

The aim

The aim of my study was to determine whether the selected endocrine disruptors (EDs) affect reproductive parameters of sperm. Due to two experimental models, in which was tested the influence of selected Eds, my work is divided into two parts:

A) On the boar model (*Sus scrofa*) was tested effect of selected EDs (zearalenone (ZEN), di(2-ethylhexyl) phthalate (DEHP), vinclozolin (VIN) on the course of capacitation, acrosome responses *in vitro* and changes in the detection and localization of selected proteins.

B) On the fish model (*Perca fluviatilis L.*) was tested the influence of the selected ED-bisphenol A (BPA) on the motility and velocity of fish sperm movement.

Results

Mammalian model

In mammalian model the course of capacitation and acrosome reaction was significantly influencing by the examined EDs in comparison with control samples. The increase of the number of marked cells during capacitation and reduce of the number of marked cells after AR compared with the differences between experimental and control samples was confirmed by the flow cytometry method. At higher concentrations EDs clearly inhibited acrosome response and thus reduce the number of sperm capable of fertilization. The relevancy of the results of detection acrosome reaction was confirmed by using various methodological approaches.

Fish model

The study *in vitro* on fish proved that BPA affects the percentage of motile sperm and their velocity. Different concentrations of BPA affect the percentage of motile sperm, sperm trajectory, the period of their movement as well as their speed. BPA at low concentrations (0.12 to 0.25 mM) increased the speed of sperm movement and also reduced the percentage of motile sperm and duration of their movement. The mechanism of effect of low concentrations of BPA on a higher speed of sperm movement in the fish model is unknown and will be subjected to further detailed research using the image and motility analyzer.

Conclusion

I proved that selected EDs (ZEN, DEHP and VIN) affect the course of capacitation and acrosome reaction at boar sperm. In case of the fish sperm BPA affects sperm motility. If the physiological processes are damaged, there is a risk of an unsuccessful fertilization and reproduction in both examined models.

EDs as environmental pollutants can threaten the reproduction of both species and they can negatively affect human reproduction.

