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THE EFFECTS OF INTRACEREBRAL INJECTIONS OF SUBSTANCE P, AND A SUBSTANCE P FRAGMENT (5-11) INTO THE MEDIAL PREOPTIC NUCLEUS ON LORDOSIS BEHAVIOR IN THE FEMALE RAT

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Recently, an increasing number of studies has revealed the importance of neuropeptides in the neural regulation of reproductive behavior in both male and female rats. One peptide of particular interest to us is substance P (sP). Bilateral injections of three different doses of sP into the dorsal midbrain central gray (dMCG) produce a rapid and sustained (3 h) facilitation of lordosis behavior in ovariectomized (OVX) estrogen-primed females (Neuroendo. 45:498,1987). sP-immunoreactive fibers and receptors are found within the medial preoptic nucleus (MPN). There is evidence from Akesson et al. (Brain Res. 451: 381, 1988) that almost half of the estrogen-concentrating cells within the ventromedial nucleus of the hypothalamus (VMH) project to the MPN. Whether or not these cells are the same which produce sP is presently unknown. Nonetheless, it is tempting to speculate that the sP innervation of the MPN may play a role in the peptidergic regulation of sexual receptivity in the rat.

In this study, substance P, a sP fragment (sP 5-11) an analog which is resistant to enzymatic degradation, or acidified saline were injected bilaterally into the MPN, in OVX, estrogen-primed females, and the lordosis quotient, along with the lordosis intensity scale (LIS) were recorded using a steroid regime that produces a slow increase in sexual receptivity. On tests 1 and 2, when receptivity was relatively low, bilateral injections of 2 different doses of sP (100 ng,1ug/cannula), had no effect on the lordosis response. On test 3, however, when the receptivity was maximal, SP (5-11) 1mg/cannula produced a marked decrease in lordosis responding. The present results indicate that the effects of bilateral injections of sP on lordosis behavior is dependent on the level of sexual receptivity.