

Short Term Accumulation and Recovery of Environmental Endocrine Disrupting Chemicals in Water to Medaka, *Oryzias latipes*

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Many researchers reported that *p*-nonylphenol, bisphenol A and some environmental endocrine disrupting chemicals influenced seriously to sex determination on fish¹⁻³⁾. However, there are a few data of the accumulation rate of the chemicals in fish body. The aim of this work was to clarify time dependences of concentrations changes of environmental hormones (*p*, *p'*-DDT, γ -BHC, 4-nonylphenol (NP)) in medaka, *Oryzias latipes*, when the fish were exposed to the chemicals in water. And to get a basic knowledge of the concentration changes in the fish body after exposure period was also one of aims.

The chemicals dissolved with acetone were added to water tanks (60 L). Several fish were collected at desired times, and the chemical concentration of the fish was analyzed with an ion trap type GC/MS (CP-3800/Saturn 2000, Varian Co.). Each of the chemical concentrations of the water was 10 $\mu\text{g/L}$ and the water was maintained a static condition. The fish were starved during the experimental period and the water was not aerated. The collected fish was mixed homogeneously with methanol, and then the mixture was centrifuged. The supernatant was passed through a silica-gel column for cleanup. 4-nonylphenol was used a mixture of isomers, which was almost the same as a nonylphenol composition existed in environment.

Figure 1 shows the time dependence of the chemical concentrations in the whole body of the fish. The concentrations of the DDT and NP became gradually high as the time passes after exposure. The concentration of the DDT was higher

than NP all through the experimental period.

On the other hand, the increasing of the γ -BHC concentration was not clear, and the concentration was a low and same level. After exposure period, the chemical concentrations decreased almost half for short-term than expected. However, the concentrations did not decrease extremely after 4 hours for the depuration period.

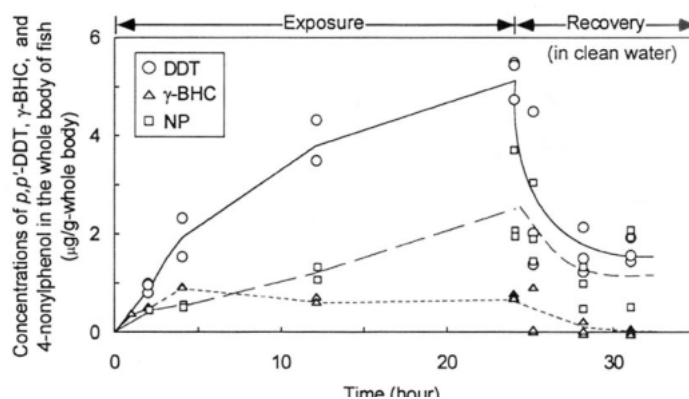


Fig. 1. Time dependence of chemical concentrations in the whole body of medaka, *Oryzias latipes*, exposed to mixture of 10 $\mu\text{g/L}$ *p,p'*-DDT, γ -BHC, and 4-nonylphenol in water.

1) H. Ishibashi, et. al., *J. Health Sci.* 47(2), 213-218 (2001).

2) A. Arukwe, et al., *Aquatic Toxicol.*, 49, 159-170 (2000)

3) M. A. Gray and C. D. Metcalfe, *Env. Toxicol. Chem.*, 16(5), 1082-1086 (1997).