

ROPME MUSSEL WATCH PROGRAMME

2014

INTER-COMPARISON BETWEEN THE CONCENTRATIONS OF CONTAMINANTS IN ROCK AND PEARL OYSTERS

CONCLUSION

High variability of trace elements and organic contaminants concentrations was found in the Rock and Pearl Oyster collected from the two sampling sites at Umm Al-Quwain, UAE. Rock Oysters had significantly and consistently higher concentrations of Ag and Cu than Pearl Oysters in the inter-comparison sampling sites. Relatively increased concentrations of these elements in Rock Oysters were also found in all surveyed stations during the present Mussel Watch campaign, as it was reported in previous studies in the ROPME Sea Area.

No significant differences were found in the accumulation of petroleum hydrocarbons and chlorinated hydrocarbons between the two Oyster species. A slight increase of some more petrogenic PAH compounds was noticed in Pearl oysters (while concentrations of the pyrolytic-derived PAHs (parent PAHs) were similar in both species), but the variability of data is very important and the number of samples very small to allow for conclusions. The normalization of organic contaminants concentrations to the lipid content of the organisms, showed relatively higher normalized concentrations of all groups of organic contaminants in Pearl Oysters, but the very important variability of the results within each Oyster species do not allow for conclusions. Furthermore, this result was mainly caused by differences in the lipid content of the organisms (the Rock Oysters had higher lipid content than the Pearl Oysters), which needs further investigation to exclude a possible artifact due to sampling.

The results of the present study suggest that only Ag and Cu appear to have a different accumulation pattern in the two Oyster species, which could be further investigated. For the remaining trace elements and the organic contaminants, no clear conclusions could be drawn on their relative accumulation in the two Oyster species at Umm Al-Quwain station, because of high variability of data for the same species and location.

In order to further investigate contaminants accumulation mechanisms and biological process, a fit-for-purpose laboratory study is needed, addressing the effects of the metabolism, food availability, physiological condition and reproductive cycle on the accumulation of contaminants in the two oyster species.