Expression of VPAC1 receptor at the level of mRNA and protein in the porcine female reproductive system

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Abstract

The presence and distribution of vasoactive intestinal polypeptide (VIP) receptor VPAC1 was studied in the ovary, oviduct and uterus (uterine horn and cervix) of the domestic pig using methods of molecular biology (RT-PCR and immunoblot) and immunohistochemistry.

The expression of VPAC1 receptor at mRNA level was confirmed with RT-PCR in all the studied parts of the porcine female reproductive system by the presence of 525 bp PCR product and at the level of proteins by the detection of 46 kDa protein band in immunoblot. Immunohistochemical stainings revealed the cellular distribution of VPAC1 receptor protein. In the ovary it was present in the wall of arterial blood vessels, as well as in the ovarian follicles of different stages. In the tubular organs the VPAC1 receptor immunohistochemical stainings were observed in the wall of the arterial blood vessels, in the muscular membrane, as well as in the mucosal epithelium.

The study confirmed the presence of VPAC1 receptor in the tissues of the porcine female reproductive tract what clearly shows the possibility of influence of VIP on the porcine ovary, oviduct and uterus.

Key words: reproductive system, vasoactive intestinal polypeptide, VPAC1, female, pig

Introduction

Vasoactive intestinal polypeptide (VIP) is regarded to be a co-transmitter in the parasympathetic nerve fibers influencing functions of smooth muscles, glandular tissue and others (Fahrenkrug et al. 1988). It occurs often together with pituitary adenylate cyclase-activating peptide (PACAP) being structurally and functionally similar to VIP. Besides being involved in the neurotransmission VIP (and PACAP) are trophic factors being important in the period of the central nervous system development (Lilling et al. 1994). They are also involved in the neuroprotection (Saïd et al. 1998, Arciszewski and Ekblad 2005, Arciszewski et al. 2008) and are regarded as potent anti-inflammatory factors (Leceta et al. 2000).

Female reproductive system is supplied by autonomic, afferent and efferent, nerve fibers. They were