

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

(State the objective of the project, describe the research to be carried out, and present reasons for choosing the research topic - max. 1 standard type-written page)

The use of pesticides in modern agriculture and farming practice improves the quality and quantity of crops. However, after long-term use of the pesticide, it turned out that they can be risky for the human and animal health. Due to resistance to degradation and strong lipophilic character, they widespread in the environment and accumulated in organisms. After their penetration into the living bodies, pesticides alter the endocrine system and they can activate or inhibit some receptors (e.g. estrogenic receptors). Therefore, these so-called “endocrine disruptors” (EDs). They exert their adverse effect on reproductive processes, which was confirmed in many animal species and human. It is worth to pointed that their effect is not toxic, and it can be latent and difficult to detect.

The pesticides, which were chosen for these studies, are currently used and they are commonly assigned in the environment and living organisms. We showed previously, that these pesticides caused the opposite effect on myometrial contractions. It is interested that cervical contractions is independent on myometrial contractions and the same pesticide can affect on differently way on myometrial and endometrial secretion. The doses which will be used are non-toxic, and close to the level of pesticides in the environment and living organisms, but they disturb the function of reproductive system of cows.

The framework of this project comprises the determination whether pesticides disrupt the cervical contractions. Next, it is planned to check how pesticides affect the regulation of signal to cervical contractions: the reception of the signal (the effect on receptor for contraction stimulator) and the force of signal (amount of its inhibitor) to contractions. At first, we want to verify the ability to changes of patency the cervix by pesticides and their potential effect on fertilization. Finally, it is planned the verification of used model and ability of pesticides to open cervix during pregnancy. In this way we want to determine the usefulness of our model for studies of potential effect of pesticides (also new on market) on frequency of preterm birth or miscarriages.

The planned research will be conducted on the material taken from the cow. The results can help in the better understanding of the involvement of the contaminated environment in the lack of reproductive success in others mammals, including human. Thus, these basic studies are cognitive in nature and they have some practical significance in veterinary and medical practice.