

Amino acids and related proxies as indicators for food quality of different benthic organism habitats in the northern Bering and Arctic Chukchi Sea.

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Different organic matter largely determines the biomass and species of benthic organisms such as bivalves. Most of the characterised organic matter in organisms is in amino acids (AAs), many of which are present as proteins, which are essential for benthic organisms' growth. Thus, the percentage of organic carbon contributed by AAs (here is TAAC%TOC), organic nitrogen contributed by AAs (TAAN%TON) and other related proxies could be used as indicators for food quality for the benthic organism. The northern Bering and Chukchi Sea are areas in the Pacific Arctic characterised by seasonal variability in sea ice cover and abundant benthic biomass. Here we analysed over 100 sediment samples and 50 particulate samples collected by sediment traps and large-volume filtration in the western Arctic Ocean. In this presentation, we focus on three macrofaunal biomass "hot spots" (macrofaunal benthic communities with high biomass). Our results found that the highest TAAC%TOC (>20%) and TAAN%TON (>50%) were found in northern Bering and southern Chukchi Sea, and the high-value areas corresponded to the macrofaunal biomass "hot-spots" areas. The heavy stable isotope of carbon ($\delta^{13}\text{C}_{\text{org}}$) indicated that organic matter in that area contributed mainly by marine biota, higher nitrogen isotope ($\delta^{15}\text{N}$) showed macrofaunal biomass uptake the lighter nitrogen left organic nitrogen with the heavy nitrogen in the sediment. The other AAs-related proxies, such as amino acids/amino sugars (AA/AS), Reactivity Index (RI), and Degradation Index (DI), could also provide beneficial information on organic matter characteristics and benthic habitat.