

Unintended childlessness, classified by the WHO to social problems, refers to an increasing number of couples seeking progeny. It is assumed that in 40-60% of cases, the male factor is cause of infertility. In view of the increasing number of published literature data concerning the problem of male fertility, there are hypotheses regarding the etiology of said alterations. As one of the reasons is industrialization and widespread use of plastic products, which is associated with excessive exposure to substances with hormonal activity. These include bisphenol A (BPA), which due to its phenolic structure has the ability to interact with the estrogen receptor through the estrogen signaling pathways. The test results indicate the involvement of BPA in the pathogenesis of many diseases, including hypothyroidism, prostate tumors, breast cancer and polycystic ovary syndrome.

Due to permanent human exposure to this polymer and the alarming research results there is a need for basic and clinical research in order to clear up doubts about the effects of the BPA on the endocrine system and reproductive potential. There have also been taken steps to reduce exposure to BPA, introducing substitutes such as bisphenol F (BPF) and bisphenol S (BPS). Because of the indiscriminate use in the food packaging, which often come into contact with food, these compounds should be thoroughly tested for their effects on the human body. There were early reports based on animal models suggesting harmful effects of these polymers. At the moment, however, there is no conclusive data regarding their impact on the human reproductive system.

Our study will determine the mechanisms of action of BPA, BPS and BPF and their effects on male germ cells, both after exposure to a single compound and mixtures thereof. Results will also help answer the question asked by the public, whether bisphenols are environmental factor affecting significant in recent years infertility incidence. The results can bring significant benefits in diagnosing the causes and development of new treatments for infertility. In addition, they can raise public awareness on the harmful health effects of xenobiotics and affect the possible reduction of their widespread use.