Original Research Article

Does seminal plasma affect angiogenesis in the porcine oviduct?

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Abstract

In the present study we examined the effect of seminal plasma (SP) on angiogenesis in the porcine oviduct. Gene expressions of vascular endothelial growth factor (VEGF) and its two receptors (Flt-1: fms-like tyrosine kinase and Flk-1/KDR: fetal liver kinase-1/kinase insert domain-containing receptor) as well as fibroblast growth factors (FGF-1 and 2) and von Willenbrand factor (VWF) were determined in the oviduct of SP-treated and control (PBS-treated) gilts. Moreover, vascular density (VD) indicated by endothelial cell area immunolocalized by VWF staining, was assessed in the oviducts. Real-time PCR revealed significantly higher expression of FGF-2 and VWF on day 1 (p < 0.05) after SP administration in comparison to control animals. In contrast, Flt-1 mRNA level on day 1 was lower in SP-treated gilts compared to controls (p < 0.05). In the examined oviductal sections, VD did not differ between control and SP-treated animals. However, in SP-treated animals VD was higher on day 5 than on day 1 (p < 0.05) or 3 (p < 0.01). SP had no significant effect on VEGF, Flk-1/KDR and FGF-1 mRNA expression. In conclusion, our results suggest that SP affects the vascular network by changing the expression of factors contributing to angiogenesis.

Keywords

Sus scrofa; Oviduct; Seminal plasma; Angiogenesis; VEGF