

Organ distribution of the neurotoxin β -N-methylamino-L-alanine in the freshwater mussel *Dreissena polymorpha*

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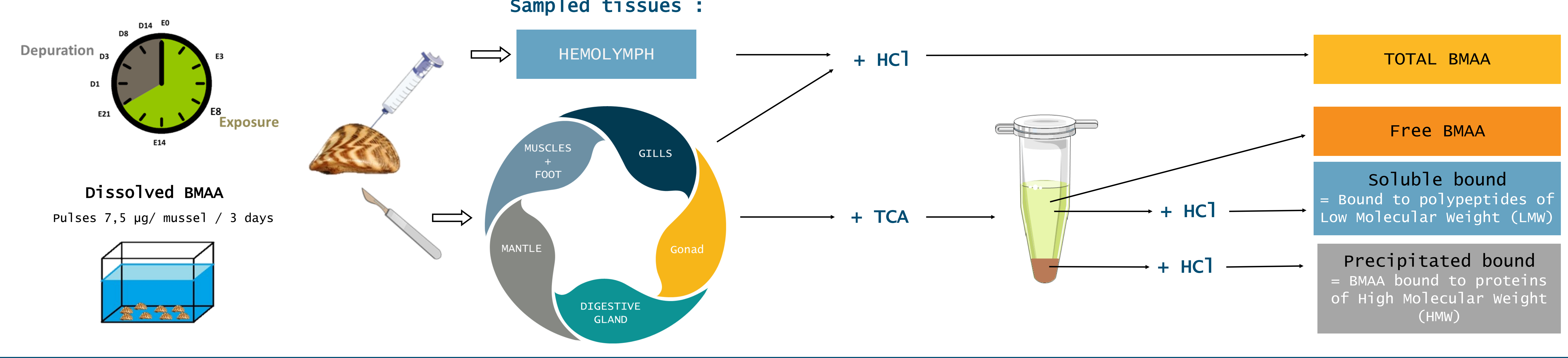
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CONTEXT :

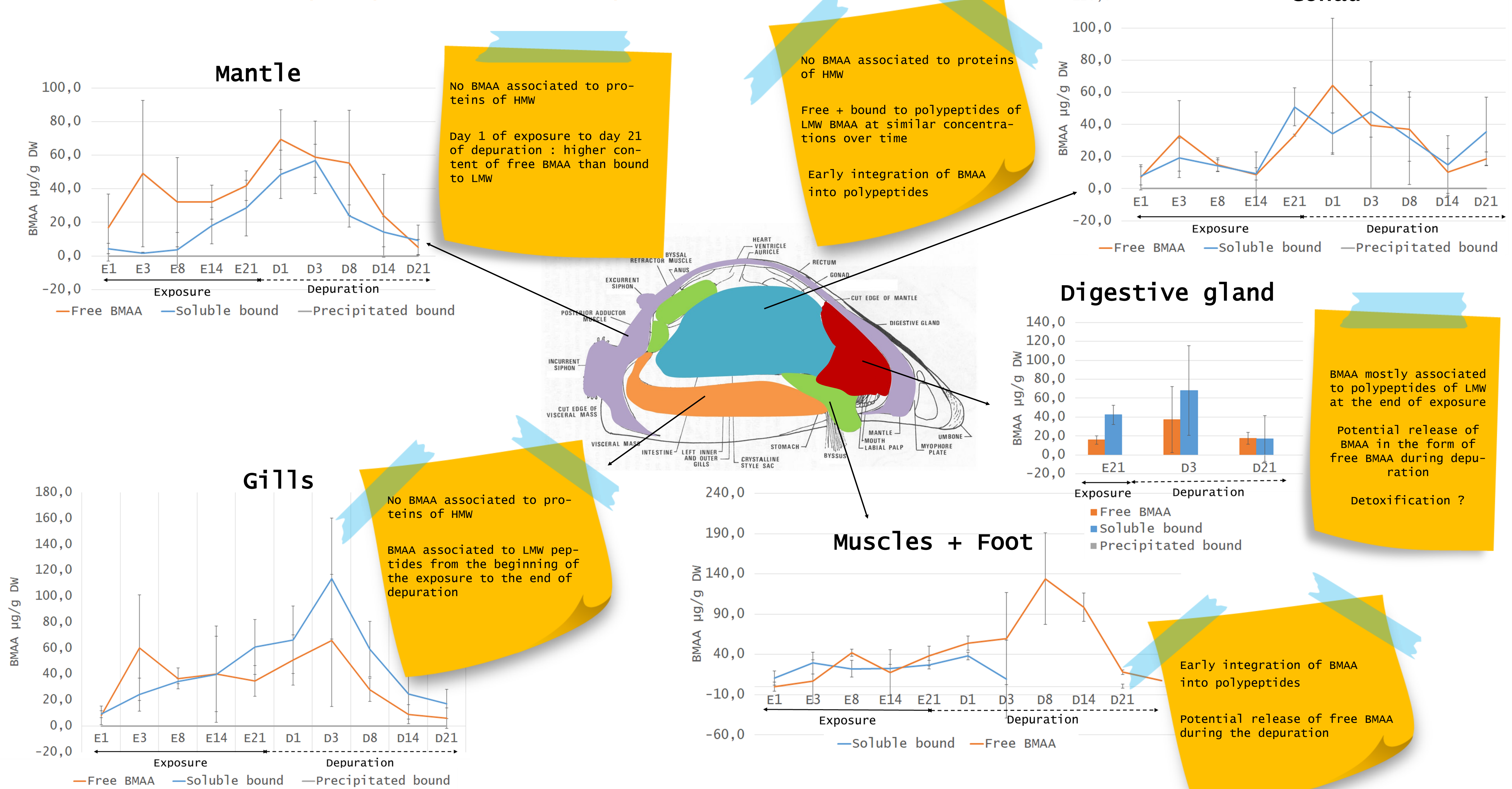
Among toxins synthesized by phytoplankton, **BMAA** (β -N-methylamino-L-alanine), a non **proteinogenic** and **neurotoxic amino acid**, **accumulates** in the freshwater and marine **food webs** and could promote neurodegenerative pathologies such as the Amyotrophic Lateral Sclerosis through a chronic ingestion of contaminated food. However, for a better health-risk management, knowledge about its **organotropism** in aquatic organisms is mandatory, as well as a proper measurement of BMAA in tissues. Indeed, BMAA is known to **accumulate in organisms under various** fractions: free, bound to polypeptides of low molecular weight (soluble bound fraction) and bound to proteins (precipitated bound fraction) requiring **various extraction procedures**. We use the freshwater zebra mussel *Dreissena polymorpha*, a filter-feeder bivalve known to accumulate BMAA in the laboratory, to assess the organ distribution of these BMAA fractions during a 3-week exposure followed by 3 weeks of depuration.

EXPERIMENTAL SETTINGS :



RESULTS :

Free, soluble bound and precipitated bound BMAA per tissue :



CONCLUSION :

No BMAA bound to proteins of HMW but BMAA is bound to LMW polypeptides in all analysed organs

Bound BMAA to LMW polypeptides still present in all organs at day 21 of depuration from 0,002 µg/g DW (mantle) to 60,05 µg/g DW (gonad)

The digestive gland apparently dissociated free BMAA from LMW polypeptides : **Detoxification ?**

Long term accumulation under LMW-bound form in gills ?

Comparison of the total BMAA accumulation between organs over time :

