Physiological response of mussel *Mytilus galloprovincialis* to genotoxic effect of environmentally relevant benzo(a)pyrene concentrations

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Mussel *M. galloprovincialis* is sentinel filter-feeding bivalve commonly used as bioindicator of marine contamination status. Benzoa(a)pyrene, B(a)P is the most genotoxic of polycyclic aromatic hydrocarbons in PAH mixtures found in contaminated marine environment. In this study mussel response to genotoxic effect of B(a)P concentrations (0.01 - 20 µg/L) was investigated in gills (acid DNase activity and DNA integrity) and digestive gland (acid DNAse activity, lipofuscin, as a measure of oxidative stress and neutral lipids content). In gills, both acid DNase activity and DNA integrity were negatively dose-dependant and the responses even to the lowest dose (10 ng/L) were statistically significant. In the digestive gland, all investigated parameters were positively correlated to B(a)P, expressing statistically significant effect at 10 ng/L (acid DNase activity, neutral lipids) or 50 ng/L (lipofuscin content). Acid DNAse activity measured in gills as well as in digestive gland showed tissue-specific activity pattertn. Positive correlation to B(a)P was observed in digestive gland where B(A)P metabolic activation occurs. It can be concluded that even very low B(a)P concentrations (<0.1 µg/L), occasionally found in PAH contaminated environments lead to neutral lipid accumulation, generated oxidative stress leading to decrease in DNA integrity and consequently altered DNA metabolism.