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ANALYSIS OF PAH METABOLITES AND ANTIOXIDANT CAPACITY IN MUSSELS (*Unio pictorum*) FROM NEMUNAS RIVER (LITHUANIA)

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The Rivers are under increasing constant threat of anthropogenic activities, most leading up to contamination. Various pollutants enter the aquatic environment and polycyclic aromatic hydrocarbonates (PAHs) are a significant part of it. The Nemunas is the fourth-largest river draining into the Baltic Sea and its basin covers the largest area in Lithuania. PAHs constantly contaminate the Nemunas River, a significant part of them produced during petrogenic and pyrogenic reactions [1]. Bivalves of the *Unionidae* family are distributed worldwide and are widely used as bioindicators in the determination of ecosystem status. Sensitivity and informativity of biochemical biomarkers assessed in mussels of the *Unionidae* family were demonstrated after exposure to various groups of pollutants *in situ* and under laboratory conditions [2]. Thus, the current study aimed to evaluate levels of PAH metabolites and antioxidant capacity in *Unio pictorum*. In this study, mussels were collected in the summer of 2020, 2021, and 2022 at 4 different Nemunas River sites. The first sampling site N1 was located upstream of the Alytus City industrial and municipal wastewater outlet. The other sites were located below the wastewater outlet – N2 at approximately 2 km distance, N3 – at a 30-32 km distance in Nemunas Loops Regional Park, and N4 – below the Birštonas and Prienai Cities. The naphthalene- type and benzo[a]pyrene-type PAH metabolites in *U. pictorum* haemolymph were analysed using a semi-quantitative fixed wavelength fluorescence method with the respective pairs of excitation and emission wavelengths [3]. The total antioxidant capacity of *U. pictorum* was evaluated using the ferric-reducing antioxidant power (FRAP) assay [4]. Analysis of study results showed that the levels of naphthalene-type and benzo(a)pyrene-type metabolites in the haemolymph of the mussels increased from 2020 at Nemunas sites N1 and N3, respectively. The antioxidant capacity of the bivalve mussels increased from 2020 to 2022 at all sites located downstream from site N1. Spearman rank correlation analysis revealed that there was no reliable relationship between the responses of the biomarkers in any of the studied years.