Perna perna Mussel Reference Material – Short Term Stability Assessment

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Many mussel species are produced or collected worldwide and are consumed as seafood. Mussel consumption is due to their delicate taste and because they are considered as a good source of proteins, vitamins and essential trace elements. However, due to their intimate contact with sea water, mussels are able to accumulate organic pollutants and toxic trace elements such as As, Cd, Pb and Hg that may be present at the sea water. Even though this fact is a concern from the nutritional point of view, it is used in water quality monitoring studies as many mussel species can accumulate toxic elements, without deleterious effects that might lead to death of the individuals. To improve the confidence on biomonitoring measurement results and to make it possible to compare results from different places in time, various quality assurance measures are needed. The use of validated methods, participation in proficiency tests and use of certified reference materials are considered the most important tools for quality assurance of chemical measurement laboratories. There are various steps for the preparation and property value certification of a reference material: bulk material sampling and processing; particle size adjustment; degree of homogeneity assessment; stability study and property value characterization and certification. The objective of this work is to show the results for the short term stability study undertaken on a mussel candidate reference material under preparation. The short term stability is used to verify if normal transport conditions will not modify the status of the characteristic of interest in the material. Vials of the material were kept for various time periods up to three months, at several temperatures (-20^{o}C, 20^{o}C, 40^{o}C, and 60^{o}C). After the test periods, sample aliquots were taken and Ag, As, Br, Co, Cr, Fe, Na, Se and Zn were determined by instrumental neutron activation analysis. To verify if the material may be transported under normal conditions, a comparison of element concentration for the various temperatures to the ones obtained at the control temperature (-20^{o}C) was performed.

The comparison of element concentration for the various temperatures to the ones obtained at the control temperature (-20^{o}C) showed with 95% confidence that element concentration is stable up to 40^{o}C during the three month test period and hence the material may be transported under normal conditions.