

DESCRIPTION FOR THE GENERAL PUBLIC

The functioning of the reproductive system of farm animals is closely related to their nutritional status. Disorders of energy balance can directly affect fertility, maintenance of pregnancy and litter size. It is considered that pigs have many common physiological traits with humans, which is the reason why the results of this project may help to broaden knowledge about the human physiology. Adipokines, biologically active molecules produced by the white adipose tissue, belong to the factors regulating both the metabolism and the proper functioning of the reproductive system of females. In our previous projects, we have demonstrated the presence of adipokines, such as leptin, adiponectin and chemerin in the porcine uterus. We have shown that these hormones can affect not only the steroid hormones secretion, but also the expression of the key steroidogenic enzymes in the uterus. It seems that another molecule affecting both the energy homeostasis and animal reproduction is resistin.

The basis of this project is a research hypothesis that assumes the expression of resistin in the porcine uterus during the cycle and early pregnancy. We also want to explore the effect of resistin on the transcriptome of the endometrial cells and the secretion of steroid hormones by endometrium.

The propose research may not only show a cycle and/or pregnancy phase-dependent expression of resistin in the porcine uterus, but may also explain the direct effect of resistin on steroidogenesis in the porcine uterus. Analysis of the resistin effect on the porcine endometrial cells transcriptome will allow to identify potential genes/mechanisms that are directly dependent on this adipokine. Because the pig is an important species among the farm animals, understanding the role of resistin in the uterus of these animals during early pregnancy, which is a key period for the maintenance of pregnancy and proper development of the embryo is very considerable. The obtained results of the research may also, in the long term, contribute to a better understanding of the mechanisms determining the reproductive success of animals.