The relationship and co-localization of vasoactive intestinal peptide (VIP)- and Leu$^5$-enkephalin (LENK)-immunoreactivity in the female genital tract of the pig

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Abstract

The vasoactive intestinal peptide (VIP) and opioid family member Leu$^5$-enkephalin (LENK) have already been established as playing independently significant roles in the functioning of the female genital tract. However, the mutual influence of both neuropeptides on female genital function has not been examined until now. Therefore, the aim of this study was to compare the distribution of VIP- and/or LENK-immunoreactive (IR) structures throughout the female genital tract of the pig. Immunohistochemical examination revealed that the great majority of the immunopositive structures co-expressed both peptides. Nevertheless, a small population of exclusively VIP- or LENK-IR processes and perikarya were also distinguished. The muscular layer of the organs examined revealed the greatest density of VIP- and/or LENK-IR nerve fibers. The mucosa of the ampulla, isthmus, cervix and vagina was supplied with a moderate number of single labeled LENK-IR processes, while exclusively VIP-IR fibers were found mainly in vaginal mucosa. The infundibulum was found to be poorly supplied with single labeled VIP- or LENK-IR fibers.

The paracervical ganglion (PCG), the expected source of VIP- and/or LENK-IR nerve fibers innervating the organs under investigation, has been found to contain double labeled LENK-IR processes, while exclusively VIP-IR fibers were found mainly in vaginal mucosa. The infundibulum was found to be poorly supplied with single labeled VIP- or LENK-IR fibers.

The great number of specific co-localization between VIP and LENK in nerve processes of the porcine female genital organs may indicate a functional regulatory interaction between the neuropeptides studied, requiring further study.

Key words: pig, female genital tract, VIP, LENK, immunohistochemistry