



Metabolomic study from clam gill

Key Laboratory of Coastal Zone Environment Processes, CAS; Shandong Provincial Key Laboratory of Coastal Zone Environment Processes, Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences, Yantai, China

CONTEXT

The goal of this study was to assess the sensitivity of three pedigrees (White, Liangdao Red and Zebra) of Manila clam to the acute mercury exposure which is used as the bioindicator for the monitoring of contaminants in marine environments. The gill of clam was one of target organs for the accumulation of contaminant, therefore the gills tissues were sampled and processed from the acute mercury exposed clams (White, Liangdao Red and Zebra) for the metabolite extraction [1, 2].

MATERIAL

- Precellys®24 homogenizer.
- Precellys® kit: 03961-1-003 (1.4mm ceramic beads).
- Sample: ~100 mg (wet mass) of gill tissue.
- Extraction solvents: 4 ml/g (v/w) methanol and 0.85 ml (v/w) water.

PROTOCOL

- Precellys®24: 6400 rpm, 2x10 sec, 30 s break.
- Metabolomics analysis: Extraction with methanol, chloroform and water to extract the polar metabolites, storage at -80°C, one dimensional ¹H NMR spectroscopy (500 M), data analysis.

RESULTS

¹H NMR-based metabolomics showed that the White clam (A) was the most sensitive pedigree to the exposure of mercury. However, further studies on the other tissues (digestive gland, muscle, etc.) are necessary to assess their sensitivity of various pedigrees of clam to various types of environmental contaminants.

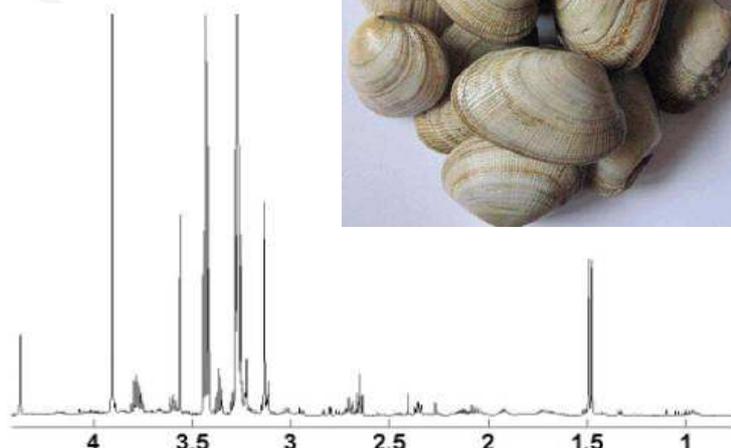
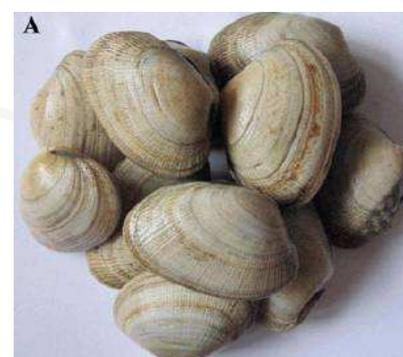


Figure 1: representative one-dimensional ¹H NMR spectrum of gill tissue extracts from Manila clam.

[1] Xiaoli Liu, et al., *Ecotoxicology* DOI 10.1007/s10646-010-0569-x

[2] H. Wu et al., *Anal. Biochem.* 37 (2008) 204–212

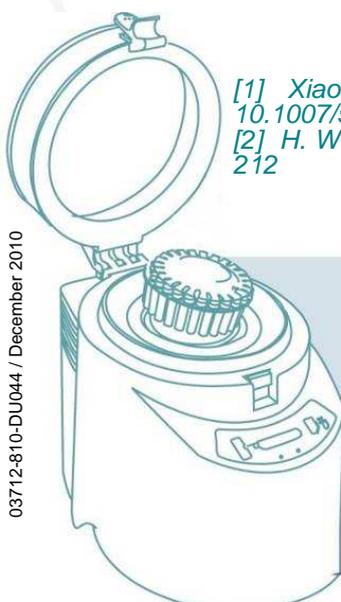


CONCLUSION

The Metabolomics usually needs to extract the low molecular weight (<1 000 Da) metabolites. Prior to the extraction of metabolites, the homogenization of biological tissues is necessary.

Precellys®24 is a high throughput homogenizer that can process up to 24 biological samples simultaneously. In addition, Precellys®24 can avoid the degradation of metabolites and cross-contamination between various biological samples. Our work proved the high quality and efficiency of Precellys®24 in the metabolomics study.

For more details, please contact precellys@bertin.fr



Problem



Solution

