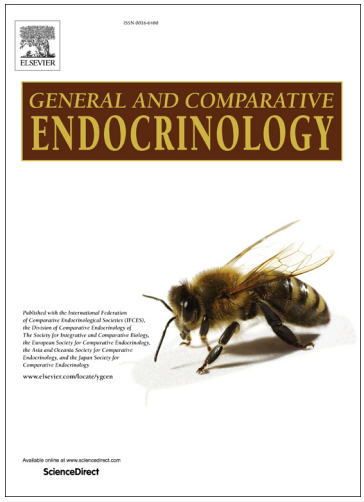

Cloning and mRNA expression of NPB and its effect on hormone secretion of the reproductive cells in the pig

Lei Zhihai

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Cloning and mRNA expression of NPB and its effect on hormone secretion of the reproductive cells in the pig

Professor Lei Zhihai

College of Veterinary Medicine

Nanjing Agricultural University

Nanjing, 210095 P.R. China

ABSTRACT

Neuropeptide B (NPB) is an endogenous ligand for the orphan G protein-coupled receptors NPBWR1 (GPR7) and NPBWR2 (GPR8). Some reports have investigated the role of NPB in the regulation of feeding, energy metabolism and hormone secretion in many species. However, few papers reported the physiological function of NPB in the pig. In this study, we cloned and sequenced the NPB mRNA from a pig, which was found to consist of 123 bases. NPB mRNA expression was detected in central and peripheral tissues by the quantitative fluorescence method. The results showed that NPB mRNA expression was higher in hippocampus, cerebellum, spinal cord, thymus, tonsil, duodenum, cecum, colon, ovary and testis. The distribution of NPB suggested that it may be involved in the regulation of reproductive functions in the pig. Subsequently, the expression and distribution of NPBWR1 and NPBWR2 were found in Leydig cells and ovarian granular cells. We then investigated the direct effect of NPB on pig reproductive cells in vitro. The results showed that different concentrations of NPB (10^{-12}, 10^{-10}, 10^{-8} and 10^{-6} M) promoted the secretion of testosterone in Leydig cells in concentration-dependent manner. Different doses of NPB could promote the secretion of progesterone in ovarian granulosa cells in dose-dependent manner. Low concentrations of NPB (10^{-8} and 10^{-10} M) promoted estradiol secretion, but high concentrations of NPB (10^{-6} M) inhibited its secretion. All the results suggested that the NPB/NPBWR1 or NPBWR2 system may play a role in modulating the reproductive activity in the pig.

Keyword: Pig; NPB; mRNA expression; Leydig cells; ovarian granular cells