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JOURNAL ARTICLE

Participation of vasoactive intestinal polypeptide (VIP) as a humoral mediator in the erectile response of canine corpus cavernosum penis

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The ability of anti-vasoactive intestinal peptide (anti-VIP) serum to suppress the electrically induced relaxation of the corpus cavernosum was evaluated in vitro to define the role of VIP in penile erection. Strips of canine corpora cavernosa were placed in 5-ml organ chambers containing oxygenated Krebs-Ringer solution. They were stretched and fixed in place at both ends and pretreated with 2 x 10(-7)M noradrenaline (NA). NA was given to produce an optimal state of isometric smooth muscle contraction so that subsequent electrical field stimulation (EFS) could induce a good range of measurable relaxation response. This response was deemed to be an in vitro representation of penile erection. After NA treatment the cavernous tension rose markedly by 2-2.5 g; it then declined by up to 1-1.2 g upon EFS. Anti-VIP serum (1:16) or atropine sulfate (10(-6)M) was added at various time points between NA administration and EFS. When anti-VIP serum was administered, subsequent EFS-induced relaxation was attenuated by 20%-55% compared to the control EFS treatments. The degree of attenuation depended upon the frequency of EFS applied, being 20.6% +/- 4.0% at 20 Hz and 54.7% +/- 6.3% at 2 Hz. Atropine administered additionally following anti-VIP serum produced no further attenuation. However, atropine alone was capable of producing up to 23.7% +/- 3.5% attenuation. When anti-VIP serum was administered following atropine, the degree of attenuation that ensured was the sum of the attenuations produced by each of the two substances independently.(ABSTRACT TRUNCATED AT 250 WORDS)