BIO-ECOLOGICAL RESULTS ON QUATERNARY BENTHIC FORAMINIFERS OF TOXIC ELEMENT POLLUTIONS IN THE ARSUZ REGION IN EASTERN MEDITERRANEAN

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Abstract - In this study, foraminiferal assemblages and the bio-ecological results of heavy metal concentrations obtained from sea drilling samples in the Eastern Mediterranean (Arsuz region) were examined. In this context, three sea drilling works were carried out in the study area and Quaternary sediments were taken as the core from the soundings. Benthic foraminifers were identified from all three sounding samples. In addition, horizontal and vertical distributions of toxic element concentrations of the same samples were determined. The upper levels of the drilling samples represent the current environmental conditions and represent the earlier periods towards the basin. A large foraminiferal community (Adelosina duthiersi, A. mediterranensis, Cibicidoides cicatricosa, Lachlanella carinata, Massilina secans, Quinqueloculina seminula, Spiroloculina angulosa, S.antillarum, S. dilatata, S. ornata, Triloculina bermudezi, Ammonia compacta, A. tepida, Amphistegina lobifera, Elphidium charlottense, E. complanatum, E. crispum, Eponides concameratus, Planorbulina mediterranensis, Rosalina bradyi) have been defined in the study. Element analyzes were carried out at Namık Kemal University Central Research Laboratory (NABILTEM). Concentrations of 28 elements (Fe, Zn, Al, Mn, As, B, Co, Cr, Cu, Ni, Sb, Na, Mg, K, Ca, P, Pb, Hg, Cd, Ag, Bi, Cd, Mo, Pb, Pt, Sn, Se, Hg) were determined but the concentrations of 9 toxic elements (Cu, Zn, Pb, Ni, Cr, Fe, As, Se, and Mn) were evaluated. In addition, superficial element analyzes have been carried out to reveal the causes of color changes in the shell structure of foraminifera (Ammonia compacta). Surface element analysis was performed with Scanning Electron Microscope at NABILTEM. In these analyzes, it was determined that the color change in the foraminifer tests originated from Mn and Fe elements. in some of the foraminifera shells which morphological changes observed in, Color changes also have been observed. Especially at the upper levels of the drilling samples the concentration values of the elements are higher. These top levels, where the elements are intensive, represent the current environment, and the foraminifers identified at these levels were more discolored. It is thought that the main cause of the polluting element densities in the upper levels representing the current environment is agricultural activities.

Keywords - Eastern Mediterranean, Foraminifera, toxic elements, heavy metals, bio-ecology