

2. Abstract

Phenol derivatives (including 4-nonylphenol, 4-*tert*-octylphenol and bisphenol A) belong to the group of endocrine disrupting compounds. Despite their knowledge about their harmfulness, they are constantly manufactured and widely used in industry, which means that their transport to the environment on land and in the water does not cease. In the sea, phenol derivatives are subject to a number of processes, and one of them is the accumulation in marine organisms. The most vulnerable are the predatory animals from the top of the trophic sea pyramid, including seals. Therefore, the doctoral dissertation is based on experiments carried out in the years 2014-2017 on a breeding herd of the baltic grey seal (*Halichoerus grypus*) colonizing the sealarium of the Hel Marine Station. The analysis of the presence of alkylphenols and bisphenol A were subjected to samples of placentas, blood, milk, fur from both adult seals and seal pups born during the experimental period. Determinations of phenol derivatives in the biological material were carried out using liquid chromatography with a fluorescence detector,

In the marine circulation cycle of phenol derivatives, the maternal transfer component was separated as the overriding research goal of the doctoral dissertation. It includes unknown process of transferring endocrine compounds to the fetus, as well as after delivery. The essence of the research was to determine the response of the body of young seals to the action of xenobiotics in subsequent life stages (during breastfeeding, physiological fasting and after the introduction of a fish diet). The additional element was to check what load of phenol derivatives is eliminated from the body of the seal by incorporation into the fur.

After the analysis of the results, it was found that the placenta does not function as a barrier to the tested compounds, thus in the fetal life there is an intergenerational transfer of endocrine active phenol derivatives. After birth, the young seal undergoes intoxication with alkylphenols and bisphenol A, along with the milk food obtained from the mother. After switching to a fish diet, the load of phenol derivatives increases as it is introduced into the body. However, with the passing of time, the weight of the pups increases and their ability to detoxify and eliminate xenobiotics, for instance by incorporating into the fur. That is why the intoxication of the grey seal pups with phenol derivatives in the first three months of staying at the sealarium weakens and does not threaten their health and life. In the female's life, parturition and lactation may be effective processes of detoxification and elimination of phenol derivatives from the body.