Trace element bioaccumulation in rope-grown *Mytilus galloprovincialis*: knowledge update

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Numerous trace elements (TEs) can be considered as potential pollutants of the environment, their mining productions and industrial uses increasing worldwide. Their monitoring can be achieved through the use of bioindicator species, such as the Mediterranean mussel *Mytilus galloprovincialis* (Lamarck, 1819). That species has been widely used to monitor the chemical pollution of coastal ecosystems by Cr, Ni, Cu, Zn, Cd, Pb, As, Ag and V. Conversely, environmental levels of Be, Al, Fe, Mn, Co, Se, Mo, Sn, Sb and Bi have been little or not monitored so far in mussel watch programs. Bioaccumulation processes of these 19 TEs in rope-grown *M. galloprovincialis* purchased from a salt pond with good chemical water quality were thus investigated in the present study. Mussels efficiently accumulated the 19 studied TEs. Bioaccumulation processes were driven by numerous mutually dependent biological parameters such as the mussel size and flesh weight, the sex and the reproductive status and the body compartment considered. TE bioaccumulation was a power function of the mussel soft body dry weight; total contents linearly increased with the shell length. Small-size mussels overall concentrated more TEs, with a high interindividual variability, consequently influencing the modelling of their bioaccumulation in the whole rope population. Although a large range of rope-grown *M. galloprovincialis* sizes can be used for monitoring purposes, one will thus take care not to use extreme size individuals. The influence of gametogenesis in determining female body higher TE concentrations prior to spawning could not be neglected and varied depending on the element. TEs were preferentially accumulated in the hepatopancreas, except for Zn, Se, Cd and Mo, more concentrated in gills. Gametogenesis did not influence TE distribution between body compartments, but likely diluted their concentrations as a direct consequence of massive reproductive tissue production. So, results from the present study underlined the potential use of *M. galloprovincialis* in the biomonitoring of numerous little studied TEs and gave some insights into the decisive role played by some relevant biological parameters in bioaccumulation processes of the 19 investigated TEs in rope-grown mussels.