

## Comparison of the self-administration liabilities of morphine and pentazocine in the rhesus monkey

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A comparison of the self-administration liability of morphine hydrochloride and pentazocine was made in 2 male (approx. 3.0 kg), drug-experienced rhesus monkeys using a method based on that described by Deneau, Yanagita & Seevers (1969). The experiment is summarized in Table 1. The number of lever presses made and the i.v. injections received by

syndromes. In animals administering morphine, naloxone (0.0032–0.032 mg/kg i.v.) produced a dose dependent increase in the duration, intensity and variety of the withdrawal signs and saline substitution resulted in a marked withdrawal syndrome lasting 3 days and accompanied initially by a 4-fold increase in lever pressing activity. During the pentazocine access period, naloxone (0.1–10 mg/kg i.v.) produced a mild, non-dose related withdrawal syndrome, saline substitution resulting in a mild withdrawal syndrome with no increase in lever pressing activity.

The results indicate that pentazocine produced a mild degree of physical dependence that was quantitatively and in some aspects qualitatively different to that exhibited by morphine. Also, the difference in the rates of lever pressing observed

**Table 1** Mean number of lever presses made and i.v. injections received daily by 2 male rhesus monkeys in periods of access to morphine hydrochloride (0.1 mg/kg per injection) and pentazocine (0.032 and 0.1 mg/kg per injection).

Test substance	Dose per injection mg/kg i.v.	Week No.	Daily mean values		Mean daily dose mg/kg i.v.
			Lever presses	Injections	
Morphine HCl	0.1	1	59	49	4.9
	0.1	2	62	56	5.6
	0.1	3	74	62	6.2
	0.1	4	132	117	11.7
Saline	—	5	Marked withdrawal syndrome		
Pentazocine	0.032	6	297	229	7.3
	0.032	7	340	252	8.1
	0.032	8	444	354	11.3
	0.032	9	545	426	13.6
Pentazocine	0.1	10	396	358	35.8
	0.1	11	440	413	41.3
Saline	—	12	Mild withdrawal syndrome		

each monkey were registered automatically and the totals for each daily 23 h session were recorded. Both animals were kept under continuous observation for 10 h daily (7 a.m.–5 p.m.) with the aid of closed circuit television.

The monkeys self-administered both substances, the mean daily dose increasing with time (Table 1). Naloxone hydrochloride given at intervals during the last week of access to morphine HCl (0.1 mg/kg i.v.) and pentazocine (0.1 mg/kg i.v.) produced short-lasting (maximum 2 h), opiate-like withdrawal

during saline substitution for both drugs suggests that pentazocine may not have the same ability as morphine to cause psychological dependence.

We thank Sterling Drug Inc. for the donation of pentazocine (Talwin).

### Reference

DENEAU, G., YANAGITA, T. & SEEVERS, M.H. (1969). Self-administration of psychoactive substances by the monkey. *Psychopharmacologia (Berl.)*, **16**, 30–48.