

NEUROPEPTIDE S STIMULATES LOCOMOTOR ACTIVITY AND WAKEFULNESS AND EVOKES ANXIOLYTIC-LIKE EFFECTS IN MICE

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Neuropeptide S (NPS) has been recently recognized as the endogenous ligand for a previously orphan G-protein coupled receptor now referred to as NPSR. In vivo NPS produces a unique behavioral profile by increasing wakefulness and exerting anxiolytic-like effects. Here we analyzed these actions in mice by assessing the effects of intracerebroventricularly (i.c.v.) injected NPS (0.01-1 nmol) on locomotor activity (LA), righting reflex (RR) recover, and on anxiety states measured with the elevated plus maze (EPM) and stress induced hyperthermia (SIH) tests.

NPS caused a significant increase in LA in mice habituated to the test cages. Moreover, NPS induced a dose dependent decrease of sleeping time (min) as measured by time needed to recover the righting reflex in mice treated with diazepam 15 mg/kg. In the EPM, NPS dose dependently increased the time (s) spent by animals in the open arms. Finally NPS exerted anxiolytic-like effects in the SIH test by reducing the stress-induced hyperthermic response. The data have been summarized in Table 1.

Table 1. Behavioural effects of i.c.v. injection of NPS in mice

	LA	RR	EPM	SIH
	n of impulses	min to recover	s open arms	T ₂ -T ₁ (°C)
saline	382±67	92±9	50±8	0.57±0.10
NPS 0.01 nmol	543±193	59±12	114±8*	0.50±0.15
NPS 0.1 nmol	1056±136*	36±5*	130±12*	0.15±0.09*
NPS 1 nmol	819±159*	22±6*	157±12*	0.04±0.11*

*p<0.05 vs saline, according to ANOVA followed by the Dunnett test. Data are mean ± SEM of at least 4 separate experiments.

In conclusion, we provide further evidence that NPS acts as a novel modulator of arousal and anxiety-related behaviours by promoting a rather unique patter of effects: stimulation associated with anxiolysis.

References

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