

DESCRIPTION FOR THE GENERAL PUBLIC (IN ENGLISH)

Environmental pollutants have a significant impact on human and animal health. One example of environmental pollutants of concern is a group of chemicals with confirmed or suspected endocrine disrupting properties, called endocrine disrupting chemicals (EDCs). They are widespread around the world and the source of EDC exposure can be either food, personal hygiene products, medicines, or the other environmental media.

The health risks of exposure to EDC are mostly related to a large number of compounds already classified as or suspected as being EDC (a total of about 800 compounds), as well as evidence of widespread, chronic exposure to low doses of a mixture of compounds. It should be noted, however, that EDCs, like naturally occurring hormones, can produce health effects both at high and low doses. Maintaining a hormonal balance is extremely important for the proper development and functioning of the human body, while exposure to the EDC can disturb this balance. In addition, exposure in the early stages of development can have a negative effect even in adulthood. Fertility problems, changes in thyroid hormone levels and reproductive disorders in men and women are examples of the effects of EDC on the human body.

Due to the prevalence of EDC and possible adverse health effects, they are subjected to biomonitoring studies to assess the exposure of a selected population by measuring the relevant biomarkers in urine or serum. The development of the human ovum is very precisely regulated by the action of natural hormones. Presence of substances that may interfere with natural hormones in the environment of ovum development, that is, in follicular fluid may be crucial for the success of fertilization and subsequent development of the embryo.

In this project, we will analyze the samples of urine, serum and follicular fluid from women, both healthy (fertile) and infertile undergoing in vitro fertilization (infertility). Research will answer the question of which common EDC environmental pollutants are detectable in follicular fluid, in the nearest egg development environment. We will search for about 30 compounds from the EDC group (parabens, bisphenol A and its S and F analogues, UV filters, or pesticide metabolites). Thanks to the advanced analysis of biological samples, we will also determine whether the form in which the substances are present can pose a risk to the development of the ovum. We will also determine whether exposure to environmental pollutants is the same for both fertile and infertile women by comparing the concentrations of substances in biological samples.