MICRONUCLEI AND GENE EXPRESSION IN A MARINE BIVALVE, Mytilus galloprovincialis

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Micronucleus (MN) formation is a common evidence after exposure to clastogenic or aneugenic agents and the analysis of micronucleated cells has been widely used to trace the early effects to genotoxins in several organisms. Overall, the MN expression depends on genetic and epigenetic mechanisms, and their spontaneous occurrence has been related to cell defence and differentiation mechanisms (Kirsch-Volders et al. 2011). The biological relevance of significant MN increase in haemocyte and gill cells of *M. galloprovincialis* from the industrial district of Marghera (Ve) was matter of debate in public court, with the late consequences possibly resulting from significant levels of DNA damage in marine mussels remaining unsolved (www.petrolchimico.it). As a matter of fact, *M. galloprovincialis* is a filter-feeding mollusc scarcely affected by typical bivalve diseases and with limited xenobiotic metabolism. Compared to chronic exposure to genotoxic contaminant mixtures in nature, controlled laboratory treatments can improve knowledge on the molecular processes occurring in response to DNA damage. To disentangle complex questions with simplified work plans, we exposed mussels to nanomolar doses of a metal mixture (Cd, Cu, Hg) for two days and then measured the levels of chromosomal damage and gene expression changes in parallel. The data resulting from DNA microarray analysis confirmed previous findings and allowed us to describe specific transcriptional changes. The progressive increase of sequence data on *Mytilus* spp. and evolutionary related species will give us the chance to understand more on mussel genes involved in the control of the cell cycle and DNA repair.