijuana-amphetamine interaction in man, experimental protocol and psychometric test equipment were established to quantitatively measure drug induced behavioral changes. The test equipment included: the Wobble Board to monitor standing steadiness; the Pursuit Meter, to assess attentive motor performance; the Delayed Auditory Feedback, to measure changes in mental performance; the Suitcase Instrument, to evaluate manual dexterity, reaction time and fine muscle control; the Modified Cornell Medical Index, to determine the subjective intensity of drug action and the Addiction Research Inventory Scale to evaluate the subjective nature of drug action. Clinical dose response studies with ethanol and secobarbital demonstrated that under the established protocol, quantitative changes in psychomotor performance could be determined by the test equipment. Ethanol in oral doses of 25, 40, 55 and 70 ml/70 kg produced a significant blood alcohol concentration related impairment in performance for 23 of 26 administered tests. Secobarbital at oral doses of 50, 100 and 150 mg/70 kg also produced a dose related increase in test scores; however significant impairment was observed only at the high dose of

150 mg/70 kg. Marihuana cigarettes designed to deliver doses of 3, 6 or 9 ug/kg THC produced only a significant decrease in stability and attentive motor performance. Dextroamphetamine in oral doses of 5, 10 and 15 mg/kg on the other hand produced no consistent change in test scores and isolated tests involving simple reaction time suggested a slight improvement in performance. A cardiovascular study of marihuana at 50 ug/kg THC and d-amphetamine at 10 mg/70 kg demonstrated that the combination produced no effect above simple addition on heart rate (HR), blood pressure (BP), ECG changes and symptom scores. THC produced an increase in HR of 35 beats/min. and d-amphetamine produced a systolic BP of 130 mm Hg. Psychometric evaluation of marihuana 25 ug/kg THC and 10 mg/70 kg amphetamine combination, indicated that the stimulant failed to change the marihuana induced impairment of performance. Psychological changes as monitored by symptom scores demonstrated additivity in drug effects. These studies suggest that higher doses of marihuana amphetamine combination may produce harmful psychological and cardiovascular effects but not above that of simple addition. The use of stimulants failed to alleviate the performance decrements produced by marihuana smoking, suggesting that THC impairment is not related to sedation or fatigue.

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