RADIONUCLIDES IN ARCTIC MARINE MACROALGAE FROM KONGSFJORDEN (SVALBARD)

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Seaweeds are known to be useful environmental bioindicators since they bioaccumulate radioisotopes at very low environmental concentrations. Levels of natural radionuclides in six ecologically relevant brown and red seaweed species from Arctic coasts (Kongsfjorden, Spitsbergen, Svalbard Islands) were analysed in the present study, in order to characterise the levels of natural radioactivity in this ecosystem and to compare this with previously published data in coastal areas from other latitudes. Thalli were collected by SCUBA divers at different depths in Hansneset in September 2014 and transported immediately to the laboratory. Young thalli, free from macroscopic epibiota, were dried, powdered and confined in a standard geometry before gamma spectrometry measurements. Then, the radioactivity of ^{7}Be, ^{40}K, ^{208}Tl, ^{210}Pb, ^{212}Pb, ^{226}Ra and ^{228}Ra was measured by high-resolution gamma spectrometry using high-purity germanium detectors for 172800 s. Detectors were calibrated using a traceable multi gamma standard source and results are on a dry weight and fresh weight basis and are decay corrected to the date of sampling. Our results revealed the influence of cosmogenic radionuclides in the intertidal zone, as shown by the unique presence of ^{7}Be in the brown macroalga *Fucus distichus*, the only analysed species inhabiting the intertidal. High concentrations of ^{40}K were observed in all species, as this is one of the essential elements in biota. Remarkably is the high content of ^{210}Pb in the red seaweeds *Phycodrys rubens* and *Ptilota gunneri*, suggesting that these species might possess a higher capacity for heavy metals bioaccumulation than the analysed brown seaweeds.

Keywords: Arctic, gamma-radionuclides, seaweed.

Área temática:
Exposición a la radiación natural y NORM
Efectos biológicos de las radiaciones ionizantes