CENTRAL ADMINISTRATION OF NEUROPEPTIDE S (NPS) INHIBITS PALATABLE FOOD INTAKE IN THE RAT.

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Neuropeptide S (NPS) is a recently identified 20 amino acid peptide widely distributed in the brain. Its mRNA precursor is highly expressed in a small cell population located between the Barrington nucleus and the Locus Coeruleus in the brainstem. The gene encoding for the NPS receptor, instead, is highly expressed in the amygdala, thalamus, hypothalamus, and in various cortical areas. Central administration of NPS stimulates arousal and exerts anxiolytic-like effects in rodents. Recently, NPS has been also shown to reduce voluntary food intake in food-deprived rats. The present study was sought to extend this latter finding by evaluating the effect of NPS on palatable food consumption. Male Wistar rats were trained to consume sweetened mesh palatable food 60 min a day twice a week. Drug testing begun after stable baseline of palatable food consumption was established (4-6 presentation). NPS (0.0, 0.1, 0.3, 1.0 and 3.0 nmol/rat) was administered into the lateral cerebroventricle (ICV) 10 min before access to palatable food, and food intake was monitored at 15, 30 and 60 min. Results showed a significant inhibition of food consumption for the entire period of observation($p<0.01$). This effect was blocked by pretreatment with the selective corticotropin releasing factor receptor 1 (CRF_R1) antagonist antalarmin (0.0, 5.0, 10.0 mg/kg, IP) given 30 min prior to NPS administration. At the doses used antalarmin alone did not affect palatable food consumption. Water intake was never affected by drug treatments. Subsequent experiments investigated the effect of NPS microinjection into the central amygdala (CeA) and the paraventricular nucleus (PVN). The results showed that this peptide given at very low doses (0.03, 0.1 nmol/rat) selectively blocks food consumption after injection into the PVN ($p<0.01$). Conversely, palatable food intake was not affected by injection of this peptide into the CeA. Altogether these findings demonstrate that NPS exerts a potent inhibition of palatable food intake and that this effect involves activation of the brain CRF1 receptor system. The PVN is an important brain site for this NPS action. (*Supported by PRIN 2006 to RC*).