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THE EFFECTS OF INTRACEREBRAL INJECTIONS OF SUBSTANCE P FRAGMENTS (5-11) AND (1-7) INTO THE DORSAL MIDBRAIN CENTRAL GRAY ON LORDOSIS BEHAVIOR IN THE FEMALE RAT

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Substance P (sP), a neuroactive peptide, has now been implicated in a wide range of behaviors. One in particular is female rat sexual behavior. Recently, it has been shown that bilateral injections of sP into the dorsal midbrain central gray (dMCG) of estrogen-primed female rats facilitates sexual behavior (lordosis). Uncertainty remains, however, concerning the mode of action of synaptically released sP. Indeed, most of our understanding of sP activity has revealed that its full structural sequence is not needed for biological activity. This has led to speculation that sP may be processed into one or more types of fragments before it can exert its behavioral effect. In view of these unusual properties, we must first develop a thorough understanding of the effects of sP fragments before we can fully appreciate the significance of this peptide on the expression of female sexual behavior. In a series of behavioral experiments, we assessed the effects of injecting two different fragments (sP 1-7 and sP 5-11) into the dMCG of ovariectomized, steroid primed, female rats. In the first experiment, sexual receptivity was measured following injection of sP 1-7, 5-11 or acidified saline directly into the dMCG of maximumly receptive (estrogen and progesterone primed) females. At five and thirty minutes post injection, an assessment revealed that neither sP 5-11 nor 1-7 had an effect on sexual behavior when compared to saline injections (controls). In the second experiment, sP 5-11 or acidified saline were injected into the dMCG of estrogen primed female rats showing a minimal lordosis response, and the effects of these injections were compared to those of controls (saline). Again, no significant difference in sexual behavior was observed following injection of sP 5-11 or saline. In conclusion, our data suggests that the effect of sP on lordosis behavior following injection into the dMCG is not due to the activity of biologically active fragments.