

Peripheral neurons innervating the extrinsic smooth penile musculature of the pig: experimental study by retrograde transport and immunohistochemistry

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Key words: Immunohistochemistry, retrograde tracing, peripheral neurons, genital smooth musculature, pig

SUMMARY

Peripheral autonomic and sensitive neurons projecting to the extrinsic smooth penile musculature of the pig were studied by means of retrograde tracing and single-labelling immunofluorescence methods.

The fluorescent retrograde tracer Fast Blue was injected into the left retractor penis muscle, that was taken as an experimental model of the male genital smooth musculature, of 4 castrated pigs. After a 7 day survival time, the ipsilateral paravertebral ganglion S1, the caudal mesenteric ganglion and the dorsal root ganglion S2 were collected. In these ganglia, the presence and the distribution of immunoreactivities to catecholamine- (Tyrosine Hydroxylase), acetylcholine- (Vesicular Acetylcholine Transporter), or nitric oxide-synthesizing (neuronal Nitric Oxide Synthase) enzymes and to some biologically active peptides (Calcitonine Gene-Related Peptide, Leu-Enkephaline, Neuropeptide Y, Substance P and Vasoactive Intestinal Peptide) were studied.

In paravertebral ganglion S1, Tyrosine Hydroxylase and Neuropeptide Y were the most frequently present substances. Also Leu-Enkephaline and neuronal Nitric Oxide were present quite frequently, while there was scarce immunoreactivity for the other antisera (in decreasing order Substance P, Vasoactive Intestinal Peptide, Vesicular Acetylcholine Transporter, Calcitonine Gene-Related Peptide).

In caudal mesenteric ganglion, in addition to Tyrosine Hydroxylase- and Neuropeptide Y-immunoreactivity, Substance P-, Vesicular Acetylcholine Transporter-, Vasoactive Intestinal Peptide-, Leu-Enkephaline- immunoreactivity were also frequently present, followed by neuronal Nitric Oxide- and Calcitonine Gene-Related Peptide- immunoreactivity.

In dorsal root ganglion S2, Calcitonine Gene-Related Peptide and neuronal Nitric Oxide resulted to be the most frequently present neurotransmitters, followed by Vasoactive Intestinal Peptide, Vesicular Acetylcholine Transporter, Leu-Enkephaline, Substance P, Tyrosine Hydroxylase and Neuropeptide Y.