

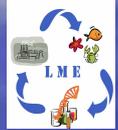
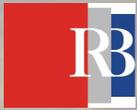
TISSUE-SPECIFIC RESPONSE OF ACID DNASE ACTIVITY IN MUSSEL *Mytilus galloprovincialis* EXPOSED TO MIXTURE OF POLLUTANTS IN SEA WATER

ORGANIC EXTRACT

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INTRODUCTION

Numerous human activities over the last century resulted with release of wide range of pollutants into the marine environment altering its quality. Nowadays, the importance of monitoring the pollution impact has been recognized and variety of sea water quality assessment strategies applied. The pollution impact can be detected and quantified by measurement of biochemical, histopathological and toxic effects in the mussel tissues (1). For biomonitoring purposes new biomarkers of high sensitivity and low cost are widely investigated. Our previous results showed that the exposure of mussels to individual model marine pollutants causes the increase of acid DNase activity in hematocytes and hepatocytes indicating acid DNase activity as a promising biomarker (2).

The aim of this study was to investigate the mussel DNase activity responsiveness to toxic environmental mixture of pollutants as well as particular mussel tissue capability to discriminate the presence of toxic pollutants.

MATERIALS AND METHODS

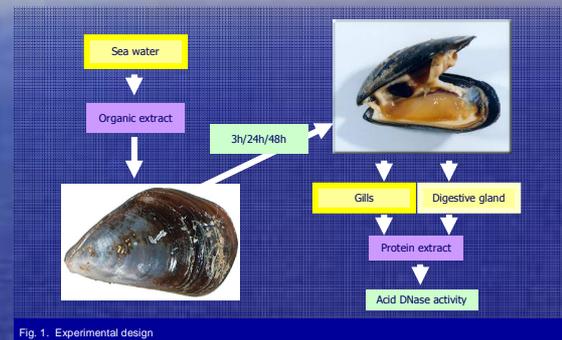


Fig. 1. Experimental design



Fig. 2. Sampling sites along the Croatian Adriatic coast

RESULTS

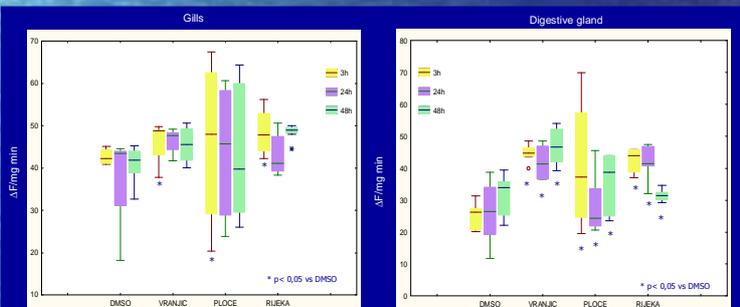


Fig. 3. Acid DNase activity in digestive gland

Fig. 4. Acid DNase activity in gill

Acid DNase activity increased in response to high potential toxicity.

Acid DNase activity increased in response to low, moderate and high potential toxicity.

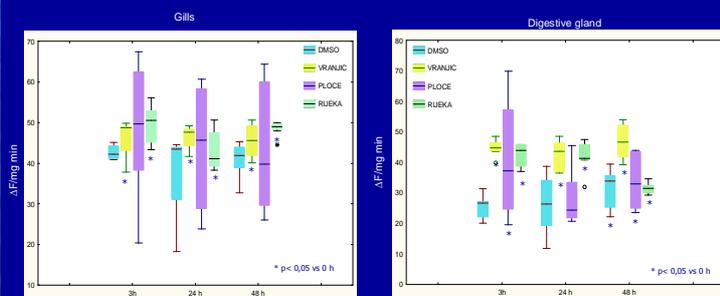


Fig. 6. Acid DNase activity in gill

Fig. 5. Acid DNase activity in digestive gland

Acid DNase activity in gills respond to high potential toxicity after 24h exposure and high/moderate potential toxicity after 48h.

Different (low/moderate/high) potential toxicity impact in digestive gland could be discriminated after 48 h of incubation.

CONCLUSIONS

1. ACID DNASE ACTIVITY IN MUSSEL *Mytilus galloprovincialis* IS RESPONSIVE TO EXPOSURE TO MIXTURE OF ENVIRONMENTAL POLLUTANTS.
2. THE PATTERNS OF ACID DNASE ACTIVITY IN BOTH TISSUES ARE SITE SPECIFIC AND RELATED TO DIFFERENT POTENTIAL TOXICITY OF SEA-WATER EXTRACTS.
3. THE SENSITIVITY OF ACID DNASE ACTIVITY TO TOXIC POLLUTANTS IS HIGHER IN DIGESTIVE GLAND.
4. ACID DNASE ACTIVITY IN MUSSEL DIGESTIVE GLAND CAN BE USEFUL BIOMARKER IN ASSESSMENT OF THE MARINE ENVIRONMENTAL QUALITY.

REFERENCES

1. Marigomez I., Soto M., Cancio I., Orbas A., Garmendia L., Carajavilla M.P., 2003. Cell and tissue biomarkers in mussel and histopathology in hake and anchovy from Bay of Biscay after the Prestige oil spill. *Marine Pollution bulletin* 53, 287-304
2. Fafandel M., Bihari N., Perić L., Cenov A., 2008. Effect of Marine Pollutants on the Acid DNase Activity in the Hematocytes and digestive gland of the mussel *Mytilus Galloprovincialis*. *Aquat Toxicol* 86, 508-513

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