ABSTRACT

This study was aimed to improve knowledge about swine ovarian follicular function, paying attention to angiogenesis, since new vessel growth is a fundamental event in ovarian function. In particular, we investigated a potential involvement of netrin-1, a protein known as a guidance axon factor.

Firstly, we studied the expression and immunolocalization of netrin-1 in swine ovarian follicle and its effect on cultured swine granulosa cell viability and steroidogenesis. Furthermore, aortic endothelial cells were employed to verify a possible netrin-1 effect on angiogenesis.

Our data demonstrate the expression and the presence of netrin-1 in swine follicular fluid; in addition, it was shown that netrin-1 inhibits granulosa cell viability and estradiol 17β levels while it stimulates progesterone production. Netrin-1 also inhibits aortic endothelial cell growth in the angiogenesis bioassay. This effect appears to be mediated by inhibiting Vascular Endothelial Growth Factor and stimulating Nitric Oxide.

Therefore, we hypothesize that netrin-1 could be important for follicular function in the swine.