LOCAL CHANGES IN CONTRACTION RELATED SUBSTENCES IN BOVINE OVIDUCTS EXPOSED TO OVARIAN STEROIDS AND PEPTIDES; INVESTIGATION BY *IN VITRO* MICRODIAYSIS SYSTEM

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The microenvironment in the oviduct is controled by the endocrine, paracrine and autocrine interactions mediated by ovarian and pituitary hormones as well as by the local oviductal products. Thus, in this study, microdialysis system (MDS) was utilized to investigate the effect of luteinizing hormone (LH), oxytocin (OT) and ovarian steroids (progesterone; P4 and estradiol-17β; E2) added to the incubation medium on the local secretion of prostaglandins (PG), endothelin-1 (ET-1) and angiotensin II (Ang II).

A 7 cm long microdialysis capillary membrane was implanted in to the lumen of the oviducts collected from post ovulatory phase of the estrous cycle, incubated in TCM 199 in simple organ culture chambers, and the system was gently perfused with Ringer's solution. Addition of LH, ET-1 and LH+ET-1 to the incubation medium induced PGE2 release and the highest stimulatory effect on PGE2 secretion was observed with the combination of LH+ET-1+E2+P4. The administration of LH, ET-1, P4+E2, LH+ET-1, LH+ET-1+ E2+P4 show a stimulatory effect on PGF2α release. LH, LH+ET-1, LH+ET-1+ E2+P4 stimulate ET-1 and Ang II releases. ET-1 in the incubation medium stimulate it's own release. When OT was added to the incubation medium it hinders the effect of all these stimulations.

The overall results of this study indicated that LH with the E2 and low P4 and/or ET-1 bearing the highest stimulatory effect on the production of contraction related substances such as PGE2, PGF2α, ET-1 and Ang II. The administration of OT resulted in an inhibition of the LH stimulated effect on the oviduct. Moreover, the locally produced ET-1 acted as an up regulator of it's own secretion.

This results provide further evidences for our previously suggested concept on the regulation of oviductal contraction that the preovulatory LH surge, together with a locally recirculated high level of E2 from the Graafian follicle and basal P4 level from regressing corpus luteum (CL) induces the maximum stimulation in the oviductal production of PG and ET-1, resulting in the active oviductal contraction for a rapid transport of gametes. OT released from the newly formed CL may block these mechanisms, thus inhibiting the contraction to secure a slow transport of the embryo to the uterus.