A7

NICOTINE SELF-ADMINISTRATION IN RATS. W. T. Nelson, Jr. and Brian Cox, Addiction Research Foundation, Palo Alto, CA 94304.

Female Wistar rats (250–300 g) with jugular cannulae were tested 23 hours a day in a paradigm of one week pre-drug saline, two weeks nicotine, and two weeks post-drug saline. Two response bars were available. Each press on the active bar delivered either saline or nicotine (3, 10, or 30 μg/kg) in an infusion of 100 μl/kg. Bar-presses on the control bar had no consequence and served as a control for nicotine's locomotor stimulant effects at these doses. In seven rats, response rates on both bars were elevated in the nicotine (30 μg/kg) tests and returned to pre-drug saline levels in the post-drug saline tests. Three of seven rats self-administered the 10 μg/kg dose above saline levels. Two of these rats selectively responded at higher rates on the drug bar, with unchanged rates on the dummy bar. Nicotine (3 μg/kg) was not self-administered by any of five drug-naive animals. Seven rats were tested for one week pre-drug saline, one or two weeks nicotine (30 μg/kg), one week nicotine (10 μg/kg), and two weeks post-drug saline. Following dose reduction, response rates increased on the drug bar and decreased on the dummy bar, but neither rate change was statistically significant compared to the prior week of nicotine 30 μg/kg. When the dose of nicotine was lowered from 30 to 3 μg/kg (n=3), response rates increased significantly on the drug bar, with no change in rates on the dummy bar. Five rats tested for three consecutive weeks on nicotine 30 μg/kg showed no difference in responding between the second and third week of nicotine access. These studies demonstrate that rats will self-administer nicotine in the absence of any other coupled appetitive drive, such as hunger induced by food deprivation, and that this self-administration is not an artifact of nicotine's locomotor stimulant effects. (Supported by NIDA grant DA-01938.)

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SCHEDULE-INDUCED NICOTINE SELF-ADMINISTRATION IN RHESUS MONKEYS. Barbara Lord Slifer and Robert L. Balster, Medical College of Virginia, Department of Pharmacology, Richmond, VA 23298.

Three male rhesus monkeys, surgically prepared with chronic indwelling IV catheters, were trained to respond during daily 60-min sessions on a two-lever concurrent FI 5 min (food) FR 1 (drug) schedule of reinforcement. The animals were given access to saline (S) and various doses (1–100 μg/kg) of nicotine (N) for 11 sessions at each dose. When this regimen (CONC I) was completed the FI component was eliminated and the drug doses repeated on the FR 1 schedule (NO FOOD condition). Following this the monkeys were returned to the concurrent schedule (CONC II) and the drug regimen again repeated. Data from the last 6 days of each treatment were used in the analyses. During the NO FOOD condition, doses of 1.0 and 3.0 μg/kg N did not maintain responding above saline levels on the FR schedule. The addition of the concurrent schedule (CONC I and II) induced self-administration of N (1.0 and 3.0 μg/kg/inf) above the NO FOOD levels and also above saline levels but did not induce S self-administration. Doses of 10–100 μg/kg/inf N did maintain modest rates of self-administration during the NO FOOD condition, however there was little evidence for schedule-induction of higher rates by the food schedule. Disruption in the generator schedule (FI) performance by N did not appear to be a limiting factor in the schedule induction of self-administration. When FI response rates were plotted as a function of total session intake of N the rates were generally unaffected across intakes of 1 to > 4000 μg/kg/session. It appears that the food schedule concurrent with scheduled access to nicotine induces the IV self-administration of N only at doses that do not effectively maintain responding above S on their own. (Supported by N.I.D.A. Grants DA-00490, DA-07027 and DA-05193.)