

***In vitro* effect of Intelectin-1 on the levels of Adipokines in Porcine Ovarian Cells: Interaction with Estradiol**

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White adipose tissue secretes hormones named adipokines like adiponectin (ADIPOQ), apelin (APLN), leptin (LEP), visfatin (NAMPT), chemerin (RARRES2), resistin (RETN) and vaspin (SERPINA12). These adipokines not only regulate energy metabolism but also reproductive functions. Another one is omentin-1, known as intelectin-1 (ITLN1), which improves insulin sensitivity and glucose metabolism. Our previous study showed that ITLN1 is expressed in the porcine ovarian follicles and its plasma levels depend on estrous cycle phase. However, its impact on ovarian endocrinology and levels of other adipokines is still unknown.

Therefore, the porcine ovarian follicle cells (10-12 days of estrous cycle) of Large White pigs were cultured *in vitro* for 48 h with ITLN1 (10-100 ng/ml) to assess mRNA expression of ADIPOQ, APLN, LEP, NAMPT, RARRES2, RETN, SERPINA12 and their respective receptors as well as aromatase using RT-qPCR (n=5). The concentration of 17 β - estradiol (E₂), ADIPOQ, APLN, LEP, NAMPT, RARRES2, RETN and SERPINA12 in the culture medium was determined by ELISA assay (n=5). Also, effect of E₂ (10-1000 nM) on ITLN1 protein levels in the ovarian cells was analyzed (n=5). Statistical analysis was performed in Graph Pad Prism 8, using one way ANOVA and Tukey's test (p<0.05).

We noted that ITLN1 enhances gene expression of RETN, NAMPT, and SERPINA12, inhibits ADIPOQ and LEP, has no impact on APLN and RARRES2, as well as modulates the levels of their respective receptors. Moreover, our results indicated that ITLN1 increases ADIPOQ, LEP, and NAMPT, decreases APLN, and has no effect on RARRES2, RETN, as well as SERPINA12 concentrations in the culture medium. We also observed the stimulatory effect of ITLN1 on mRNA expression of aromatase and E₂ levels in the culture medium and interestingly, the E₂ dose-dependently increased ITLN1 levels in ovarian cells. Additionally, a strong negative correlation between E₂ and RARRES2 levels was observed.

Taken together, our results for the first time showed positive feedback between E₂ and ITLN1 levels in porcine ovarian follicle cells. Moreover, ITLN1 by modulating the levels of other adipokines as well as their respective receptors might be a new auto- and paracrine regulator of pig reproduction.

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